

# The Financial Reporter

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## Stochastically Forecasting Accounting Standards

By Henry Siegel

**T**his year I have resolved to no longer think I can predict how the insurance contracts project will turn out. It should be an easy resolution to keep; I really have no idea how it will end up. Both the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB) received a substantial number of comment letters critical of their most recent exposure drafts (EDs). Whether either board will agree to the changes commenters advocated in those letters is unclear. Of course, being an actuary, I can make projections.

There are only a few major decisions to be made. Let's look at them.

### Q1. Will there be a change to accounting for non-life liabilities?

**Probabilities:** IASB: Yes 80%; FASB: Yes 60%

With the U.S. non-life industry in the lead, both boards received numerous comments essentially saying the same thing: "Our accounting isn't broken. Don't change it!" The problem with this is that there is no International Financial Reporting Standard (IFRS) on the issue so the IASB must do something. The FASB already has a standard and so, in theory, could do nothing.

Of course, the key issue is whether to discount claim reserves; both EDs call for it. In its ED, the IASB has indicated it won't be reconsidering the issue. Equally importantly, Solvency II includes discounting in its

- 1 Stochastically Forecasting Accounting Standards  
*By Henry Siegel*
- 2 Chairperson's Corner  
*By Bill Sayre*
- 8 Impact on Term Product Pricing from IFRS 4 Phase II (Revised Exposure Draft) Reinsurance Contract Treatment  
*By Henry Qi and Emily Zhang*
- 12 Development and Use of Stochastically Generated Mortality Scenarios in VM-20  
*By Prabhdeep Singh*
- 17 Update on Regulatory Developments  
*By Francis de Regnacourt*
- 22 SOA Assumption Development and Governance Discussion Third Quarter 2013 Calls  
*By Drew Besendorf*
- 24 International Actuarial Association Report  
*By Jim Milholland*
- 29 What Is the Professional Development Committee and What's in It for You?  
*By Beth Grice, Terry Long and Judy Powills*
- 30 Financial Reporting Research Scorecard  
*By Sam Keller and Ronora Stryker*

CONTINUED ON PAGE 4

## 2013-2014 Section Leadership

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## Chairperson's Corner

By Bill Sayre

As we read through this edition of *The Financial Reporter*, we probably pay minimal attention to those who labor to bring these articles together each quarter. Lisa Markus has been editor of *The Financial Reporter* since the June 2011 edition. She does a fantastic job of pulling together each issue, and our section is very indebted to her for her efforts! She is also a very patient editor (particularly in cutting a break to tardy section chairs who are continually late with their submissions!). This issue is yet another tribute to the care she brings to developing the newsletter.

Regarding this edition, in particular I want to highlight “Stochastically Forecasting Accounting Standards” by Henry Siegel, which contains some interesting prognostication and rumination on the future IASB and FASB accounting direction. Also, I direct your attention to “Development and Use of Stochastically Generated Mortality Scenarios” by Prabhdeep Singh as his article presents very pertinent and current discussion on VM-20 stochastic issues.

As you are reading this, the Financial Reporting Section Council (FRSC)—along with our friends—will probably just have had our face-to-face meeting in Chicago at O’Hare Airport. The FRSC has two such meetings each year, the March one and a shorter gathering coincidental with the annual meeting in October. The March meeting is the most critical meeting our council has for the year, and we spend a good portion of the day doing the longer-range planning that will carry our section through the year. Below I summarize our 2013 agenda (which 2014’s agenda should very much resemble):

- Blue sky discussion
- Finance discussion
- Education update
- SOA initiatives
- SOA annual meeting planning
- Research update
- Outreach discussion
- *Financial Reporter* update
- Council elections discussion
- Other issues (including website and volunteering).

As you will note, it is a busy day and we have no difficulty filling our scheduled six hours. I consider the blue sky discussion to be the most important part of our agenda as that is where we discuss the section philosophy and the value we provide to our membership. We solicit input through our annual survey that is circulated to our membership, and we consider that during our blue sky dialogue. This is our annual focused opportunity to maximize what the section provides to the membership.

This is where you come in. As a council, we are only as effective in leading the section to the extent we react to your ideas and concerns and translate those into new directions. We need to hear from you. While the aforementioned survey is a helpful tool in developing our section course, we typically see response rates below 10 percent. We need you to take an active role in communicating with us. The FRSC is always open to great ideas, so feel free to call or email me, or any of the council leadership, and let us know your thoughts. ■



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## DID YOU KNOW... ?

The American Academy of Actuaries' website provides Life Practice Notes and Health Practice Notes in one place, making them easy to find and utilize. Use the links below to take a look:

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accounting requirements so Europeans tend to be more accepting of this change. In addition, it appears likely that the International Association of Insurance Supervisors (IAIS) will include discounting in its upcoming accounting basis for Globally Significant Insurance Companies. Large multiline insurers and companies reporting in Europe would like to deal with a single accounting basis, so discounting is highly likely to be included in IFRS.

On the U.S. side, the FASB might well decide to leave well enough alone here, although many of its members believe discounting should be required. No change would make many people in the industry happy; however, it would cause a lack of convergence with the IASB and require companies reporting on both IFRS and U.S. GAAP to report different liability levels.

So my guess is there will be discounting, although I'm less certain of that for the FASB than for the IASB.

## Q2. Will there be changes to life insurance accounting?

**Probabilities:** IASB: Yes 100%; FASB: Yes 60%

The issue here is not whether the IASB will do something. It has to. It's a question really for FASB. A new phrase arose during the round tables and comment letters advocating "targeted" changes to the insurance accounting standards. In truth, the phrase usually means "leave our accounting alone but change theirs."

Non-life companies, of course, have always been using a variation of this plea, "Our accounting isn't broken, fix the life insurers' accounting." What's new is that

now some life companies are saying the same thing. In particular, the plea is to leave FAS 97 universal life (UL)-type contracts alone but make other changes such as unlocking FAS 60 assumptions. Unfortunately, simply unlocking FAS 60 is not a simple change at all. It essentially requires a rewrite of the standard for many products insurance companies write. If it's a targeted change, it's like using the side of a barn as the target.

Furthermore, leaving FAS 97 alone is a flawed proposal on its own. It doesn't address the different presentation and measurement between FAS 60 and FAS 97 products. This is one of the key weaknesses of the current accounting standard. It also doesn't eliminate the retrospective unlocking of deferred acquisition cost (DAC) inherent in FAS 97 that many analysts have difficulty understanding. Finally, the basic measurement standard itself, the account value, is a retrospective value rather than the prospective measurement to be used for other contracts. There is no assurance that such a measurement makes proper provision for future cash flow needs.

That's why I think FASB is likely to proceed with a general rewrite of the standard, but doing nothing is also a possibility. A "targeted" rewrite is not really likely since it would impact some companies far more than others and give up on the goal of having a single model for all products.

## Q3. What presentation model will be used?

**Probabilities:** For both boards—earned premium (from current EDs): 40%; summarized margin (from the first IASB ED): 25%; building block approach (from American Council of Life Insurers (ACLI) comment letter): 20%; other 15%

This has been a very controversial topic at the round tables and in the comment letters. There is relatively little support for the boards' proposals but no common alternative solution. The arguments against the earned premium approach are that it is artificial and not really useful for analytic purposes. It does, of course, follow the revenue recognition standard to a great extent and so has appeal for the boards and for certain users.

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... FASB is likely to proceed with a general rewrite of the standard, but doing nothing is also a possibility.

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Commenters generally agree, for instance, that the use of other comprehensive income (OCI) should be optional, depending on whether it creates an accounting mismatch or not. There's also a consensus that FASB's decision to not unlock the margin should be reversed. Otherwise, it was pointed out by many comment letters, transition and presentation are made significantly more difficult and the results are less representative of the results of the company. Both of these have about a 90 percent probability of being adopted.

Many comment letters to both the IASB and the FASB expressed concern about the guidance for calculating discount rates, particularly for the longer tenors. Companies want to be able to use long-term estimates rather than precisely what the current market might show. Some board members oppose this; others agree with the position. I think it's 60/40 that the boards will approve using long-term averages.

The summarized margin approach, on the other hand, seems to be everyone's second choice. It lacks volume information, a prime request of commenters on the first IASB exposure draft, and doesn't look anything like an income statement for most types of companies. Adopting this approach would be more of a give-up than an act of conviction.

The ACLI proposal attempts to take the summarized margin but explodes some of the items to show both actual and expected premium and benefits. This approach seems to be a viable one to me, but it's not clear whether the boards will be in a mood to consider yet another proposal. This proposal also shows actual premium on the top line, a presentation that neither board likes.

Given the lack of consensus on the best outcome, some combination of the elements of all of these proposals may turn out to be the final result.

The remainder of the issues that need resolution are more technical and largely not controversial, assuming that the boards decide to proceed with our most likely result from above.

The most controversial technical issue revolves around what has been referred to as the mirroring approach. Many in the industry have proposed removing that requirement and just treating those contracts like every other, using a prospective present value of cash flows approach. While there is some resistance to this, the European CFO Forum has endorsed the change so it is likely to be adopted. Unfortunately, it's not clear what would replace mirroring and what has been suggested may not work well for certain U.S. contracts. There is probably an 80 percent likelihood that mirroring will be removed, but it's not certain what would replace it.

