

# The Financial Reporter

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**SOCIETY OF  
ACTUARIES**

**FINANCIAL  
REPORTING  
SECTION**

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# Chairperson's Corner

By Jim Hawke

The Council had another very productive face-to-face meeting at Chicago O'Hare in March. We generally have these types of meetings twice a year, in March and at the SOA Annual Meeting.

Most of the meeting was devoted to discussions concerning content for upcoming meetings in 2017—the Life and Annuity Symposium in Seattle, the Valuation Actuary Symposium in San Antonio, and the SOA Annual Meeting & Exhibit in Boston.

By the time this issue of *The Financial Reporter* is published, the Life and Annuity Symposium will have been completed. I hope those of you who attended enjoyed the sessions and breakfast which we hosted, and many thanks to David Ruiz and Len Mangini for their work on session planning. Much of the groundwork for the Valuation Symposium and SOA Annual Meeting & Exhibit was discussed during our face-to-face meeting. I believe you will be pleased with the content as well as the venues.

We also discussed an impressive list of upcoming webcasts which I encourage you to consider. These can be found in the SOA professional development links and also on our section webpage, which was recently revamped by SOA staff and our website coordinator Kerry Krantz. Take a look and see what a great job they did!

In the research arena we will once again be a sponsor for the Actuarial Research Conference. This year it will be held in Atlanta on July 26–29. We discussed combining two of our new research ideas, using an expanded study of emergence of earnings under multiple accounting bases to also illustrate the targeted improvements to US GAAP. We also discussed co-sponsoring a



study being looked at by the Product Development Council on waiver of premium/monthly deduction rider assumptions under a principles-based framework. A project oversight group is currently being put together on this.

Simpa Baiye updated the council on the new SOA Volunteer Opportunities<sup>1</sup> site. I encourage you to take a look at this resource to see if there is a need which you could fill.

As always I hope you find this edition of *The Financial Reporter* helpful, and welcome any suggestions you might have. ■



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## ENDNOTES

1 <https://engage.soa.org/volunteeroportunities/opportunities-list-public>

# VA Reserve and Capital Reform: Overview and Update

By Aaron Sarfatti

Variable annuities (VAs) remain one of the most significant businesses in the U.S. life insurance industry, with more than \$2 trillion in industry assets under management. While originally designed as a vehicle for tax deferred accumulation, a sizable portion of the VA assets have riders attached to the policies that create exposures—in many instances material—to capital markets, behavioral and mortality risks. The regulations to guide the determination of the reserves and capital associated with these guarantees materially affect the balance sheet and capital management practices of VA manufacturers.

In 2015, in response to a proliferation of captive reinsurers designed to help companies manage VA risk and capital, the NAIC embarked on an initiative to explore potential reforms of the AG 43 and RBC C3 Phase II regulations that establish standards for setting VA reserves and capital. Oliver Wyman was engaged to conduct the study. On September 10, 2015, Oliver Wyman provided the NAIC with a preliminary report covering several sets of ideas for improvements to the current AG 43 and C3 Phase II frameworks.

In 2016, the NAIC commissioned a first quantitative impact study (QIS1) of AG 43 and C3 Phase II in the quest to further explore the ideas for framework improvements. QIS1 served two principal objectives:

- Validate hypotheses regarding the “root causes” of the challenges insurers face managing capital prudently under the standards, and
- Explore the efficacy and impact of potential alternatives to elements of the standards.

Fifteen companies participated in the QIS1 exercise which ran from February to July of 2016. The completion of the initial QIS in 2016 validated challenges of the current statutory framework and informed a series of recommended revisions to AG 43 and C3 Phase II. Oliver Wyman presented recommended revisions



to the Variable Annuities Issues Working Group in August 2016, with a redlined version of the texts issued the next month.

Following a series of discussions with regulators, industry and Oliver Wyman, regulators commissioned a second quantitative impact study (QIS2) to verify the efficacy and parameterize the recommended revisions.

## OVERVIEW OF QIS2

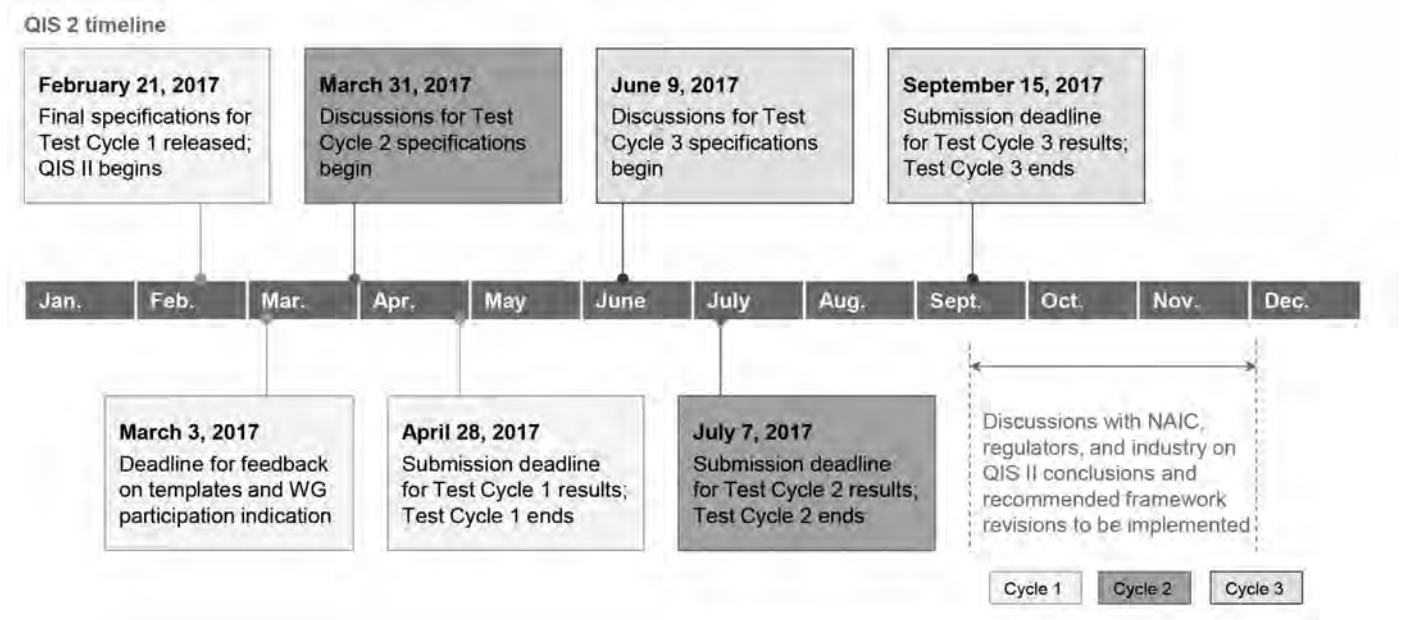
QIS2 shares many aspects of QIS1 with respect to the focus on empirical testing of the proposed revisions culminating in a set of recommended revisions to the framework. However, QIS2 differs from QIS1 in four principal ways:

- Full solution testing: All proposed framework revisions are analyzed in tandem; QIS1 tested many framework revisions in isolation from other potential revisions.
- Parameterization: While the recommendations following QIS1 elaborated a series of important structural revisions, several critical parameters were left “bracketed”—and noted further industry testing would be necessary to calibrate the parameters. QIS2 is designed to supply analysis to inform the parameterization.
- Research: The QIS1 recommendations identified several areas for which revisions require further primary research. Resources during QIS2 have been earmarked to conduct primary research into these topics to inform a prudent solution.
- Iterative: QIS1 consisted of a single round of testing. QIS2 consists of three “cycles” of testing which are, in essence, their own QIS—albeit with different focus areas.

Given its expanded scope and objectives, the timeline for QIS2 is longer than QIS1 by approximately two months. Moreover,



Figure 1



instead of delivering recommendations in the summer meeting, recommendations are anticipated to be delivered at the NAIC fall meeting in December.<sup>1</sup> The QIS2 timeline is displayed in Figure 1.

As of the time of this article, 16 companies are participating in QIS2.

### KEY ELEMENTS TESTED IN QIS2 – CYCLE I

The prior section noted that QIS2 consists of three distinct cycles of testing. While the scope of each cycle of testing remains subject to discussions and agreement among the regulators, industry and Oliver Wyman, each cycle has an anticipated focus:

- Cycle I: Revisions to stochastic calculation
- Cycle II: Revisions to standard scenario
- Cycle III: Testing of combined revisions (with refinements from Cycles I/II)

Additionally, primary research and steps to support implementation preparations are important parts of each cycle as well. Cycle I testing has commenced and intends to inform the following aspects of the revisions, organized by calculation.

#### Stochastic calculation

Some key elements of the stochastic calculation under review as part of Cycle 1 are as follows:

- Equity calibration criteria:** A central determinant of key framework properties (level of reserves/capital,

market-sensitivity of reserves/capital) are the capital markets scenarios underpinning the simulated evolutions of variable annuity investment balances. A series of principles are used to govern these returns. However, equity investment returns are subject to an additional set of “calibration criteria” that specify minimum or maximum cumulative returns at various future timeframes (e.g., 5-year, 10-year, 20-year) and for a variety of percentiles (e.g., 2.5 percent, 5 percent, 95 percent). Under current regulations, these calibration criteria are fixed over time—irrespective of capital markets conditions. Under exploration, focusing on primary research, is whether these calibration criteria should change in some fashion—either simply changing the fixed parameters or indexing their levels to market factors such as long-term interest rates.

- “High CTE” supporting C3 charge:** The C3 charge in C3 Phase II is determined by taking the difference of the C3 Phase II result (max of C3 Phase II CTE 90 and Standard Scenario) and AG43 result (max of AG 43 CTE 70 and Standard Scenario). Among the Oliver Wyman 2016 recommendations was a revision to the pre-diversification C3 charge calculation to (i) utilize a single distribution of stochastic scenario results instead of distinct distributions for AG43 and C3 Phase II, and (ii) increase the “CTE High” value, currently CTE90, to CTE98. However, the CTE98 parameter was a “bracketed” parameter, meaning its specific calibration is subject to further testing. An objective of setting the “CTE High” parameter is to promote hedging—so the parameter is being evaluated against a series of criteria designed to determine whether its value promotes hedging,



among other considerations. Moreover, the recommended High CTE selection is anticipated to be sensitive to any decision on the equity calibration criteria—with a more market-sensitive or adverse equity calibration criteria likely attended by a lower confidence level for the CTE High.

- c. **Scalar to support C3 charge:** Attending the recommendation to elevate the “CTE High” confidence level beyond CTE90 is a recommendation to set the pre-diversification C3 charge equal to the difference between CTE High and CTE 70 divided by a scalar. Division by a scalar is necessary to maintain the approximate level of prudence of the Total Asset Requirement given that CTE High is being shifted further into the tail of the stochastic distribution. The scalar is being examined in conjunction with the equity calibration criteria and the confidence level of CTE High.
- d. **Revenue sharing recognition:** The AG 43 and C3 Phase II standards specify different approaches to the recognition of revenue sharing—with specifications that any non-guaranteed revenue sharing be reduced relative to current levels by varying amounts across the standards. The Oliver Wyman recommendation to use a single distribution requires the selection of a single revenue sharing recognition approach. During Cycle I, primary research is being conducted to inform a revenue sharing recognition approach that reflects the cumulative experience regarding the risk to revenue sharing gained since the formulation of AG 43 and C3 Phase II. Of particular importance in the revenue sharing recognition is not only the level of revenue sharing allowed, but how the non-revenue sharing portion of the total fund fee is projected. This is because, for more in-the-money guarantee portfolios the portion of the total fund fee retained by the investment advisor can represent a substantial driver of reserves and capital. Currently, the regulations broadly specify that the non-revenue sharing portion of the total fund fee not decline over time, a conservative treatment.

### Standard scenario

As noted previously, Cycle I testing focuses on the stochastic calculation. However, elements of the revised standard scenario construct—recommended by Oliver Wyman to be aligned substantially with the stochastic calculation construct—are subject to testing in Cycle I. These are described briefly below.

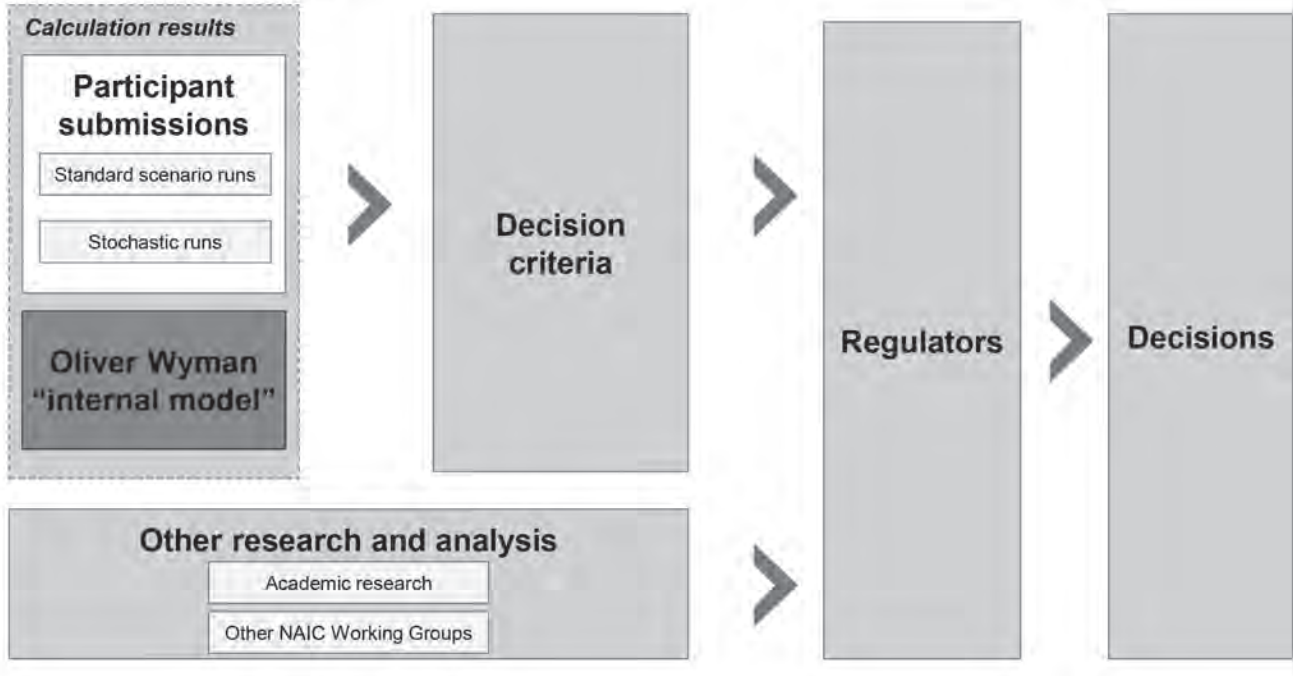
- a. **Standard Scenario market paths:** The standard scenario market path today consists of a “stress-and-recovery” style scenario, with the stress both (i) instantaneous and (ii) focused on equity markets, with the subsequent recovery following pre-determined parameters. The Oliver Wyman recommendations included extending the stress to transpire over a full year, allowing for hedge rebalancing via the Clearly Defined Hedging Strategy and any product risk mitigation (e.g., asset transfer programs) to take place. During Cycle I, a variety of different potential market paths are being evaluated, including paths that stress both interest rates and equity returns and different types of recovery rates.
- b. **Reflection of CDHS:** As noted previously, the CDHS is recommended to be reflected during the period of stress. Alternatives are being examined including, depending on the character of the market path, (i) no reflection of CDHS (if no stress takes place) and (ii) reflection of the CDHS in perpetuity, as is allowed in the stochastic calculation.
- c. **Behavioral assumptions:** Verifying and testing revisions to prescribed policyholder behavior assumptions is a focal point of QIS2, given the substantial amount of industry learnings about VA policyholder behavior since the enactment of the AG43 and C3 Phase II regulations. Cycle I testing will involve primary research into policyholder behavior experience to verify and potentially revise the Oliver Wyman 2016 recommended revisions to the policyholder behavior prescriptions. Moreover, discussions are beginning regarding a potential “hybrid governance model” that allows companies to utilize their own data under a prescribed method—not a prescribed assumption.

### HOW DECISIONS ARE BEING MADE

The significant ramifications of QIS2 decisions has attracted focus on the specification of how decisions should be made for each of the framework elements being investigated. We previously noted the presence of primary research to the quantitative testing results supplied by QIS2 participants and an Oliver Wyman stylized “internal model.” In addition, a series of decision criteria consisting of (i) target properties of the framework, (ii) supporting data, (iii) external research and (iv) regulator guidance are being developed early in each testing Cycle in order to guide decisions. This aspect of the framework and its role is described in Figure 2 and has been effective in drawing input in

Figure 2

Topology of information flow



advance of data submissions about how exactly to guide decision-making on each framework topic.