One issue that I thought had been settled was whether there would be a risk adjustment in the IASB standard. Recently, however, activity at the IAIS has indicated they will use a liability with no margin to create an International Capital Standard that would apply to many of the largest companies in the world. If this becomes the standard for regulatory accounting, then a risk adjustment might be less important. I still give it over a 95 percent chance, but there is now a non-zero probability that the IASB will change its mind.

CONTINUED ON PAGE 6

## ... Board Audit Committees should be required to have independent actuarial support.

Looking at the probabilities, it is most likely that the accounting for insurance contracts and insurance companies in general will be more dependent on actuarial calculations than ever. This raises an important concern about how management, particularly boards of directors, will be able to understand financial results without special actuarial guidance.

There is a requirement for all public companies to have someone with financial experience on their Board Audit Committee. This is no longer enough for insurance companies. Board Audit Committees should be required to have independent actuarial support, either

by requiring that a qualified actuary be a member of the committee or by requiring that the audit committee get advice from an independent consulting actuary. In either event, the actuary should be qualified to review actuarial reports and reserve calculations and to ask appropriate questions concerning assumptions and other projection issues.

This is another example of why

***Insurance accounting is too important to be left to the accountants!*** ■

### **Last Minute Update**

At its February meeting the FASB decided not to make changes to accounting for short term contracts except for disclosures. It also decided to proceed with “targeted” changes to long-duration contracts although it made no decision as to the extent of the changes.



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# Impact on Term Product Pricing from IFRS 4 Phase II (Revised Exposure Draft)<sup>1</sup>

## Reinsurance Contract Treatment

By Henry Qi and Emily Zhang



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**R**einsurance contracts can be important for a direct life insurance company; they are used to transfer risks to reinsurers and improve profitability. Under US GAAP and Canadian GAAP (CGAAP), the cash flow and liabilities used in a pricing profit test are all net of reinsurance. The reinsurance contract liability and its profit do not need to be studied separately since net cash flow is sufficient for all pricing tasks.

However, International Financial Reporting Standard (IFRS) 4 (Exposure Draft June 2013) requires the direct insurance contract and reinsurance contract to be measured separately. If there is a loss on the direct insurance contract at inception, the loss should be recognized immediately; if there is a gain on the direct insurance contract, the gain must be set up as a contractual service margin (CSM) component in the liability and amortized through the coverage period of the contract. However, both the gain and loss on the reinsurance contract at inception must be amortized, unless the reinsurance coverage is related to events that have occurred before purchasing the reinsurance contract.<sup>2</sup>

IFRS 4 also requires that the direct contract revenue, the claim amount recoverable from the reinsurance contract, and the revenue ceded to the reinsurers should all be presented in the income statement. The components of the direct and the ceded revenue, including the direct insurance contract CSM released and the reinsurance contract CSM released, must be disclosed.

IFRS 4 will possibly change how the reinsurance treaties are used in product design and pricing. In this article, the profit metrics of a simplified 10-year term product under CGAAP and IFRS 4 are compared. In particular, two scenarios in which the reinsurers reduce the premium and the direct insurers assume a lower mortality rate are studied.

### IMPACT ON TERM LIFE PRODUCT PRICING

The reinsurance treaties are very important for term product pricing under CGAAP. They can significantly

lower the required capital and provide the first-year expense allowance to mitigate new business strain thereby increasing the internal rate of return (IRR) (the earlier the gain is recognized, the higher the IRR will be). In addition, the direct insurers can obtain higher profit margins if the expected recovery from the reinsurance contract is greater than the ceded premium. As the direct insurers use IRR as the most important profit metric, the reinsurance contract plays a key role in reducing the required capital in order to boost IRR.

Let us look at a simplified 10-year term life insurance product pricing under CGAAP and IFRS 4. The product features and the main assumptions of this product are listed below:

- Ten-year term, age 40, male non-smoker.
- Face amount: 300,000.
- Annual premium: \$1.3 per 1,000 face amount.
- Investment yield: 5 percent.
- CGAAP valuation discount rate: 4.5 percent. IFRS 4 discount rate is set to 4.5 percent as well in order to study the impact solely from the reinsurance contract.
- Pricing mortality rate: 70 percent “CIA 8692” mortality table.
- Valuation mortality rate: 70 percent “CIA 8692” plus  $15/e_x$ .
- Eighty-five percent of the death benefit is ceded through the yearly renewable term (YRT) treaty. The YRT premium is 70 percent “CIA 8692” mortality table and 100 percent of the first-year policy premium is given to the insurer as the expense allowance.
- Tax rate on book profit and investment income on surplus: 25 percent.

The policy premium method (PPM) is used as a proxy for the CGAAP Canadian asset liability method (CALM) reserve in this study. The PPM reserves are calculated as the present value of future liability cash flows projected using the valuation assumptions. The best-estimate liability (BEL)<sup>3</sup> component plus the risk adjustment component of the IFRS 4 liability is assumed to equal the PPM reserve.

The required capital formula is assumed to be the same under the two sets of financials (i.e., CGAAP and



Table 1: Profit Metrics under CGAAP and IFRS 4

	CGAAP Gross	CGAAP Net	IFRS 4
PV of CTFS <sup>4</sup> per 1,000 Face Amount (5% discount rate)	-0.14	0.23	0.23
After-Tax Profit Margin	-1.6%	2.7%	2.7%
After-Tax IRR	4.2%	10.9%	6.8%

IFRS 4). The minimum continuing capital and surplus requirements (MCCSR) formula is used. The insurer targets its capital to be 180 percent of the minimum required capital.

Since the main risk component of statutory required capital for term life products is the mortality risk component, and this component depends on the net amount at risk (NAAR), the expected next year claims, and the face amount, the difference in this component for the CGAAP and IFRS 4 financials would be very small. Therefore, the CGAAP and IFRS 4 financials have a very similar amount of required capital in this study.

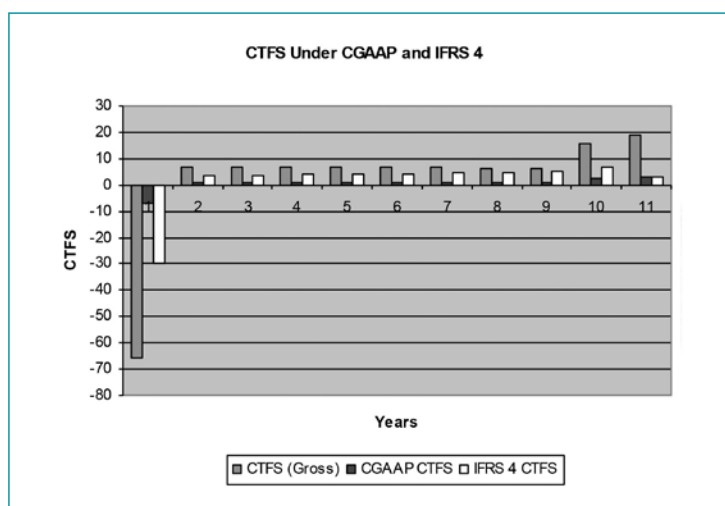
The test results in Table 1 show that both the profit margin and IRR can be significantly increased by using this reinsurance treaty under the CGAAP accounting basis.

The after-tax profit margin (ATPM) increased from -1.6 percent to 2.7 percent, because the expected reinsurance recoverable is greater than the reinsurance premium paid. The required capital for the first year has been reduced from \$3.6 per 1,000 face amount to \$0.5 per 1,000 face amount, since 85 percent of the mortality risk is transferred to the reinsurer. Therefore the after-tax IRR (AT-IRR) increased from 4.2 percent to 10.9 percent.

However, the direct insurance contract is onerous under the IFRS 4 accounting basis, which means the loss at inception of \$2.7 per 1,000 face amount must be recognized immediately. The gain from the reinsurance contract of \$2.5 per 1,000 face amount must be amortized through the 10-year coverage period as a CSM. The large CSM held in the reinsurance contract liability worsens the new business strain, and decreases the AT-IRR from 10.9 percent to 6.8 percent.

Graph 1 illustrates the patterns of contribution to free surplus (CTFS) under CGAAP financials and IFRS 4 financials, as well as the CTFS pattern if there were no reinsurance.

Graph 1: Profit (Contribution to Free Surplus) Pattern under CGAAP and IFRS 4



How can pricing actuaries improve the product profitability without hiking up the policy premium? Today pricing actuaries can shop the reinsurance market to find the lowest reinsurance premium. Can insurers still use this method in the IFRS 4 world?

Let's assume that the insurer has negotiated with a reinsurer and lowered the reinsurance premium by 7 percent. The results of the profit tests on the CGAAP financials and IFRS 4 financials are in Table 2.

The CGAAP and IFRS 4 profit margins are the same, both increasing significantly from 2.7 percent to 4.8 percent. However, although the CGAAP AT-IRR jumped from 10.9 percent to 19.1 percent, there is only a moderate rise in the IFRS 4 AT-IRR of 1.5 percent (from 6.8 percent to 8.3 percent).