### CONCLUSION

QIS2 promises to be an important milestone in the development of more prudent regulatory standards for the variable annuity sector. It is an initiative that draws on skills and experience gained by members across the industry and consulting fields over many decades. We hope this introduction and background of QIS2 is helpful for participants and non-participants alike, and will seek to continue to provide updates on QIS2 status throughout the course of the initiative. ■



Aaron Sarfatti, ASA, is a partner at Oliver Wyman. He can be contacted at [aaron.sarfatti@oliverwyman.com](mailto:aaron.sarfatti@oliverwyman.com).

### ENDNOTES

- 1 The author of this article sincerely hopes the rumors that the NAIC fall meeting will be hosted in Hawaii are true.

# GAAP Targeted Improvements— Illustrated Universal Life Earnings

By Steve Malerich

Among the proposals to improve Generally Accepted Accounting Principles (GAAP) for long-duration insurance contracts is a simplification of deferred acquisition cost (DAC) amortization.<sup>1</sup> The changes should make it easier to understand some aspects of an insurer’s financial statements. It will, however, significantly alter the emergence of GAAP earnings from universal life (UL) contracts.

In this article, we’ll see how the changes affect UL earnings and specific sources of earnings, and then end with some thoughts about how we might evaluate performance after the change.

To illustrate these effects, I built models of four simple UL product designs. The traditional design has annually increasing cost of insurance (COI) rates. The front load design is similar to traditional but with added front-end loads and a higher crediting rate. The level COI design has flat COI rates and the same crediting rate as the front load design. The front and level design adds front-end loads to the level COI design and reduces the COI rates. Rates and charges are set to produce roughly equal lifetime profitability.

## EARNINGS

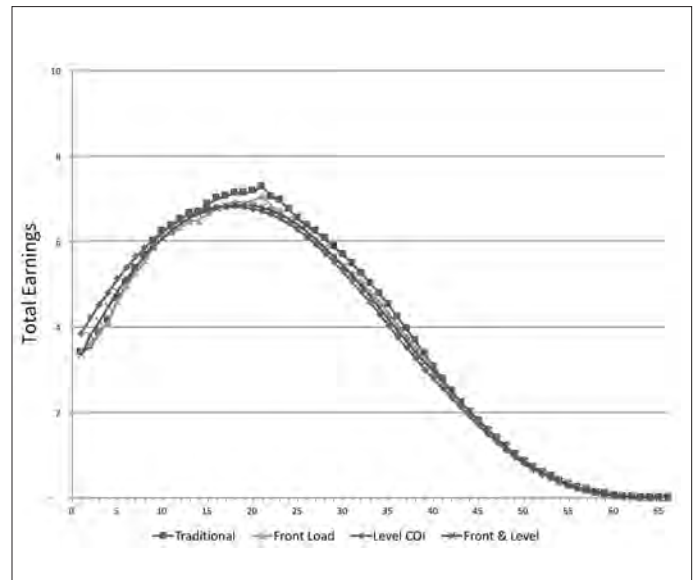
Beginning with current standards, Figure 1 illustrates earnings emergence for all four products.

Despite different charge structures, the products see little difference in the emergence of GAAP earnings.

The similar patterns result from current standards that integrate accounting for the whole of each contract. The interaction of DAC amortization with an additional liability (reserve) on the level COI products and an unearned revenue liability (URL) on the front-loaded products substantially equalizes GAAP timing.

The 20-year increasing pattern comes from interest margin on increasing policyholder account balances. The combination of

Figure 1  
Current Standards



aggregate COI rates and a select mortality assumption causes insurance margins to decrease throughout the life of the business.

Figure 2 illustrates the same products under the proposed standards. Two things are immediately apparent.

First, there are greater differences among the products. Second, earnings emergence is significantly delayed for all products.

Both effects can be understood by looking at the patterns of expense recognition.

Figure 2  
Proposed Standards

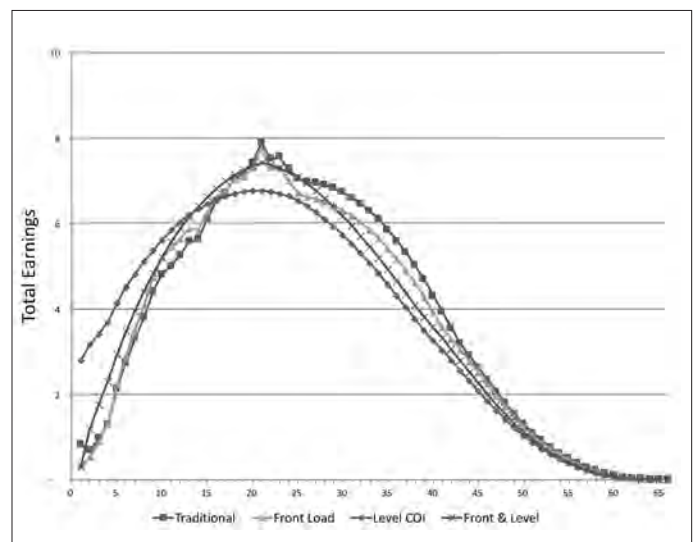
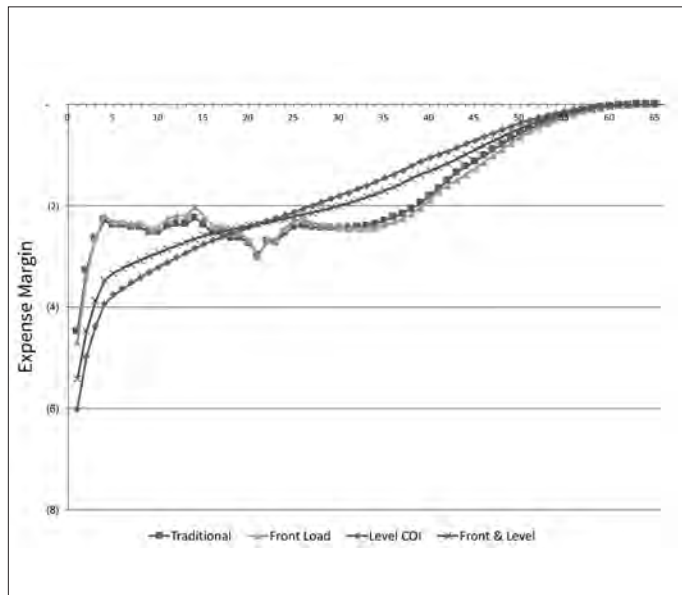




Figure 3  
Current Standards



## EXPENSE

Figures 3 and 4 illustrate GAAP expenses (in the form of negative expense margins) under current and proposed standards, respectively.

Unlike total earnings, the expense margin varies significantly among products under current standards, in what appears to be two distinct patterns.

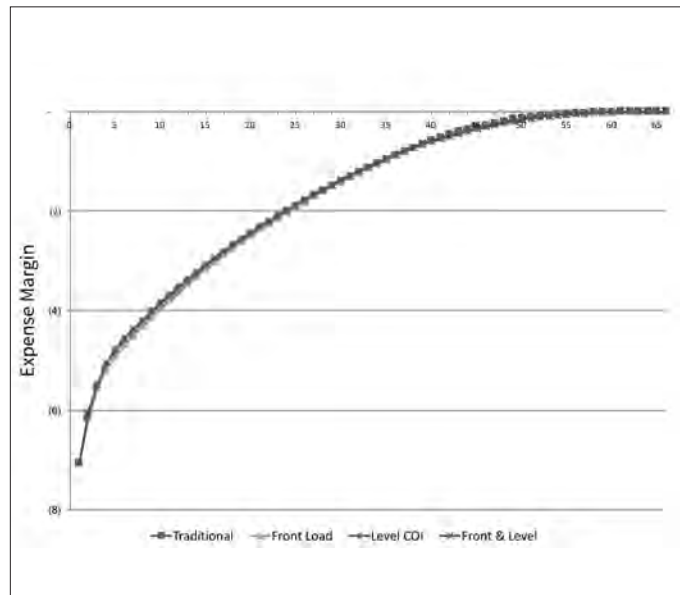
Level COIs, besides making a reserve necessary, shape both the reserve accrual and DAC amortization as part of their respective bases (assessments and gross profit). Thus, they produce a distinctly different amortization pattern than the increasing COI products.

Front-end loads are excluded from gross profit but amortized into assessments. Thus, they have no direct effect on DAC amortization. Their secondary effect, resulting from their amortization into the reserve calculation, is relatively small.

Though all products start with nearly the same acquisition costs and maintenance expenses, the interactions among loads and charges, interest margin, benefits, maintenance expenses, URL and reserves lead to significantly different patterns of DAC amortization, and hence to different expense margins.

The proposed DAC standards ignore those interactions, producing similar amortization among all four designs. They also move more of it into the early years.

Figure 4  
Proposed Standards



The significant differences that we saw emerge in Figure 2, coincident with the significant expense convergence seen in Figure 4, suggests that other margins are significantly different among products.