Why doesn't the lower reinsurance premium for this sample product effectively boost the IFRS 4 AT-IRR? It is due to the reinsurance CSM. The lower the reinsurance price, the higher the reinsurance CSM the insurer

CONTINUED ON PAGE 10

Table 2: Profit Metrics of 100 Percent and 93 Percent Reinsurance Premiums under CGAAP and IFRS 4

	CGAAP		IFRS 4	
	100% Ceding Premium	93% Ceding Premium	100% Ceding Premium	93% Ceding Premium
PV of CTFS per 1,000 Face Amount (5% discount rate)	0.23	0.41	0.23	0.41
After-Tax Profit Margin	2.7%	4.8%	2.7%	4.8%
After-Tax IRR	10.9%	19.1%	6.8%	8.3%

Table 3: New Business Strain and Its Components under CGAAP and IFRS 4 (all the numbers are in per 1,000 face amount)

Components of New Business Strain	CGAAP 100% Reinsurance Premium	CGAAP 93% Reinsurance Premium	IFRS 4 100% Reinsurance Premium	IFRS 4 93% Reinsurance Premium
BEL at Year-End	-1.66	-1.91	-1.66	-1.91
CSM at Year-End	0.00	0.00	2.42	2.65
Statutory Req. Capital	0.53	0.53	0.53	0.53
Net Cash Flow plus Tax	1.70	1.77	1.14	1.15
New Business Strain	-0.57	-0.39	-2.43	-2.42

must hold due to the larger profit from the reinsurance contract at inception.

Table 3 above and Graph 2 on page 11 illustrate the components of the new business strain under CGAAP and IFRS 4.

Observations:

- The lower reinsurance premium mitigates new business strain under CGAAP—the new business strain is reduced by over 30 percent; however, it cannot mitigate the new business strain under IFRS 4.
- Under CGAAP, the profit obtained with the lower reinsurance premium is recognized at inception and decreases the new business strain. Under IFRS 4, the profit obtained with the lower reinsurance premium cannot be recognized at inception. The larger reinsurance CSM offsets the increase in the negative BEL.
- The CSM is the biggest component of new business strain; it is much greater than the statutory required capital for this sample term 10 product.

The test shows that the IRR under IFRS 4 would improve, but not significantly, from a reinsurance premium decrease, if the direct contract is onerous.

## PROFIT METRICS FOR THE LOWER EXPECTED MORTALITY SCENARIO

Finally, let's study a hypothetical situation where the direct insurer decides to reduce the mortality assumption based on its good historical mortality experience. The mortality assumption is reduced to 52.5 percent of the "CIA 8692" mortality table, while the reinsurance YRT premium is still 70 percent of "CIA 8692" mortality table, which reflects the profit required by the reinsurer and also the reinsurance market reality.

The reinsurance premium is higher than the insurer's best-estimate mortality rate, so that the insurer cedes profit to the reinsurer to mitigate mortality risk and reduce the statutory required capital. The reinsurance premium is still lower than the insurer's padded mortality rate though.

Table 4: Profit Metrics for the Lowered Mortality Assumption

	No Reins. CGAAP & IFRS 4	CGAAP Reinsured	IFRS 4 Reinsured
PV of CTFS per 1,000 Face Amount (5% discount rate)	0.67	0.35	0.35
After-Tax Profit Margin	7.7%	4.1%	4.1%
After-Tax IRR	7.2%	16.4%	9.4%

With the lower best-estimate mortality rate, the gross contract is still onerous although the loss at inception is reduced drastically. The reinsurance contract still brings profit to the direct insurer at inception under the valuation assumptions. Thus, the reinsurance CSM should be set up at inception and amortized through the coverage period.

The profit metrics under this scenario are displayed in Table 4 below. It demonstrates that:

- Under the CGAAP financials, the reinsurance treaty can effectively increase the AT-IRR although it lowers the profit margin because it helps mitigate new business strain significantly. Even though the insurer loses almost half of its profit margin, the AT-IRR has more than doubled.
- Under IFRS 4, the large new business strain caused by the reinsurance CSM makes the reinsurance no longer able to effectively boost the AT-IRR. The gain in IRR is only 2.2 percent after ceding almost half of profit to the reinsurer.

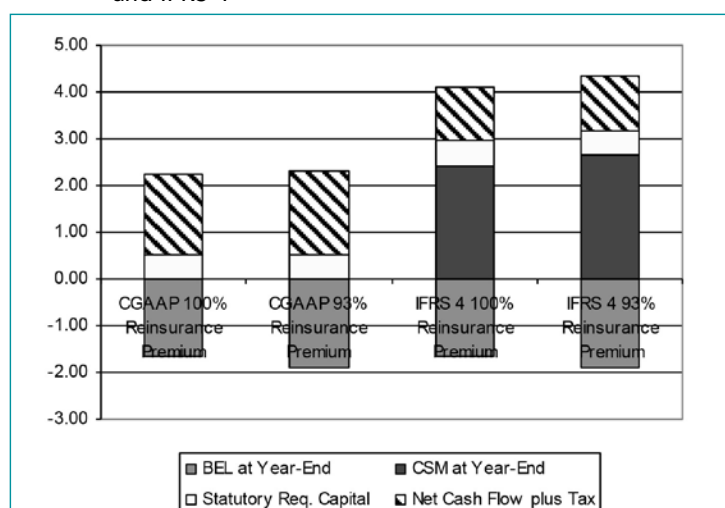
## CONCLUSION

Since the profit from the reinsurance contracts cannot be recognized at inception under the IFRS 4 Exposure Draft of June 2013, the role reinsurance contracts play in term life product pricing may be changed.

The studies conducted on the simplified term life insurance product and under several hypothetical scenarios show that:

- If the insurance contract is onerous, the AT-IRR may decrease under the IFRS 4 financials as profit is deferred.
- Under IFRS 4, once the direct insurance contract becomes onerous, choosing less expensive reinsurance treaties to boost IRR may not be as effective as it is under CGAAP.

Graph 2: The New Business Strain Components under CGAAP and IFRS 4



- Under IFRS 4, if a reinsurance treaty cannot increase profit margins, and the direct insurer has to hold a large reinsurance CSM in reserve, AT-IRR could only be moderately increased while ceding considerable profit.

*The views expressed herein are those of the authors and do not necessarily reflect the views of their employers. ■*

## ENDNOTES

<sup>1</sup> IFRS 4 Phase II Revised Exposure Draft issued by the International Accounting Standards Board (IASB) on June 2013 is also known as IFRS—Insurance Contracts Revised Exposure Draft.

<sup>2</sup> For more information refer to Paragraph 41 of IFRS—Insurance Contracts Revised Exposure Draft.

<sup>3</sup> IFRS 4 BEL is the present value of the best estimate fulfillment cash flows for an insurance contract.

<sup>4</sup> CTFS: contribution to free surplus.

# Development and Use of Stochastically Generated Mortality Scenarios in VM-20

By Prabhdeep Singh



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**A**s written, VM-20 allows for the use of stochastically generated mortality scenarios in developing reserves. There are some issues pertaining to the use of stochastic mortality scenarios that the framers of VM-20 might not have foreseen that need to be addressed. I will discuss these issues in this article.

## STOCHASTICALLY GENERATED MORTALITY SCENARIOS ARE ALLOWED

It may come as a surprise that VM-20 allows you to use stochastically generated mortality scenarios. Your surprise may be due to the focus of the educational efforts of the American Academy of Actuaries (the Academy), the National Association of Insurance Commissioners (NAIC), and others close to VM-20. They have justifiably focused on the methodology for setting prudent estimate mortality assumptions. I would like to bring to your attention the following paragraphs in subsection 9.A of VM-20:

The company shall use prudent estimate assumptions in compliance with this section for each risk factor that is not prescribed or is not stochastically modeled by applying a margin to the anticipated assumption for the risk factor.

If the company elects to stochastically model risk factors in addition to those listed in A.3 above [interest rates and equity returns], the requirements in this

section for determining prudent estimate assumptions for these risk factors do not apply.

These paragraphs clearly show that you can choose to model any assumption stochastically, as long as it is not prescribed.

These paragraphs also make a clear distinction between prudent estimate assumptions and prescribed assumptions. For example, the NAIC has published tables, included in VM-20 appendices, for the baseline default cost factors, current benchmark spreads and long-term benchmark spreads. You are required to use these tables to set the asset default assumption. The mortality assumption, on the other hand, is a prudent estimate assumption. Like other non-prescribed assumptions, the methodology for setting the prudent estimate assumption is described in Section 9. And like the other non-prescribed assumptions, you can instead model this assumption stochastically.

A review of the Reinsurance Section provides additional evidence that the use of stochastic analysis for risk factors other than interest rates and equity returns is not alien to VM-20. Paragraph C.2 of this section states:

To the extent that a single deterministic valuation assumption for risk factors associated with certain provisions of reinsurance agreements will not adequately capture the risk the company shall ... stochastically model the risk factors directly in the cash flow model when calculating the stochastic reserve.

The guidance note to this section mentions that you may be required to perform a stochastic analysis for stop-loss reinsurance.

## CONSIDERATIONS IN DEVELOPING STOCHASTIC MORTALITY SCENARIOS

Below is an approach for developing stochastic mortality scenarios. All the major topics to be considered when developing stochastic mortality models are touched upon. Overall, the approach is as follows:

1. Use a stochastic model to generate scenarios for the U.S. population.



2. Adjust the U.S. population mortality scenarios to reflect the current best estimate for the company.
3. Take into account the additional random fluctuations in the mortality due to the smaller sample size for the company experience compared to that of the U.S. population.
4. Reflect the uncertainty in the estimates due to the lack of credibility and relevance of the data used to develop the current best estimate for the company.

Extrapolative stochastic mortality models of the Lee-Carter type are discussed here. Extrapolative models are based purely on historical mortality data and do not take into account any knowledge about the medical, societal or behavioral influences on mortality. A recent publication by the Society of Actuaries (SOA), “Literature Review and Assessment of Mortality Improvement Rates in the U.S. Population: Past Experience and Future Long Term Trends,” provides a summary of the various mortality models. It mentions that the Lee-Carter-type models are well suited for generating future mortality paths. Typically, these models are calibrated to several decades of mortality experience of a population, e.g., the United States. These models capture the general volatility in mortality by age and sex and the uncertainty in mortality improvements.

The data needed to calibrate these models is readily available from the Human Mortality Database.<sup>1</sup> For U.S. population mortality, the experience from 1933 to 2010 is available. Once calibrated, these models can be used to simulate mortality rates that vary by age, sex, projection year and scenario.

#### ***Relationship Between Population Mortality and Insured Mortality***

Next you need to convert the population mortality rates into company mortality rates. Company mortality rates could differ from population mortality rates for many reasons. Company mortality rates are select and ultimate, whereas population mortality rates are clearly not. Furthermore, depending on the markets that the company focuses on, there could be differences due to socioeconomic status, race distribution, age distribution, etc. There has been some research on the relationship between population mortality and the

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... Lee-Carter-type models are well suited for generating future mortality paths.

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insured mortality based on statistical analysis. See, for example, Li, Hardy and Tan.<sup>2</sup>

Here I suggest a simplified approach. First, convert the simulated mortality rates into projected to current (P/C) ratios. You can set the current mortality to be the 2010 mortality rate for the U.S. population. The P/C ratio is then:

$$\text{Population P/C ratio (age, sex, year)} = \frac{\text{Projected Mortality (age, sex, year)}}{\text{2010 Mortality (age, sex)}}$$

Next, apply the population P/C ratios to the current company mortality table. If you have generated 1,000 scenarios and 30 projection years, then this step has given you 30,000 mortality tables. This approach assumes that the company’s true mortality rates move proportionately with the population mortality. It also assumes that company mortality is as volatile as the U.S. population mortality and the company’s true mortality rates are known with certainty. Both of these assumptions can be relaxed.

The uncertainty in the company mortality rates can be estimated using bootstrapping methods. Standard use of bootstrapping can be studied from a textbook on simulation. For an example of the use of bootstrapping to estimate uncertainty in the estimates of mortality rates, see Alkema and New.<sup>3</sup> For an example of its use in mortality projections, see Li, Hardy and Tan. These methods can be adopted for taking into account the uncertainty in the company mortality rates for the model outlined here. The result would be a wider range of projected mortality rates.

CONTINUED ON PAGE 14

Due to its smaller size, the company's simulated mortality experience should be more volatile than the U.S. population's. This can be taken into account with standard Monte Carlo analysis. Guth<sup>4</sup> provides a step-by-step guide to Monte Carlo analysis of mortality in the context of X factors. This can be adopted for the model outlined here. The result should be a greater volatility in the projected mortality experience.

#### ***Pandemic Events***

Should the stochastic model take into account pandemic events? If the stochastic mortality model being used for VM-20 will be used for internal capital calculations, then it might make sense to include pandemics in the model. If properly modeled, because of the rarity of pandemics, reserves should not be impacted significantly by including pandemics in the model.

#### ***Aggregation of the Mortality Scenarios with Other Scenarios***

The final item that needs to be considered is how to aggregate the stochastically generated mortality scenarios with the scenarios for other risks. This topic is well researched. If one believes that 1,000 scenarios are sufficient to discover the CTE 70 portion of the distribution of the asset requirement for each risk, then 1,000 interest/equity scenarios multiplied by 1,000 mortality scenarios would require the company to run 1,000,000 scenarios! Sampling 2,000 scenarios from the 1,000,000 scenarios would be a reasonable compromise. Other variance reduction techniques could also be applied to reduce the number of scenarios that need to be run.

## **OBSTACLES TO OVERCOME IN THE CONTEXT OF VM-20**

### ***VM-20 Language Regarding No Mortality Improvements after Valuation Date***

To summarize this stochastic mortality model approach, a mortality table that reflects the current company mortality experience is needed, which should then be adjusted for various items, including any population mortality improvements. VM-20 requires that for the anticipated mortality assumption, no mortality improvements be assumed beyond the valuation date. It would be a difficult task, and not a scientific one, to solve for the parameters in this model to ensure that at

CTE 70 there are no mortality improvements in every single projection year. Therefore, the discussion regarding the mortality improvements after the valuation date has to morph into a discussion about the parameters of the stochastic model. How do we adjust the volatility parameter calibrated to historical values to reflect actuarial judgment and satisfy regulatory requirements?

#### ***Prescribed Margins***

Currently there are prescribed margins for setting the prudent assumption. The margins are prescribed separately for the company experience rates and the industry table. The prescribed margins for the company experience are based on the credibility of the experience. It seems that the margins reflect the random fluctuations and the uncertainty due to low credibility. The prescribed margins for the industry table seem to be for the uncertainty in the estimates due to the potential difference between a company's own experience and the average industry experience.

The model outlined above would take into account the random fluctuations and the various sources of uncertainty. The discussion between the industry, the profession, and the regulators would have to shift from the right level of margins to the right level of uncertainty and volatility to be incorporated into the stochastic model. The method for taking into account random fluctuation is less contentious than the methods for taking into account the uncertainty in anticipated mortality estimates.

Under a stochastic mortality model approach, applying a credibility adjustment is optional. If the company has not adjusted for credibility, then there is a greater amount of uncertainty arising from the use of a small sample size. This greater uncertainty would be reflected in the model outlined. If the company has adjusted for credibility, then the company has reduced the amount of uncertainty arising from the sample size but may have increased the uncertainty from the industry table to the extent industry data is not relevant. In order to capture the uncertainty from the variation in the company by company experience, you would need to know certain statistics backing the industry experience, e.g., distribution of mortality experience by companies of similar size and underwriting/sales practices. Hardy

and Panjer<sup>5</sup> suggest an approach, but further research is needed.

### ***VM-20 Language Does Not Mention Aggregation***

There is no language in VM-20 regarding the aggregation of stochastically generated mortality scenarios with the scenarios for interest rates and equity returns. The language in Section 5 needs to be tweaked because it is clear that the author of this section was not thinking of scenarios being an aggregation of interest rates/equity return and mortality (or any other stochastically modeled assumption). For example, paragraph A of Section 5 states:

Project cash flows in compliance with the applicable requirements in Sections 7, 8 and 9 using the stochastically generated scenarios described in Section 7.G.2.

This paragraph makes a specific reference to Section 7.G.2. Because the paragraph already states that cash flows should be projected in compliance with the applicable requirements of Sections 7, 8 and 9, the reference to 7.G.2 is extraneous. It was apparently done to emphasize that 7.G.2 develops the stochastically generated scenarios that must be used. However, it is open to interpretation. It could be interpreted to be limiting the stochastic scenarios to 7.G.2. This does not seem to be the intent and such interpretation would contradict Section 9. This language would have to be ignored or removed via an amendment proposal.

The issue then is that none of Sections 7, 8 and 9 describes the appropriate and reasonable approach to aggregating scenarios. This leaves this topic open to interpretation by the company actuary. The options for the regulators and the actuarial profession would be to leave this hole as it is (which could lead to comparability issues), or the regulators could put some guardrails on the aggregation and scenario reduction techniques to ensure comparability. Another possibility is for the actuarial profession to come up with acceptable or standardized practices to be used by the actuaries.

### ***Stochastic Exclusion Test***

It is doubtful there is any need to change the stochastic exclusion test. The exclusion test requires the use of

anticipated mortality based on the absence of mortality improvements after the valuation date. The purpose of the stochastic exclusion test is to determine if a company has any material tail interest rate or equity risk. The way mortality is being handled here, in my opinion, is fine.

### ***Expectations of the Regulators***

If the industry and the profession move toward developing principle-based reserves (PBR) using stochastic mortality, could some companies have an easier time with the regulators in terms of their interpretation of the valuation law than other companies? Would different state regulators have different interpretations and different requirements for the setting of parameters of mean, volatility and uncertainty? Would some regulators disallow the use of stochastic mortality in the calculation of PBR because they believe there is a prescribed way to determine mortality in VM-20 without exception?

Comparability is an important issue for regulators. In the absence of a standard mortality scenario generator, different companies could use different models and approaches. Regulators, the industry, or the actuarial profession would need to address this. The actuarial profession could address this via research, practice notes, or an Actuarial Standard of Practice (ASOP) on stochastic mortality. It could also be addressed by developing a standard stochastic mortality model, akin to the interest/equity model that the Academy developed for VM-20.

## **CURRENT STATE OF RESEARCH, DEVELOPMENT AND EDUCATION**

From my review of the literature, my impression is that stochastic mortality research has mostly focused on developing population models for dealing with longevity risk. More recent focus has been on pricing and managing longevity risk via structured transactions. The issues related to reserving for the mortality risk are somewhat different. The SOA needs to encourage research into the development of stochastic mortality models for life insurance reserving purposes.

CONTINUED ON PAGE 16

Investment in such research could pave the way for the use of stochastic mortality in developing reserves under the PBR regime.