## INTEREST AND INSURANCE MARGINS

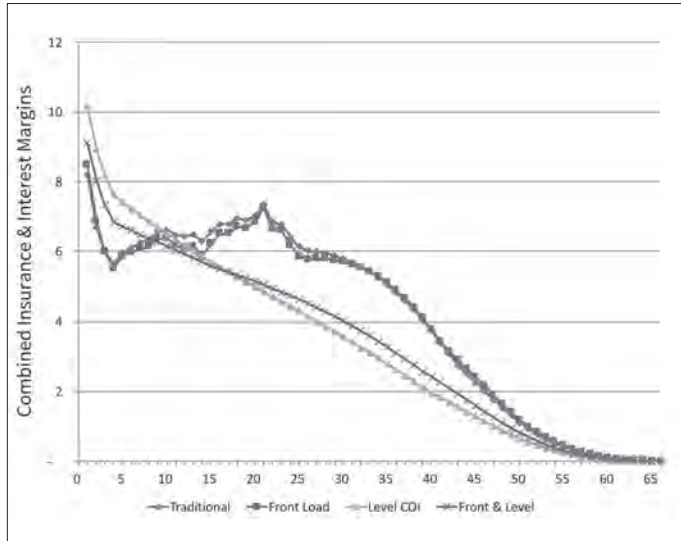
Other margins can be classified into two types, interest and insurance. Interest margin is the difference between interest credited on policyholder account balances and investment income on assets backing those balances. Insurance margin is the difference between the various charges against the policyholder accounts (adjusted for URL deferral and amortization) and the cost of insurance benefits (adjusted for reserve accrual and release).

Since the proposed standards keep interest margin in assessments for the reserve calculation, looking at interest and insurance margins separately would reveal some odd looking insurance margins, including negative margins when account values are at their highest.<sup>2</sup>

To avoid confusing this analysis, Figures 5 and 6 (see pg. 10) illustrate the combined interest and insurance margins.

In Figure 5, under current standards, the combined margin resembles a magnified mirror image of the expense margin in Figure 3. Where an additional reserve is present (the two level products) we see a smoothly declining progression of the margin over the life of the business. Without a reserve, the two products with increasing COI rates aren't as smooth and see a nearly flat margin for several years after the first few.

Figure 5  
Current Standards



The proposed standards do little to alter the combined interest and insurance margin. There certainly are some changes, but they tend to magnify rather than shrink the differences among products.

Of particular concern, the proposed standards do not move the combined interest and insurance margin more heavily to the early years as they do the expense margin.

**SUMMARY**

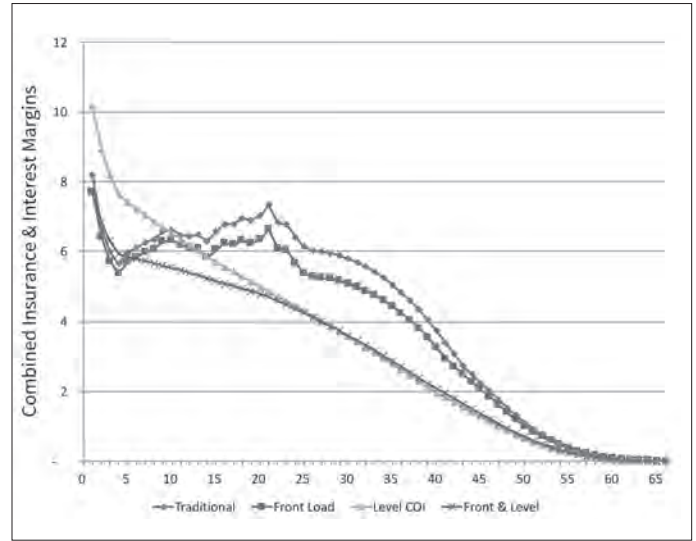
An overall shift toward later UL earnings under the proposed standards is largely due to heavier DAC amortization in early years. If the product is evaluated in terms of GAAP earnings emergence, it will appear less profitable after the changes and it will also be more sensitive to product design.

It seems unlikely that FASB will retreat from the simplification of DAC amortization. Though some have objected to this divorce of amortization from revenue, most comment letters and investor feedback has been supportive. In short, both insurers and investors are tired of the many complications in existing DAC amortization standards.

Beyond DAC, if there is an underlying theme to the proposed changes, it seems to be a movement to break apart the complex integration of different functions (insurance, investment, and administration) that exists in the current standards.

As is obvious from Figures 3 and 4, the proposed changes should make it easier to understand and explain expense performance. Interest spread should remain easy to understand and explain.

Figure 6  
Proposed Standards



The proposed changes, however, will not make it any easier to understand insurance margins. Perhaps further deliberations will bring refinements to address some of the remaining complications.

Whatever the shape of the final standards, the move to account separately for separate functions will visibly change universal life earnings emergence. We may find it best to join the movement—to evaluate earnings in pieces. Expenses, including DAC amortization, will be more easily evaluated in terms of unit costs rather than revenue. We may even choose to evaluate expenses in total rather than separately for each cohort; one benefit of simplified amortization is that it will no longer depend on an allocation of investment income and maintenance expenses among cohorts. ■



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**ENDNOTES**

- 1 For a description of the DAC changes, see “Major Activity at FASB” by Leonard Reback in the June 2015 edition of *The Financial Reporter*.
- 2 Since URL and reserves generally do not alter a company’s total asset requirement, interest on these liabilities and investment income on assets backing them are both excluded from product margins and assessments. To include them would distort the comparison of margins among products with and without such liabilities. These are, however, included in Figures 1 and 2 along with overhead expenses and equity investment income.

# Setting Ascribed Premiums for Market Risk Benefits under FASB Targeted Improvements

By Shaowei Yang and David Ruiz

On Sept. 29, 2016, FASB released an exposure draft of Proposed Accounting Standards Update for Financial Services—Insurance (Topic 944) or “FASB Targeted Improvements to the Accounting for Long-Duration Contracts.”<sup>1</sup>

Paragraph 944-40-25-25C introduced a new concept of market risk benefits (MRB), defined as:

“A market risk benefit shall be recognized for contracts and benefits that meet both of the following criteria:

a. Contract: The contract holder has the ability to direct funds to one or more separate account investment alternatives maintained by the insurance entity, and investment performance, net of contract fees and assessments, is passed through to the contract holder. The separate account need not be legally recognized or legally insulated from the general account liabilities of the insurance entity.

b. Benefit: The insurance entity provides a benefit protecting the contract holder from adverse capital market performance, exposing the insurance entity to other-than-nominal capital market risk. A nominal risk, as explained in paragraph 944-20-15-21, is a risk of insignificant amount or a risk that has a remote probability of occurring. A benefit is presumed to have other-than-nominal capital market risk if the net amount at risk (that is, the guaranteed benefit in excess of the account balance, cash value, or similar amount) varies more than an insignificant amount in response to capital market volatility. Capital market risk includes equity, interest rate, and foreign exchange risk.”

The various guaranteed minimum benefit (GMxB) guarantees embedded in variable annuity contracts clearly fall under this definition. There is still debate as to which riders should be scoped in as MRB, but it is undeniable that certain GMxB rider types that previously did not qualify as embedded deriv-

atives (ED), as defined in FAS 133, will be scoped in as MRB (e.g., GMIBs and certain life-time GMWBs that are not valued as ED).

Currently GMxB riders are generally valued as either embedded derivatives (as defined in FAS 133) or insurance risk benefits. EDs are valued at fair value using risk neutral valuation techniques. Insurance risk benefits are valued as SOP 03-1 reserves using assumptions consistent with those used for DAC valuation (real-world economic assumptions).

## FAIR VALUE RESERVE CALCULATION

Fair value reserves are based on a prospective projection of guarantee cash flows and computed as

$$PV(\text{claim costs}) - PV(\text{ascribed premiums or ascribed fees})$$

At rider issue, the ascribed fees are set and locked in so that there is no gain or loss at inception; that is, the fair value reserves at inception is zero.

Ascribed fees are commonly expressed in two ways:

- A constant proportion of rider charges, and
- A percentage charge independent of rider fees.

If a GMxB rider is scoped in as an MRB, one task a responsible valuation actuary is faced with is to set the ascribed fees for the rider. For existing riders that are valued as ED, the valuation actuary will continue current practice. However, if a rider is currently valued according to SOP 03-1, the actuary will need to set the ascribed fees for such a rider even though the rider may have been issued a long time ago. Such a seemingly easy task may turn out to be challenging. There are several alternative approaches and each has its merits and shortfalls.

This article discusses several alternative approaches to setting ascribed fees for riders that are not currently valued at fair value.