The SOA also needs to bring back linear algebra topics on the syllabus. Some of the current scientific research on extrapolative mortality models requires understanding of topics such as singular value decomposition, which is a topic you find in intermediate undergraduate level textbooks and is not on the SOA syllabus.

Companies that can develop their stochastic mortality modeling capabilities can change the nature of their conversations with the regulators and potentially get greater reserve relief than the prudent estimate assumption approach affords.

## CONCLUSION

Earlier versions of VM-20 required a more rigorous actuarial approach to setting the mortality assumption than it does today. The authors of VM-20 attempted to describe the method for developing the credibility-adjusted mortality assumption. During the Impact Study, it became apparent that the instructions were confusing. Actuaries seemed to be having trouble

with a very actuarial topic—credibility. Trying to get the same actuaries to use stochastic mortality to set reserves seems like a herculean task. But I am hopeful. I am hopeful for many reasons. One reason is that, because I can do it, I believe other actuaries can do it as well. I am also hopeful because of the industriousness of our profession and of the insurance regulators. I am also hopeful because perhaps there would be a financial incentive for companies to explore stochastic mortality solutions for setting their life reserves. ■

## ENDNOTES

<sup>1</sup> Available on [www.mortality.org](http://www.mortality.org).

<sup>2</sup> Li, S.H., M. Hardy and K.S. Tan. 2010. "Developing Mortality Improvement Formulas: The Canadian Insured Lives Case Study." *North American Actuarial Journal* 14(4): 381-99.

<sup>3</sup> Alkema, L., and J.R. New. 2012. "Progress toward Global Reduction in Under-Five Mortality: A Bootstrap Analysis of Uncertainty in Millennium Development Goal 4 Estimates." *PLoS Med* 9(12): e1001355, doi:10.1371/journal.pmed.1001355.

<sup>4</sup> Guth, R.W. December 2000. "Using Monte Carlo Simulation to Understand Mortality." *Small Talk Newsletter Issue No. 16: 6-7*. Society of Actuaries.

<sup>5</sup> Hardy, M.R., and H.H. Panjer. November 1998. "A Credibility Approach to Mortality Risk." *ASTIN Bulletin: A Journal of the International Actuarial Association*. Volume 28, No. 2: 269-283.

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# Update on Regulatory Developments

By Francis de Regnaucourt

## OVERVIEW

Starting with this issue, we will report quarterly on regulatory developments in the United States and internationally. We will be following developments at the National Association of Insurance Commissioners (NAIC), the International Association of Insurance Supervisors (IAIS), as well as other groups who may get involved in group supervision, and discuss those that may be important to members of the Financial Reporting Section.

The last quarter of 2013 was a big one for regulatory developments, with the much-awaited report (commissioned in the Dodd-Frank Act) on whether the United States should have federal or state regulation of insurance. The answer was: Let's keep the state system, making some changes to improve some of its shortcomings, and add federal regulation only in limited areas where it makes sense. Proponents of federal regulation will be disappointed, but by all accounts, the majority appreciates the restrained approach taken by the Federal Insurance Office (FIO).

On the NAIC side, by contrast, the fall meeting of the Life Actuarial Task Force (LATF) was chock-full of presentations representing countless hours of work and forward progress, but there was little that was new or different. Even discussions of principle-based reserves (PBR) showed no surprises, just a sense of the enormous amount of work ahead for regulators (to say nothing of the industry) to meet the 2016 date. 2016 remains the target date, but a few times the words "or 2017" were heard. Watch this space.

Finally, on the international side, there is ongoing forward progress on international capital standards and the Insurance Core Principles, as well as an interesting report on longevity risk transfer.

## FIO REPORT ON THE SYSTEM OF INSURANCE REGULATION IN THE UNITED STATES

On Dec. 12, 2013, the FIO issued its report titled "How to Modernize and Improve the System of Insurance Regulation in the United States" (the Federal Insurance Modernization Report, or "the Report").<sup>1</sup>

This article focuses on the role of the FIO and its recommendations for near-term improvement to the insurance regulatory system in the United States. Regulatory items not related to solvency and financial reporting (e.g., market conduct and the mechanics of dealing with insolvent insurers) are touched upon at the most cursory level only.

### Key Takeaways

First and foremost, the FIO does not recommend that state insurance regulators be replaced wholesale by a single federal regulator. The report prefers a more disjunctive two-part approach. One part is identifying areas where federal intervention is warranted. The second is to recommend short-term changes to the current state-based regulatory system. Cooperation between states, and between countries, to pool knowledge and resources across states and across countries, is a recurring theme.

### What the FIO Does

The FIO, formed in July 2010 as part of the Dodd-Frank act, was given the following authorities:

- Monitor all aspects of the insurance industry, including identifying issues or gaps in the regulation of insurers that could contribute to a systemic crisis in the insurance industry or the U.S. financial system;
- Monitor the extent to which traditionally underserved communities and consumers, minorities, and low/moderate-income persons have access to affordable insurance products for all lines except health insurance;
- Recommend which insurers, including affiliates, should be designated as non-bank financial companies to be supervised by the Federal Reserve;
- Assist the Treasury Department in administering the Terrorism Insurance Program established in 2002;
- Coordinate federal efforts and develop federal policy on prudential aspects of international insurance matters, including representing the United States in the IAIS and assisting the secretary in negotiating covered agreements ;
- Determine whether state insurance measures are pre-empted by covered agreements<sup>2</sup>;



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CONTINUED ON PAGE 18



- Consult with the state insurance regulators regarding insurance matters of national importance and prudential insurance matters of international importance; and
- Perform other related duties and authorities as assigned.
- The degree of national/federal interest for that area; and
- The nexus<sup>3</sup> of the issues and the firms with the global marketplace.

The Dodd-Frank Act also explicitly required the FIO to conduct a study and submit a report to Congress on how to modernize and improve the system of insurance regulation in the United States. The Federal Insurance Modernization Report answers that requirement.

The report reiterated the limitations of the current state-based insurance regulation in the United States:

- Higher cost of regulation per dollar of premium;
- Uniformity and consistency issues; and
- Lack of coverage of non-U.S. players (especially in reinsurance).

It also recognized the local nature of some insurance products (not necessarily relevant to life or health insurance), where state regulation would be more appropriate.

The report concludes that the proper question is not whether there should be federal or state regulation, and that the better question is whether there are areas in which federal involvement is warranted, and, if so, which areas. It goes on to say that the necessity for federal involvement in any area should be based on:

- The ability of the states to regulate that area effectively;
- The ability of the states to regulate that area with uniformity;

If the answer is that federal involvement is warranted, the next question is what form that involvement should take. Some possibilities are:

- Direct regulation;
- Standard setting;
- Operating a program to support or replace a failed insurance market.

***Specific, Short-Term Reform Recommendations for the States***

Based on the above framework, the report recommends the following to improve and modernize the U.S. system of insurance regulation:

1. For material solvency oversight decisions, a process where the appropriate state regulator must obtain the consent of regulators from other states in which the subject insurer operates.
2. An independent third-party review mechanism for the NAIC Financial Regulation Standards Accreditation Program.
3. A uniform and transparent oversight regime for the transfer of risk to reinsurance captives.
4. Convergence of state oversight and capital adequacy regimes to best practices and uniformity.
5. Moving forward cautiously with PBR, with (a) consistent, binding guidelines for accounting and solvency requirements, and (b) uniform guidelines and sufficient resources at the state level to ensure adequate supervisory review of PBR.

6. Development of state corporate governance principles for corporate directors and officers, appropriate to the size and complexity of the insurer.
7. Continue to develop an approach to group supervision to address the shortcomings of solo entity supervision. In particular, consider the concept of supervisory colleges.<sup>4</sup>

The report goes on to recommend uniform approaches to (a) state guarantee maximum benefits, and (b) the administration of estates of failed companies, especially the settlement of qualified contracts with counterparties. It also makes a number of recommendations for market conduct issues.

#### **Recommended Areas for Direct Federal Involvement**

The report lists a number of areas where federal involvement is recommended, or may be recommended near term. Items 2 and 3 are relevant to solvency regulation for the life and health insurance industries.

1. Develop federal standards for mortgage insurer oversight.
2. Pursue a covered agreement on reinsurance collateral requirements based on the NAIC Credit for Reinsurance Model Law and Regulation.
3. Engage in supervisory colleges to monitor large national and internationally active reinsurers.
4. The National Association of Registered Agents and Brokers (NARAB) Reform Act should be adopted and the FIO should be charged with monitoring its implementation.
5. Develop personal auto insurance policies for U.S. military personnel enforceable across state lines.
6. Establish pilot programs for rate regulation that maximize the number of insurers offering personal lines products.
7. Report on the manner in which personal information is used for insurance pricing and coverage.
8. Identify ways to increase access and affordability of insurance to Native Americans.
9. Monitor the simplification of surplus line tax collection; determine if federal action may be warranted.

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... the proper question is ... whether there are areas in which federal involvement is warranted, and, if so, which areas.

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#### **Other Sections of the Report**

There are four other sections to the report:

- A history of U.S. insurance industry regulation, including the financial crisis, AIG, government support for the industry, and lessons learned.
- A discussion of prudential oversight—the entire framework of capital requirements, accounting standards, investment portfolio limitations, practices to promote the safety and soundness of insurers, state guaranty funds, and the process for resolving insurer insolvencies. This section also serves as a “basis for conclusions,” showing the analysis that led to the recommendations and conclusions.
- A discussion of marketplace oversight: consumer protection and access to insurance.
- A conclusion.

#### **LATF MEETING AT THE NAIC FALL MEETING, WASHINGTON, D.C., DEC. 13, 2013**

We report briefly here on new developments at this meeting. Briefly, because little was truly new; there was, however, much forward progress on ongoing projects, albeit without landmarks or significant developments.

#### **Specific Developments**

1. Mary Bahna-Nolan (AAA) reported that a slight delay was expected for the 2014 VBT mortality table, as there is some discomfort with the slope and smoker/nonsmoker relationships in the current data.
2. Alan Routhenstein (AAA) reported that an updated table of spreads over Treasuries had been developed for the Valuation Manual. A motion to expose these was passed.

CONTINUED ON PAGE 20

3. John Bruins (ACLI) requested a small company exemption for PBR, citing the sizable resources required to perform the required calculations. Many regulators voiced approval in principle, but expressed concern about the lack of specificity in how small a company has to be in order to be exempted. ACLI agreed to come back with more precise definitions of what constitutes a small company.

#### ***Items Moving Along, with No Significant Items to Report This Meeting***

- Actuarial Opinion and Memorandum Regulation update
- Accreditation Standards (a motion that non-forfeiture is not a standard was passed)
- AG 33 non-elective incidence assumptions
- Annuity Reserve Working Group
- Kansas Field Tests for VM-22(A)
- Non-Forfeiture Working Group
- Experience Studies (Medical Information Bureau report exposed)
- Joint Qualified Actuary Working Group
- C3 Phase II Working Group
- Contingent Deferred Annuity Subgroup
- Amendment proposals to AG 38

## **INTERNATIONAL DEVELOPMENTS**

The IAIS had a number of developments in the fourth quarter of 2013:

- On Oct. 16, 2013, the IAIS announced a commitment to developing a risk-based, group-wide, global insurance capital standard (ICS) by 2016, as part of its Common Framework (ComFrame). The first step was the exposure of Basic Capital Requirements (BCR) for Global Systemically Important Insurers (G-SII). Written comments on the BCR exposure draft have been requested by Feb. 3, 2014. A second version, followed by a second round of public consultation, is due in the summer of 2014.

- In December 2013, the Joint Forum of Basel Committee on Banking Supervision issued its report titled “Longevity Risk Transfer Markets: Market Structure, Growth Drivers and Impediments, and Potential Risks.” This report<sup>5</sup> discusses the three major types of transactions for transferring longevity risk, and the regulatory considerations, including assessing risk-bearing capacity, tail risk, and regulatory arbitrage. This is an excellent read for life insurers, annuity writers, pension plans, and even individuals.
- On Oct. 18, 2013, the IAIS adopted a common implementation framework (CIF). This is a procedural step toward getting uniformity among member regulators in meeting the Insurance Core Principles (ICPs), the globally accepted requirements in insurance regulation. ■

### **ENDNOTES**

<sup>1</sup> The full report can be found at <http://www.treasury.gov/initiatives/fio/reports-and-notice/How%20to%20Modernize%20and%20Improve%20the%20System%20of%20Insurance%20Regulation%20in%20the%20United%20States.pdf>.

<sup>2</sup> A covered agreement is a memorandum of understanding between regulators of different countries to cover matters regarding large, internationally active insurance groups. Dodd-Frank has a covered agreement provision that broadly defines prudential supervision matters that could be subject to such an agreement.

<sup>3</sup> Merriam-Webster defines nexus as a connection or a series of connections. One interpretation is that the facts and circumstances of both the issue and the insurer should inform the decision.

<sup>4</sup> Supervisory colleges are meetings of insurance regulators in different jurisdictions where the topic of discussion is regulatory oversight of one specific insurance group that writes significant amounts of insurance in many jurisdictions (see NAIC Center for Insurance Policy and Research, July 2012 newsletter). The IAIS is seeking to improve the operation and efficiency of supervisory colleges globally, as part of their Common Framework Project (ComFrame).

<sup>5</sup> The report is available on the Bank for International Settlements website ([www.bis.org](http://www.bis.org)) and the online version is numbered ISBN 92-9197-966-X.

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# SOA Assumption Development and Governance Discussion

## THIRD QUARTER 2013 CALLS

By Drew Besendorf



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Having assumption committees for governance and oversight is gaining wider acceptance amongst U.S. and Canadian companies. Given its newness in most companies, the structure of these committees, the assumptions reviewed, and the buy-in from departments vary by company. The Assumption Development and Governance Group (sponsored by the Financial Reporting and Product Development sections), formed in 2013, discussed these topics in detail during its September meetings. This article consolidates the practices mentioned by various companies during the discussions.

### STRUCTURE OF THE ASSUMPTION APPROVING COMMITTEES

Typical members of the approving committee include, but are not limited to, the CFO, chief risk officer (CRO) and chief actuary, with some committees also including the appointed actuary, pricing actuaries, valuation actuaries, illustration actuaries and accountants/controllers. Meetings may occur quarterly or annually, with extra meetings as necessary. Approving committees start the year with a meeting to discuss which assumptions to review for the upcoming calendar year. An assumptions list is created and disseminated amongst all interested parties. Working groups are assigned to address each assumption. The working groups meet more frequently during the year and provide the approving committee with a formal update quarterly on their progress. Typically, one or more members of the approving committee is involved in the working groups. Experience studies are conducted and peer reviewed, and impact and sensitivity testing is done to identify material changes and to find modeling errors. Margins are discussed.

The most important meeting of the approving committees occurs annually; it is usually in the third quarter to accommodate deferred acquisition cost (DAC) unlocking and year-end reporting. The work groups present their findings, including the lists of the assumptions, supporting evidence of the assumptions, and supporting evidence of correct implementation; material risks and outstanding issues are discussed. Use of a formal voting process varies amongst the companies. Some companies try to gain consensus while others specify members who get to vote.

### ASSUMPTIONS REVIEWED

Liability and economic assumptions are formally reviewed. Extra scrutiny is put on the most material assumptions and on those assumptions not stipulated in the exercise (e.g., short-term versus long-term outlook on interest rates and asset spreads). Thresholds are set to clarify if an assumption needs to be updated. In setting the thresholds, companies use confidence intervals, A/E ratios, or credibility relating to impacts on profitability, capital, reserves or policyholders. The goal is a consistent, measurable approach. Most companies are enhancing their guidelines in preparation for upcoming principle-based reserves (PBR) and Own Risk and Solvency Assessment (ORSA) requirements.

Various methods of storing the assumptions and minutes of the assumption meetings were discussed, including SharePoint, databases, spreadsheets and stored memos. The documented assumptions are put into standardized templates and are typically dozens of pages in length. Peer review is formally documented. “Challenges” to the assumptions are captured to show the peer review was detailed enough.

### BUY-IN/COMPLIANCE AND CONSISTENCY

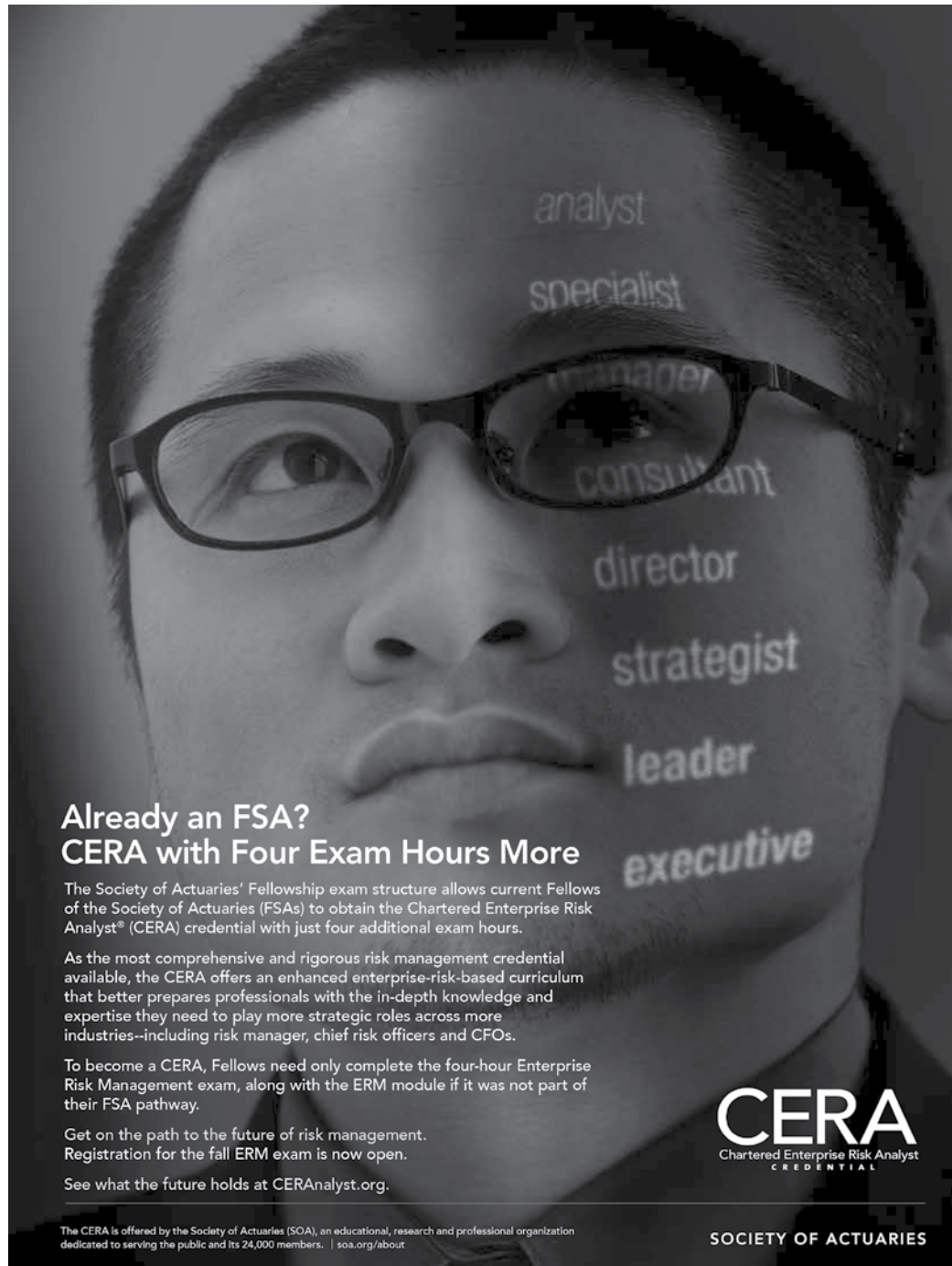
Given the demands of the assumptions work, more representation from the data users on the committees/work groups eliminates a lot of the problems with provider push-back. Standardized templates helped improve the initial responses from the documentation providers and greatly decreased the work required from future responses. Push-back is most typical from parties needing immediate responses to keep up with work demands because the review process can delay implementation.