## ALTERNATIVES FOR SETTING ASCRIBED FEES FOR MRB

### Alternative 1: Go back to issue

A natural approach is to go back to the inception of a rider and set ascribed fees as if it were a new contract. Cash flows associated with the riders would then be projected based on the market conditions at inception and other cash flow assumptions.

This approach is based on first principles and consistent with how ascribed fees are normally set for a rider. This approach is a theoretically correct way to set ascribed fees. It will produce materially correct fair value reserves at the transition date and

Going back in time to old systems and assumptions could pose challenges to actuaries.

going forward only if the assumptions are materially consistent with how they would have been set at inception.

However, this approach is not without shortcomings. It would create potential bias in assumption setting, be costly to implement, pose projection system challenges, and require balance sheet restatement.

When computing ascribed fees as of rider inception, the actuary must come up with assumptions (economic and policyholder behavior) based on the environment at rider inception.

In fair value projections, one is required to use as much market observable information as possible. To the extent that an assumption is observable from the market, there would be little controversy. Two examples are risk-free rate of return and implied volatility.

However, certain assumptions are not observable. One example is volatility for long durations. The derivative market is liquid only for shorter durations and the actuary needs to set volatility assumptions for durations beyond observation. Liquidity for long-dated derivatives since the 2008 financial crisis has become very limited. If a rider was issued prior to the 2008 financial crisis, knowledge about the high volatility during the financial crisis could naturally bias the assumption setting.

Another example is policyholder behavior assumptions. When a GMxB type is new in the market, little to no experience exists. With accumulated policyholder behavior experience, the actuary's assumption setting could be influenced by recent experience. Over time, the assumptions an actuary would set at rider inception and the assumptions used in today's valuation would potentially converge through assumption updates as more experience emerges. However, ascribed fees are normally locked-in at inception, so the assumptions used to set such fees will affect the fair value reserves for the life of the rider guarantee.

Assumption setting involves a great deal of professional judgment and the knowledge the actuary has gained since rider inception could filter into the assumption setting process. Consequently, the assumptions might be different from what he would use if he was performing the work when the rider was issued.

This approach would also be very costly to implement. It would entail a great amount of work to set assumptions and run projection models at various rider issue dates. One key consideration for this accounting update is cost/benefit tradeoff. Incurring a great deal of costs to set ascribed fees for valuing MRB may not be in the spirit of the standard update.

Actuarial projection systems advance at a fast pace in today's environment. The assumption frameworks change as well, as the industry gets more sophisticated in modeling complex guarantees and accumulates more policyholder behavior experience. Going back in time to old systems and assumptions could pose challenges to actuaries.

Using this approach would very likely produce a reserve that is different from the carrying amount at the transition date. An equity adjustment would be necessary.

**Alternative 2: Match transition date reserves**

A second alternative is to set ascribed fees so that the fair value MRB reserves are equal or close to the carrying amount for SOP 03-1 reserves at the transition date.

This alternative has several advantages. First, the current market is observable. Any potential bias in assumption setting due to foreknowledge could be avoided. Additionally, by matching SOP 03-1 reserves and MRB reserves, a restatement to GAAP equity can be avoided. The actuary can also use the same cash flow assumptions and certain other economic assumptions that are used to calculate SOP 03-1 reserves; however, the actuary needs to consider adding risk margins to certain best estimate assumptions. Unlike the first alternative, no or limited changes to projection systems would be required. And finally, this approach would naturally incur much less costs.





Table 1

	Go back to inception	Match carrying reserves	Use transition date assumptions
Pros	<ul style="list-style-type: none"> <li>Theoretically correct way to set ascribed fees</li> </ul>	<ul style="list-style-type: none"> <li>Transparency in assumption setting</li> <li>Balance sheet restatement unnecessary</li> <li>No need to come up with assumptions as of inception</li> <li>No or limited system challenges</li> <li>Less costly</li> </ul>	<ul style="list-style-type: none"> <li>Easy to implement</li> <li>Least costly</li> </ul>
Cons	<ul style="list-style-type: none"> <li>Potential bias in setting assumptions</li> <li>Costly</li> <li>Potential system challenges</li> <li>Balance sheet restatement</li> </ul>	<ul style="list-style-type: none"> <li>May require several trial runs</li> <li>Differences between SOP 03-1 reserves and fair value reserves</li> </ul>	<ul style="list-style-type: none"> <li>A reserve balance of zero on transition date</li> <li>Balance sheet restatement</li> </ul>

This alternative is not without its own drawbacks. Matching the reserves may require several trial and error runs. Additionally, SOP 03-1 and fair value reserves are fundamentally different. The former is calculated with a retrospective and prospective component and the reserves are accrued over time. The latter is purely a prospective view of the liabilities. SOP 03-1 reserves are normally calculated at a cohort level, so there may be diversification benefits within a cohort. Fair value reserves, however, are normally computed at the liability cell level. SOP reserves are required to be floored at zero, and fair value reserves are not.

**Alternative 3: Set ascribed fees based on transition date market conditions**

Under this alternative, the in-force business would be treated like new business. The ascribed fees would be set for the in-force business using market conditions at the transition date, so that the MRB reserves would be zero or close to zero.

This alternative is easy to implement. It would require a one-time ascribed fee computation without the need to come up with additional assumptions.

On the other hand, this approach will result in an MRB reserve of zero or close to zero, which may not be appropriate for in-force business. Additionally, it would require a restatement to GAAP equity.

The pros and cons of each of the three alternatives are summarized in Table 1.

**DISCUSSIONS**

Comparing the three alternatives discussed in this article, the second alternative (matching carrying liability reserve on the transition date) has the most advantages and the fewest disadvantages.

Avoiding a GAAP equity restatement may be the primary consideration because many companies use return on equity (ROE) as a key GAAP performance measure. Without a disruption to the GAAP equity balance, the existing ROE measure can continue to serve as an important GAAP measure. It would be easy to compare historical ROE metrics with those after the transition date. Such consistency may be well-received by the industry.

One difference between fair value reserves and SOP 03-1 reserves is that the former are not subject to flooring and the latter are floored at zero. One reason an SOP 03-1 reserve can be floored at zero is due to the retrospective nature of the calculation. When historical claim costs exceed accumulated assessments, the SOP reserve will be negative, and many actuaries will floor the reserve at zero. Fair value reserves are calculated using a prospective approach, considering future claims and premiums without regard to historical claims. The author would not suggest removing the SOP 03-1 floor when matching the current carrying value of the liability. ■



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**ENDNOTES**

1 [http://www.fasb.org/jsp/FASBDocument\\_CDocument-Page?cid=1176168477111&acceptedDisclaimer=true](http://www.fasb.org/jsp/FASBDocument_CDocument-Page?cid=1176168477111&acceptedDisclaimer=true)

# The Rainbow

By Henry Siegel

I was originally going to title this article “No-See-Ums (3)” since most of what the International Accounting Standards Board (IASB or the board) did this quarter was to again fix problems that had been found with the draft standard. In March, however, I went to St. Thomas for a couple of days and while it rained most of the time, one morning we woke up to the most beautiful rainbows including a double (see photo). I decided this might be an omen that the worst part of the standard development is over and it’s now time for the improved accounting resulting from nearly two decades of development to finally be realized.

During the past several months, the board had worked with a number of parties on a field test of the proposed standard. During the course of this test, 29 issues arose that the staff cat-

alogued along with proposed changes to address them. Two of those issues had been extensively debated previously and were therefore discussed separately at the February board meeting.

## CHANGES TO THE CONTRACTUAL SERVICE MARGIN

One issue that has been around ever since the board initially decided to allow changes to assumptions about future cash flows is how to treat those changes in the income statement. The board recognized that there are two types of changes to future cash flows: those arising from experience differing from expected (e.g., there are more or fewer policies in force at the end of the reporting period) and those due to changes in assumptions about future experience. The most recent tentative decision had been that the combined effect of the experience and assumption changes should be reflected in earnings. Upon study, however, the staff and board concluded that this approach did not achieve their objectives.

As a result, the board made similar but slightly different decisions for the general model and for contracts measured using the variable fee approach.

For contracts measured under the general model, all changes in estimates of the present value of future cash flows arising from non-financial risks should now be netted against the contrac-



tual service margin (CSM), i.e., either increasing or decreasing it. Unless the CSM goes to zero, or there is a previous loss that is being reversed, this means that there is no effect in current earnings and the effect of the changes is realized in future results. The exception to this rule is that changes due to changes in incurred claims should go to earnings.

The effect of changes to current year cash flows, except for financial risks, still flows through earnings.

For contracts measured under the variable fee approach the decision is consistent, differing only with respect to the effect arising from the underlying items. All changes in estimates of the present value of future cash flows that are unrelated to the underlying items and that arise from non-financial risks are adjusted against the CSM similar to the general model.