Companies strive to make their assumptions consistent across pricing, valuation, reserve adequacy testing, and illustrations. Most start with the same assumption across all applications, but it’s difficult to retain consistency. Consistency doesn’t always mean “the same” as there can be short-term and long-term views of assumptions or reasons to vary, such as a new product feature. Mortality improvement was brought up several times during this discussion.

The benefits of these committees are many: improved communication, documentation, consistency, accuracy, auditability and control. With the increased emphasis on assumption governance coming from risk-focused audits, actuaries should welcome the presence of these committees as an important part of their companies' risk mitigation strategy.

### FUTURE ASSUMPTION DEVELOPMENT AND GOVERNANCE DISCUSSION GROUP CALLS

If you are interested in joining our conversations, please contact me at [dbesendorf@humana.com](mailto:dbesendorf@humana.com) or 502.580.2262. Also, look for announcements regarding future calls in the SOA updates and on LinkedIn under "SOA Assumption Development." ■



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# International Actuarial Association Report

By Jim Milholland



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**A**t the Singapore meeting of the International Actuarial Association (IAA) in October 2013, the Insurance Accounting Committee (IAC) spent most of its energy on the task of finalizing its comment letter to the International Accounting Standards Board (IASB) on its exposure draft Insurance Contracts (ED). The IAC also announced the publication of *Discount Rates in Financial Reporting: A Practical Guide*.

## THE COMMENT LETTER

The IAA represents 95 percent of actuaries practicing around the world. The comment letter is a collaborative work of actuaries involved in insurance accounting from many countries, and hence provides a unique perspective of practitioners who will be heavily involved in the implementation of that new standard. They bring insights from a global range of products, operating environments and regulatory regimes. The IASB appreciates the benefits of receiving input from the IAA, as is evident from the long history of interaction with the board and staff during the project and the memorandum of understanding that formalized the relationship of the IAA with the IASB.

### *Endorsement of the Model, but ...*

The letter begins by stating that the IAA supports the model proposed in the ED. It characterizes the model as a current value approach and states the objective that the measurement principles should reflect the business model of the reporting entity. The need to correspond to the insurer's business model underlies many of the specific comments. As is typical of comment letters, the largest part of the letter expresses ways that the proposed standard could be improved. The IAA letter runs to 30 pages, so it is apparent that actuaries see a lot of

need for improvement. The letter emphasizes needs for improvement in the proposals for the updating of the contractual service margin (CSM), for measurement of contracts with participation features, for the use of other comprehensive income (OCI) in presentation, and in the guidance for the transition to the new standard.

### *Updating the CSM*

The CSM is the amount determined at the inception of a contract that defers profit. It is amortized in relation to the services provided with discounting. The CSM is updated for changes in estimates of future cash flows (for example, due to assumption changes), so that these changes do not affect profit or loss (P&L) in the current period. The IAA expresses support for the general approach to updating CSM but also identifies several problems with the specific guidance.

- The first is that the discounting is locked in at inception. The IAA believes that discounting should be on the same basis as the future cash flows (i.e., dual rates with a fixed rate for the expense and a current rate for measurement).
- The second problem is that the amortization is not adjusted for changes in the expected pattern of service to be provided. The IAA recommends that amortization in the current period should be adjusted to reflect that services have been deferred to future periods or accelerated from future periods, as compared to previous estimates.
- The IAA also notes general lack of clarity in how the effects of changes in various items affect the updating of CSM. The effects referred to are the effects on the projection of services provided, which form the basis for the amortization of the CSM. Items specifically referred to are:
  - o Effects of changes in the carrying amount of liabilities that use the mirroring approach, which may be reported in P&L or in OCI,
  - o Effects of changes in cash flows that are not measured under the mirroring approach but vary with returns on the underlying item, which are reported in P&L, and

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The comment letter is a collaborative work ... from many countries, and ... provides a unique perspective. ...

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o Effects from changes in cash flows or discount rates determined entirely using market variables, which are reported in P&L.

#### ***Contracts with Participation Features***

The IAA supports the concept of considering underlying items (i.e., those that provide the basis for participation) in the measurement of dependent cash flows, but it does not agree with the conclusion of the IASB that this requires separating cash flows into those that are dependent on the underlying and those that are not for differentiated discounting. The IAA finds the decomposition of cash flows overly complex and impractical to implement, while not providing any useful additional information.

The IAA finds the criteria to determine whether to apply the approach of mirroring too strict and does not encompass the range of products and business models that can be found around the world. In fact the IAA suggests that all participating contracts should be treated consistently, which would mean that it would be permissible for all types of participating contracts to reflect the measurement of the underlying item in the measurement of the liability. One main implication of the consistent treatment would be that the interest expense presented in P&L would be consistent with the investment income. Not explicitly stated in the letter, the implication of this point is that because the

investment income in the P&L is based on an effective yield rate, the corresponding interest expense should be based on a similar levelized rate rather than on the unwind of the discounting along a yield curve.

#### ***Presentation***

The ED proposes that the effects of changes in discount rates be shown in OCI for both insurance liabilities and for the backing fixed-income assets. The IAA letter notes that this treatment does not meet the objective of avoiding accounting mismatches for many business models and recommends that insurers be able to choose to recognize the effects of changes in discount rates in P&L.

The members of the IAC were narrowly in favor of the earned premium approach for the presentation of revenue, with a sizable minority in favor of the summarized margin approach. Of particular concern with the earned premium approach was the separation of the investment component from revenue and expense. The IAA letter notes that a few actuaries continue to ask for premiums as revenue in the presentation.

#### ***Transition***

The IAA welcomes the requirement that contracts that are in force at the time of an insurer's transition to the new standard have a CSM. This requirement is one of the more significant changes to the ED as compared to

CONTINUED ON **PAGE 26**

the first exposure draft (from 2010). The letter notes that there are practical implementation issues with the guidance in the ED, particularly with comparability among companies of the OCI at transition. The letter suggests changes to make the implementation more practical and more comparable.

#### **Other Topics**

The IAA letter addresses at length all the questions for which the IASB requested comments. Actuaries wishing to read the complete letter can access it at the IAA website at: [http://www.actuaries.org/LIBRARY/Submissions/FTP4\\_2013\\_CommentsonIASBED.pdf](http://www.actuaries.org/LIBRARY/Submissions/FTP4_2013_CommentsonIASBED.pdf).

#### **Other Comment Letters and the IASB's Likely Response**

The IASB received nearly 200 comment letters. The letters had many themes in common with the letter from the IAA. The IASB has shown in the past that it carefully considers contracts comment letters and has often modified its proposals in response to the comments. How far it will go to meet the concerns of the IAA and others is of course uncertain. Re-deliberations are set to start in the first quarter of 2014, and there is no indication in the IASB's current work plan of when it expects to issue an International Financial Reporting Standard (IFRS).

## **IAA MONOGRAPH ON DISCOUNTING**

The IAC announced the publication of *Discount Rates in Financial Reporting: A Practical Guide*. The book is the product of a team of actuaries from Milliman, under the direction of the IAC. The Financial Reporting Section and other sponsors financed the book.

The book on discounting is the second of three monographs intended to assist actuaries with the new challenges of reporting under the proposed revised IFRS for insurance. The first is *Stochastic Modeling* (released in May 2010), and the third is a monograph on risk margins, which is underway but waiting now for the accounting standard to be finalized so that the monograph can specifically address the requirements of the emergent IFRS. The Financial Reporting Section is a sponsor of these publications as well.