The board also agreed to revise the definition of an experience adjustment to exclude investment components. This change makes current year cash flow effects on investment components go to the CSM while all others, as described above, go to P&L.

Operationally, these decisions will create additional work. It would seem, however, that at least most of the information needed should be easily at hand from the models used in the valuation. Probably the most difficult part of the process will be agreeing with your auditor exactly which effects go where.

### NARROW EXEMPTION FOR THE GROUPING OF REGULATORY-AFFECTED PRICING OF INSURANCE CONTRACTS

Another issue that arose in the past several years is the requirement to measure in separate portfolios products that were required by regulation (or law) to be priced together. The most common example of such a situation is the pricing of annuities

on a unisex basis. The board had been insistent that losses on such products (e.g., on women) should be recognized immediately while profits (on men) should be recognized over time.

At the meeting, however, the board relented to arguments from preparers and users and will allow such products to be measured together so that the combined profit will be recognized over time.

### OTHER ISSUES

Staff prepared brief notes on the 27 other sweep issues that had arisen during the review. The board approved the staff's proposals on these as stated in the paper for the meeting. There were another nine issues that staff and board agreed did not need to be addressed.

### MARCH PROGRESS REPORT

At the March board meeting, staff reported orally that everything was going as expected and that a final standard was expected at the end of May. Staff also stated that they would be looking for nominees to a transition group around the time the standard is released.

I hope that the transition group will include more than the one or two actuaries that have been included on advisory groups in the past. By now, everyone should realize the key role that actuaries play in insurance accounting and that

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



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# Purchase Accounting for Insurance Business Combination under China-GAAP from an Actuarial Perspective – Part II

By Vincent Y. Tsang, Bonny Fu, and Florence Ng

*This article first appeared in the May issue of International News. It is adapted here with permission.*

In Part I that was published in the December 2016 issue of *The Financial Reporter*, we discussed several theoretical topics regarding purchase accounting under China-GAAP. In Part II, we will discuss the following practical issues:

- Differences in product classification under China-GAAP and IFRS,
- Unbundling of insurance contracts,
- Allocation of acquisition expenses among components of the unbundled contracts,
- Relationship between residual margin (RM), best estimate liability (BEL) and risk adjustment (RA) due to assumption changes,
- Grouping of value of business acquired (VOBA) for amortization, and
- Shadow accounting

## PRODUCT CLASSIFICATION UNDER CHINA-GAAP

Under China-GAAP, insurers are required to perform a test of significant insurance risk for all of their insurance policies upon sales and subsequent reporting periods. Such tests should be performed separately for base policies and riders. If an insurance or reinsurance policy passes the test, it should then be accounted for using accounting standards for insurance contracts. Otherwise, other applicable accounting standards should be applied.

To perform the test, the insurer must first determine whether the risk transferred by the policy is a pre-existing insurance risk with commercial substance. If the transferred risk is not an insurance risk, such contract cannot be considered as an insurance contract. Second, the insurer calculates an insurance risk ratio<sup>1</sup> for each non-annuity contract.

If the insurance risk ratio at one or more renewal years equals or exceeds 5 percent, the insurance risk is regarded as significant and the policy is qualified as an insurance contract under China-GAAP.

For annuity policies, longevity risks can be significant. Therefore, for practicality and simplicity purposes, policies that transfer longevity risk are usually categorized as insurance contracts.

For reinsurance policies, the test is slightly different from that for insurance policies. The ceding company first determines whether the transferred risk is a pre-existing insurance risk with commercial substance. Then, the insurer computes the reinsurance risk ratio.<sup>2</sup> If the ratio equals or exceeds 1 percent (not 5 percent as used for direct business), the reinsurance policy is qualified as a reinsurance contract under China-GAAP.

Even if a policy is considered as an insurance contract at inception, the insurer is required to continually monitor the policy's status at each subsequent valuation date. If warranted, the insurer may re-classify the policy as a non-insurance contract.

As indicated in one of the examples illustrated by China Insurance Regulatory Commission (CIRC), if the insurance company expects that most of the insureds would choose the annuitization option based on the guaranteed annuitization rate, the company is subject to longevity risk and the policies are considered insurance contracts.

If, based on emerging statistics and external interest rate environment, the company recognizes at a subsequent date that most insureds would not choose the annuitization option due to a low guaranteed annuitization rate, the insurance company may re-evaluate the significance of the longevity risk of the policies and consider them non-insurance policies.

## PRODUCT CLASSIFICATION UNDER THE 2010 AND 2013 IFRS 4 PHASE II EXPOSURE DRAFT

There are minor differences between product classification guidance under China-GAAP and that defined in the 2010 and 2013 IFRS 4 Phase II exposure drafts ("2010 ED" and "2013 ED" respectively).<sup>3</sup> Paragraphs B1–B22 of the 2010 ED provide guidance on the definition of an insurance contract by addressing items such as "uncertain future event," "payment in kind," "insurance risks and other risks." This guidance assists insurers to determine the commercial substances of a policy.



Paragraphs B23–B31 of the 2010 ED provide further guidance on the criteria to determine the significance of insurance risk. According to paragraph B24,

*“Insurance risk is significant, if and only if, an insured event could cause an insurer to pay significant additional benefits in any scenario, excluding scenarios that lack commercial substance (i.e., have no discernible effect on the economics of the transaction). If significant additional benefits would be payable in scenarios that have commercial substance, the condition in previous sentence can be met even if the insured event is extremely unlikely or even if the expected (i.e., probability-weighted) present value of contingent cash flows is a small proportion of the expected present value of all the remaining cash flows from the insurance contract.”*

Thus, under the 2010 ED, a policy can be considered as an insurance contract if the insurer can:

- a. Identify one extremely unlikely scenario which can cause the insurer to pay significant additional benefits, or
- b. Determine whether the ratio between (i) the expected present value of contingent cash flows; and (ii) the expected present value of all remaining cash flows is greater than a threshold percentage.<sup>4</sup>

Due to the differences in definitions of insurance contract, a policy recognized as an insurance contract under the 2010 ED may not be recognized as an insurance contract under China-GAAP or vice versa.

Paragraphs 32–33 of the 2010 ED specify that a contract that qualifies as an insurance contract shall remain an insurance contract until all rights and obligations are extinguished. As mentioned earlier, under China-GAAP, an insurer is required to continually monitor the policy’s status and may reclassify an insurance contract as a non-insurance contract, if warranted.

Due to these differences in product classifications, a company preparing China-GAAP for the first time due to purchase accounting should assess whether the product classification under its existing accounting policy is consistent with that under China-GAAP.

## UNBUNDLING OF AN INSURANCE CONTRACT

Paragraphs 8–12 of the 2010 ED provides guidance that an insurer should unbundle an insurance contract into different components if the investment and the service components are not closely related to the contract’s insurance component. An investment component is considered to not be closely related to the insurance component if it reflects an account balance that meets the following conditions:



- a. The account balance is credited with an explicit return; and
- b. The crediting rate is based on the investment performance of the underlying investments such as a specific pool of investments for unit-linked contracts, a notional pool of investments for index-linked contracts or a general account pool of investment for universal life contracts.

Examples of unbundled components include embedded derivatives that can be separated from the host contract in accordance with IAS 39 as well as goods and services components that are not closely related to the insurance component.

Based on the comments from the industry regarding unbundling, paragraph 10 of the 2013 ED updates the unbundling guidance. An insurer should only separate an investment component from its host contract if the investment component is distinct. Paragraph 32(b) of the 2013 ED further indicates that if the lapse or termination of one component in a contract causes the lapse or termination of the other components, the insurer should apply the Insurance Standard to the whole contract (i.e., not unbundling). Under this guidance, a universal life contract probably should not be unbundled. For more information, please see the illustrative example in paragraph IE3 of the 2013 ED.

Paragraph 10(d) and BCA208 of the 2013 ED also prohibit insurers from separating components when it is not required.



China-GAAP guidance, on the other hand, requires an insurer to unbundle the contract into components if the insurance risk and the other risks can be separated and independently measured. If the components cannot be separated and the insurance risk is significant, the entire contract is considered as an insurance contract. If the insurance risk is not significant, it should not be recognized as an insurance contract.

The exact definition of “separable,” however, is not provided.

We studied market practice in China and it appears that most companies follow the guidance provided in paragraphs 8–12 of the 2010 ED. That is,

- Universal life, unit-linked contracts and other contracts which have an explicit account value are unbundled into separate investment and insurance component;
- Premiums, premium loads, contract charges and acquisition expenses are fully allocated to the investment component;
- Cost of insurance charges which are deducted from the account value are considered as cash inflows of the unbundled insurance component; and
- Whole life or participating policies which do not have explicit account value are not unbundled.

While we can debate which way is a better way to unbundle an insurance contract, the current market practice in China provides a head-up for companies preparing China-GAAP for the first time.

After a contract is unbundled into its investment and insurance components, the next step is to determine the BEL, RA and risk margin (RM) of the insurance component. For products which are priced with proper cost of insurance (COI) charges, the insurance component should be self-supporting. However, if the product is priced with low COI charges and the investment spread is used to subsidize the COI charges, the insurance component may become an onerous contract and require loss recognition even when the contract, as a whole, is profitable.

When such a situation happens, an insurer may consider combining the COI charges with other charges collected from the policy as cash inflows for the insurance component so that the present value of the combined charges is greater than the present value of cash outflows (e.g., death benefits).

For products which are priced with minimal contract charges or no COI charges, using the method mentioned above may still result in an onerous insurance component.

An insurer facing this issue may consider leveraging on the total assessment approach mentioned in the Statement of Position 03-1 under USGAAP for the guaranteed minimum death benefit (GMDB) of variable annuity contracts. Under the total assessment approach, the sum of the investment spread and other charges collected from the variable annuity contract is used as the revenue stream to reserve for the GMDB. For a universal life policy with low or no COI charges, the insurer may study the pricing document and identify the amount of interest spread which is priced to subsidize the COI charges. From an economic perspective, allocating an appropriate portion of investment spread as additional cash inflows for the insurance component to avoid loss recognition appears to be a viable solution. However, such practice is not common in China. Instead, companies would typically reprice the product with different product designs so that risks can be minimized.

### ALLOCATION OF ACQUISITION EXPENSES

An aftermath of unbundling components of a policy (e.g., universal life policy) is the allocation of premiums, acquisition expenses, charges, etc. among the components. A common market practice in China is to allocate all premiums, acquisition expenses, and policy charges such as front-end load and administration charges to the investment component. The insurance component only receives charges (e.g., COI charge) from the investment component as cash inflows and pays the death benefits as cash outflows.

According to China-GAAP guidance on liabilities for non-insurance contracts, the liability of the unbundled investment component of a universal life policy is the account value less the unamortized net acquisition expense. The amortization is based on an effective interest rate method and the net acquisition expense is the acquisition expense at issue less the applicable initial policy charge such as initial premium load.

Normally, acquisition expense is greater than the initial policy charge such that the net acquisition expense is positive. If the policy charge is greater than the acquisition expense, the guidance does not specify whether the insurer can recognize the profit or capitalize it as an unearned revenue liability. As the insurer has yet to complete the earning process, the insurer may consider recognizing the negative net acquisition expense as unearned revenue liability.

In practice, many companies simply hold the account value as the liability and let the acquisition costs and policy charges flow through the P&L.

### RESIDUAL MARGIN AND CHANGES IN BEL AND RA

In Part I of this article, we discussed two different ways to treat the RM at the time of acquisition. One possible way is to maintain the existing RM and define book value of liability as

the sum of BEL, RA and RM. In this case, both the actuarial reserve and the VOBA will be inflated by the RM.

An alternative is to set RM to zero so that the resulting VOBA is not inflated.

The market practices in measuring RM in subsequent valuation dates vary among companies. Some companies follow the guidance in the 2010 ED such that RM is determined at inception and is not adjusted subsequently. If there are any changes in BEL and RA in subsequent periods, the changes in BEL and RA due to assumption changes would flow through the income statement.

Some companies in China, on the other hand, do not follow this “locked-in” approach. Instead, they follow the guidance in paragraphs 29–32 of the 2013 ED where changes in BEL and RA in subsequent periods could be absorbed by changes in RM. For companies which define RM as zero in the initial PGAAP balance sheet, it does not necessarily mean that RM cannot be positive in subsequent measurement. An acquirer must define clearly in its accounting policy whether it follows the guidance in the 2010 ED or the 2013 ED on RM. That is, whether the changes in BEL and RA due to assumption changes should be reflected in the income statement or absorbed by RM.

### GROUPING OF VOBA FOR AMORTIZATION

If the acquired company has many blocks of business, there could be many VOBAs for amortization. If the definition of the unit of account is at a lower level, the number of VOBAs can be in the thousands and it would be a practical challenge for companies to amortize a large number of VOBAs and monitor their reasonableness.

For blocks with immaterial VOBA, the acquirer may consider assigning their VOBA to other major blocks of business for practical reasons as long as the inclusion of these small VOBAs would not materially affect the profit emergence of the bigger block.

### RELATIONSHIP BETWEEN DISCOUNT RATE AND SHADOW RESERVE

As all assets and liabilities are marked to market at the acquisition date, the book values of the invested assets will be replaced by the market value at the acquisition date and the previous book yields will also be replaced. The change in book yield has important implication on the reserve of par business because the discount rate is based on the company’s projected future earned rates and reinvestment rate.

### DISCOUNT RATE FOR PARTICIPATING BUSINESS

China-GAAP literature is silent on whether the discount rates for par business shall be based on the book yield or the market

yield of the supporting assets. From a matching of investment income and interest expense perspective, it would make sense that the discount rates should be consistent with the yields on supporting assets based on their asset classification. That is, if all of the supporting assets are classified as held-to-maturity (HTM), the discount rates should be based on their book yields.

Due to the lack of clear guidance, if the supporting assets are a mixture of HTM and available-for-sale (AFS) assets, it is not clear whether the company should simply use the book yields of the supporting assets regardless of their classification or a blend of book yields and market yields. It would seem to make sense to discount the future benefits using the blended yield rates.

If the discount rates are based on blended yields, any unrealized capital gain or loss (URGL) would affect the market yields of AFS assets and the resulting discount rates. The change in reserve due to the change in market yield would partially offset the change in market value of AFS assets on other comprehensive income (OCI) and equity.

If the discount rate is based on book yields even when some of the supporting assets are classified as AFS, the URGL of the AFS assets would then have a larger impact on the equity as the change in market yields would not affect the discount rate and the actuarial reserve.

### NON-PARTICIPATING BUSINESS

The discount rate for non-participating business (such as term insurance or the insurance component of universal life) is based on the 750 days moving average of Chinese national debt yield and liquidity premium. Thus, it is independent of the yield rates of the supporting assets.

If some of the supporting assets are AFS assets, the URGL would directly affect the OCI and the equity.

### UNREALIZED CAPITAL GAIN/LOSS AND SHADOW ACCOUNTING

Shadow accounting is a common concept under IFRS to mitigate the impact of URGL on income and equity. Currently, there is no shadow accounting guidance under China-GAAP.

For participating business, if the URGL is recognized and the amount is expected to be shared<sup>5</sup> between policyholders and shareholders, a company may consider setting up a shadow reserve adjustment (e.g., 80 percent of the URGL) to account for future dividend changes due to the URGL.

For non-participating policies such as term insurance, the URGL would not be shared with policyholder in terms of dividends. As there is no DAC under China-GAAP, the shadow DAC approach under US GAAP is not applicable. Thus,

shadow accounting may not apply for non-par business and URGL may directly affect the OCI and the equity.

### CONCLUSION

We are only at the initial stage of discussing issues related to preparing PGAAP under China-GAAP. The guidance from the China Insurance Regulatory Commission (CIRC) will continue to evolve and become clearer with more actual cases. In addition, CIRC may incorporate the updated provisions of IFRS 17 into the future China-GAAP. Refinements to the actuarial processes would be inevitable.

This article (Part I and II) is intended to initiate discussions among actuaries rather than to provide strict answers. Practitioners are encouraged to further discuss this subject in future professional publications and conferences.

*Disclaimer: The views reflected in this article are the views of the author and do not necessarily reflect the views of the global EY organisation or its member firms. ■*



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### ENDNOTES

- 1 Insurance risk ratio =  $\left( \frac{\text{Benefit paid by the insurer should the insured event occur}}{\text{Benefit paid by the insurer should the insured event not occur}} - 1 \right) \times 100\%$ .  
The denominator refers to the surrender benefit or maturity benefit. For non-life contracts, it refers to surrender benefit or the amount paid by the insurer when the contract is terminated.
- 2 Insurance risk ratio for reinsurance policy =  $\left( \frac{\sum \text{Present value of the losses suffered by the reinsurer under a net loss scenario} \times \text{probability of the net loss scenario}}{\text{Present value of reinsurance premium received by the reinsurer}} \right) \times 100\%$
- 3 This article focuses on the 2010 and 2013 exposure drafts since IFRS 17 has not yet been officially adopted by CIRC.
- 4 The threshold percentage should be based on the insurer's internal accounting policy.
- 5 The sharing percentage should be based on the policyholder reasonable expectation.