## **NEXT MEETING AND IAC ACTIVITIES**

The IAA meets again in April 2014. The IAC plans to start drafting International Actuarial Notes (IANs) on the new IFRS for insurance. With luck, by the time of the meeting the IAC can at least organize its efforts and then begin drafting IANs as soon as the IASB's decisions become final. ■



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# What Is the Professional Development Committee and What's in It for You?

By Beth Grice, Terry Long and Judy Powills



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**T**he Professional Development Committee's Top 10 Facts:

10. Otherwise known as the PDC, the Professional Development Committee is an SOA board of directors appointed committee.
9. The PDC was formed in 2009.
8. The PDC has overall responsibility for managing the development of the professional development (PD) curriculum (the content, method of delivery and resources provided to facilitate learning) reflecting the SOA's competency framework (<http://www.soa.org/Professional-Development/Competency-Framework/default.aspx>).
7. The PDC is charged with providing the highest quality learning experiences.
6. The PDC ensures that the PD program is focused on both current and forward-looking technical and non-technical content (state of the art).
5. The PDC ensures that the PD program makes use of instructional technologies to assure timeliness of, and broad access to (globally accessible), relevant and engaging programming.
4. The PDC fosters career-long learning.
3. The PDC is charged with ensuring that the SOA's PD program meets the needs of the profession and is aligned with the SOA strategic plan.
2. The PDC represents the SOA's constituencies including Canadian and international.

## AND NO. 1 ... THE PDC REPRESENTS YOU AND YOUR PD NEEDS!

Approximately 75 percent of content developed for, and delivered to, SOA members comes from you—the sections! The sections and volunteers play vital roles in the planning, development and delivery of the SOA PD program. 2014 looks to be an exciting year for section-sponsored PD offerings—section plans reflect an array of offerings targeted to member needs—meeting sessions, seminars, webcasts, podcasts and more. Congratulations to the sections!

If 75 percent of content comes from the sections, where does the rest of the SOA's PD programming come from? The SOA partners with other organiza-

tions, actuarial and non-actuarial. The SOA also enters into strategic alliances with other organizations. The PDC is responsible for considering these strategic alliances. For example, if an organization is interested in delivering a seminar, it is required to submit a strategic alliance form to the PDC. The PDC has the responsibility and authority to evaluate the proposals and make a decision as to the appropriateness of the relationship. The PDC also looks to SOA staff to set goals in support of the PDC's initiatives to develop and deliver quality curriculum to meet members' PD needs and support lifelong learning. Remember that the prequalification curriculum with new additions is available to the PD audience, too.

Learning technologies are rapidly changing. The PDC evaluates and makes recommendations for the adoption of new technologies to apply to PD programs—the best in webcasting, virtual sessions and podcasting. And, our e-Learning portfolio continues to expand, offering more for members' technical and non-technical knowledge and skill development.

In addition to overseeing the PD program for members, the PDC sets priorities on an annual basis to provide a comprehensive, progressive curriculum to meet upcoming needs. 2014 priorities include building/enhancing PD offerings for pension actuaries and actuaries internationally, offering more in the areas of business analytics and general insurance, conducting market research to better understand member needs and gaps, and letting you know about offerings and tools available. Did you know, for example, that you can purchase a group of business and communication skills e-courses from BizLibrary: <http://www.soa.org/bizlibrary/>? Do you know about Tools for Actuaries: <http://toolsforactuaries.org/>? Check it out to find tools relevant to your development including books, e-books and training opportunities.

The PDC is a resource for you. Current PDC members representing the sections are:

- Beth Grice (PDC chair)—Health and Long Term Care Insurance sections and liaison to the Health Meeting: [bgrice@humana.com](mailto:bgrice@humana.com)
- Peter Hayes—Pension and Social Insurance sections: [phayes@eckler.ca](mailto:phayes@eckler.ca)



- Donald Krouse—Investment and Joint Risk Management sections and liaison to the Investment Symposium and ERM Symposium: [dkrouse@aegonusa.com](mailto:dkrouse@aegonusa.com)
- Terry Long (PDC vice chair)—Product Development, Financial Reporting, Marketing & Distribution, Reinsurance, Smaller Insurance Company, and Taxation Sections and liaison to the Life & Annuity Symposium and Valuation Actuary Symposium: [tlong@lewisellis.com](mailto:tlong@lewisellis.com).

- Kevin Pledge—Actuary of the Future, Entrepreneurial Actuaries, Education & Research, International, Forecasting & Futurism, Management & Personal Development and Technology sections and 2014 Annual Meeting Chairperson: [kevinpledge@gmail.com](mailto:kevinpledge@gmail.com).

The other PDC members are Jennie McGinnis (board partner), Lorne Schinbein (Education Executive Group curriculum chair), Genghui Wu (international constituency), Mike Boot (SOA managing director—Sections & Practice Advancement) and Judy Powills (SOA senior director of Curriculum and Content Development). PDC members are also assigned to board-appointed teams including the Issues Advisory Committee, the International Committee and the Transfer Knowledge Team.

The PDC wishes to thank the sections for their contributions. Feel free to call upon us as your sounding boards for your ideas about PD content and delivery! ■

# Financial Reporting Research Scorecard

By Sam Keller and Ronora Stryker

**R**esearch is a primary mission of the Financial Reporting Section and is the largest use of section dues. This scorecard will keep section members informed about research projects sponsored or co-sponsored by the section.

Research initiatives in process (updated as of 1/8/2014):

Sam Keller, FSA, MAAA, is an actuary at Allianz Life Insurance Company in Minneapolis. He can be reached at sam.keller@allianzlife.com.

Ronora Stryker, ASA, MAAA, is a research actuary with the Society of Actuaries. She can be reached at rstryker@soa.org.

Project Name	Description	Targeted Completion	Status	Project Oversight Group (POG) Contact
Monograph on Risk Adjustment	A monograph addressing the application of risk and uncertainty in the measurement of insurance liabilities.	Q3 2014	The POG (Project Oversight Group) is reviewing an alternative project plan to accommodate delays encountered around the sourcing and vetting of research materials.	Mark Yu
Illustrating Multiple Measurement Bases and their Application	An illustrative example of applying different accounting regimes to various product lines.	2014	The POG is reviewing proposal responses to select a researcher.	Sam Keller
IFRS	Examines the impact to life insurance financial reporting of the upcoming IASB Exposure Drafts on accounting of insurance contract liabilities.	Q1 2014	The research team is finalizing the project.	Tom Herget
Behavioral Economics Applications to Life and Health Insurance Policyholder and Annuitant Behavior	This is a call for papers to expand actuarial understanding of the theory of behavioral economics and its application to life and health insurance consumer behavior.	Currently ongoing	One paper has already been awarded prize money (\$4K) and is out on the SOA website at: <a href="http://www.soa.org/Research/Research-Projects/Risk-Management/Behavioral-Simulations/">http://www.soa.org/Research/Research-Projects/Risk-Management/Behavioral-Simulations/</a> . A second paper was recently received and is being evaluated.	Ronora Stryker
IFRS	Examines the impact to life insurance financial reporting of the upcoming IASB Exposure Drafts on accounting of insurance contract liabilities.	Q4 2013	The research team is working with the participating companies to model their product blocks under the proposed accounting requirements. Project completion is expected by the end of October.	Tom Herget

Recently published research of interest to Financial Reporting Section members:

Project Name	Link
IFRS	See <a href="http://www.soa.org/Research">www.soa.org/Research</a> for final link to study.
Setting Dynamic Policyholder Behavior	See <a href="http://www.soa.org/Research">www.soa.org/Research</a> for final link to study.
PBA Implementation Guide	<a href="http://www.soa.org/Research/Research-Projects/Life-Insurance/research-2013-pba-implementation-guide.aspx">http://www.soa.org/Research/Research-Projects/Life-Insurance/research-2013-pba-implementation-guide.aspx</a>

Research projects out for proposal: Please visit <http://www.soa.org/Research/Research-Opps/Research-Opportunities.aspx> at any time for a comprehensive list of SOA research opportunities.

Project Name	Link
The Impact of the Transition from a Low Interest to an Increasing Interest Rate Environment on Life Insurers	<a href="http://www.soa.org/Research/Research-Opps/Proposal-Request/The-Impact-of-the-Transition-from-a-Low-Interest-to-an-Increasing-Interest-Rate-Environment-on-Life-Insurers.aspx">http://www.soa.org/Research/Research-Opps/Proposal-Request/The-Impact-of-the-Transition-from-a-Low-Interest-to-an-Increasing-Interest-Rate-Environment-on-Life-Insurers.aspx</a>
Tail Risk Analysis and Correlation of Risks in Tail/Extreme Environments	<a href="http://www.soa.org/Research/Research-Opps/Proposal-Request/Tail-Risk-Analysis-and-Correlation-of-Risks-in-Tail/Extreme-Environments.aspx">http://www.soa.org/Research/Research-Opps/Proposal-Request/Tail-Risk-Analysis-and-Correlation-of-Risks-in-Tail/Extreme-Environments.aspx</a>

Please visit <http://www.soa.org/Research/Research-Opps/Research-Opportunities.aspx> at any time for a comprehensive list of SOA research opportunities.

Have an idea for a research project? Send it to Bill Sayre ([Bill.Sayre@milliman.com](mailto:Bill.Sayre@milliman.com)) or John Esch ([John.Esch@allianzlife.com](mailto:John.Esch@allianzlife.com)). ■

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