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# Preparing for the Future: Understanding the Issues from the 2017 Living to 100 Symposium

By Faye Albert

While there is a long-term trend indicating mortality improvement, the underlying causes of improvement change over time and differ by age. Medical and scientific developments contribute to the changes. The Society of Actuaries has sponsored a research program “Living to 100 and Beyond” for the last 15 years. The symposia, held every three years, and most recently held this January, focus on the big picture relating to changes in high-age mortality, and bring together a diverse group of experts with different perspectives on the need to understand changing life spans and adapt to longer life spans. These programs are a place for new ideas, exchange of information, controversies, learning how other disciplines view related issues and identifying points of agreement and disagreement.

I enjoy participating every three years because each symposium gives me a chance to learn about new scientific research and to network with people from different disciplines. I hope that many of you will read the papers and the overview paper, and that you will participate in the next rounds of Living to 100. Thank you to the Society of Actuaries for this effort.

Also, thank you to Anna Rappaport for her summary of the meeting highlights prepared for the pension section newsletter. Some of her findings are liberally included in this article.

## MORTALITY IMPROVEMENT: A MAJOR CONCERN

Actuaries establish prices and calculate reserves for financial products. Rates of mortality improvement are important in these calculations; different mortality tables are used for different products based on the populations covered.

Living to 100 was started around the year 2000 because of the difficulty in finding reliable data at very high ages and the added difficulty of projecting change. In 2017, public pension actuaries from the U.S., U.K. and Canada again compared mortality

## ACCESSING INFORMATION ABOUT LIVING TO 100

For each of the six symposia there is a monograph on the Living to 100 website at <https://livingto100.soa.org/monographs.aspx>. The 2017 monograph including the new papers should be ready late in 2017.

All of the papers from 2002 to 2014 and the findings are summarized in a report prepared by Ernst and Young. This report is split between technical issues and implications, and can be found at <https://www.soa.org/Research/Research-Projects/Life-Insurance/soa-living-100.aspx>.

The report also highlights areas of agreement and differences and it includes abstracts for all of the published papers in an appendix.

and projection methodology. All agreed that mortality improvements at the high ages are slowing compared to the last 25 years. Canadian mortality continues to be significantly lower than U.S. mortality. The U.S. has a shorter life expectancy than many countries.

In addition to the methods described by the public pension actuaries who consider cause of death analysis in setting improvements, Larry Pinzur presented a session on mortality improvement approaches. One approach taken is to blend near-term mortality improvement, based on recent experience, with longer-term mortality improvement, based on expert opinion.

It was interesting that at the 2017 symposia there did not seem to be any major disagreements about future mortality improvement levels, especially as to the upper limit to human life. This was in sharp contrast to some of the earlier conferences. Perhaps this reflects a different attendee mix at this conference.

## IMPORTANT SCIENTIFIC ISSUES: BIOLOGY—NEW APPROACHES TO ANALYZE AGING

Focus on biology has been a regular part of Living to 100. In 2017, there were two major presentations highlighting developments in biological and medical research. Overlapping content in those presentations pointed to evidence that there is a biological aging process related to the development of many different diseases. If that aging process can be stopped or slowed down, medical science would be able to extend the period that people are able to live healthy lives. Such intervention does not seem to impact total life span, but it does seem to reduce the portion of life that is infirm. Such a result would drastically reduce the number and growth in numbers of disabled elderly!

Nir Barzilai is Professor of Medicine and Genetics at the Albert Einstein College of Medicine at Yeshiva University and Director of the Institute for Aging Research. His presentation was titled, “How to Die Young at a Very Old Age.” He is conducting research on centenarians, and searching for a drug that can intervene in the aging process. He is actively involved in promoting a large research project “TAME: Targeting Aging with Metformin,” hoping the study will demonstrate Metformin can target multiple morbidities of aging, and that it will then be approved for use on a widespread basis. This is a different paradigm for studying next generation drugs. It targets multiple morbidities of aging instead of developing treatment for a particular morbidity. If Dr. Barzilai’s team achieves the hoped-for results, this work could help in extending healthy life expectancy and lead to major reductions in medical costs. It could also change the way medicine is practiced to focus less on specific diseases and much more on the total person and on cross disease prevention. (You can learn more about his research at <https://www.einstein.yu.edu/centers/aging/longevity-genes-project/>.)

Judith Campisi is an internationally recognized biochemist at the Buck Institute for Research on Aging. She has made contributions to understanding why age is the largest single risk factor for developing a variety of diseases including cancer. She explained cellular processes and senescent cells—older cells that have stopped dividing—and how they contribute to disease and the aging process. Senescence occurs when cells experience certain types of stress, especially stress that can damage the genome. The senescent cells help prevent cancer by blocking damaged cells from multiplying. But, there is a trade-off: the lingering senescent cells may also cause harm to the body. Her research group found evidence that senescent cells can disrupt normal tissue functions and, ironically, drive the progression of cancer over time. Senescent cells also promote inflammation, which is a common feature of all major age-related diseases. Her research is shedding light on anti-cancer genes, DNA repair mechanisms that promote longevity, molecular pathways that protect cells against stress, and stem cells and their role in aging and age-related disease. Her research integrates the genetic, environmental and evolutionary forces that result in aging and age-related diseases, and identifies pathways that can be modified to mitigate basic aging processes. She is collaborating with many other research groups on similar issues. Her research and related work has the potential to make major changes in the way aging and disease are viewed. (For more information about her work, see <http://www.buckinstitute.org/campisiLab>.)

Together, these two presentations suggested that major changes in the way we view aging and deal with the diseases of aging can lead to a big reduction in the number of sick years at the end of life.

In the final panel Jay Olshansky suggested that if we continue to consider major causes of death individually, without addressing together the combined diseases observed during aging, we can expect longer and longer periods of frailty, which in turn would lead to greater demands for long-term care. We all have a major stake in successfully addressing the aging issues so that we can have healthier lives.

## REPEATED THEMES—COPING WITH AGING

The individual has to take responsibility for planning to deal with aging. Research by the Society of Actuaries’ Committee on Post-Retirement Needs and Risk has documented gaps in knowledge when surveying how people plan and manage assets. Shocks are important and often dealt with as they happen. Living to 100 touched on these topics several times.

Retiring later and working in retirement were mentioned during the discussions, but there was much less emphasis on these topics than in 2014. Financial products (annuities, both deferred and immediate) seem to be offered as a solution for individuals in every recent Living to 100 symposium. However, research by the Committee on Post-Retirement Needs and Risk indicates that financial products other than health insurance are not very popular with individuals; people tend to rely more on employee benefits. As retiree employee benefit programs have been reduced, individuals have not made up the difference.

There was emphasis on illness and the need for long-term services and support throughout the conference. The scientific presentations pointed to developments that may reduce the need for such services in the future. However, the public policy panel on the Impact of Aging pointed out that there are gaps in the system for providing and financing support in all of the countries discussed.

Changes in longevity impact actuarial calculations for both new product pricing and valuation. We need to consider these changes and estimate their impact in our work. ■



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# The SOA Regulatory Web Resource: A Tool for Understanding Regulatory Change

By Robert Leach

**T**he August/September 2016 edition of *The Actuary* announced the rollout of the SOA's web-based Regulatory Resource, which can be found at [www.soa.org/regulatoryresource](http://www.soa.org/regulatoryresource). The resource was developed in response to consistent input over several years from SOA members about the difficulty of responding to regulatory change. While email alerts announcing breaking regulatory changes are common, it can be much harder to learn about regulations released a few weeks ago. By providing a curated list of recent regulatory changes by practice area, this web-based resource seeks to fill this gap.

The resource is currently organized into three practice areas: life & annuity, health and long-term care (LTC). Each practice area has a separate page containing links to information on recent developments and emerging issues. All links are accompanied by a brief (in most cases, one sentence) description of what the link leads to, making it easy to scan and quickly find relevant information.

For example, the Life & Annuity page provides an entire section devoted to principle-based reserves (PBR), including links to the proposed PBR Actuarial Standard of Practice (ASOP) and the Academy's Model Governance Checklist. Other areas of this page cover accounting and capital standards, Academy practice notes, National Association of Insurance Commissioners (NAIC) committee documents (including the most recent version of the Valuation Manual), international and insurance product regulations. The health page covers topics related to the Affordable Care Act (ACA) including pricing and risk adjustment, and non-ACA topics including Medicaid, Medicare and important court cases. The LTC page provides a number of resources related to premium rate filings. All three pages include links to ASOPs.

Given the ever accelerating pace of change, a good deal of effort has been expended to keep these pages current and relevant. Each page is maintained by a team that meets regularly to review

recent developments and modify content accordingly. In some cases, the scope of topics has been expanded in response to input from SOA membership. For example, the life & annuity page initially focused exclusively on U.S. related topics, but has been expanded to feature international topics such as the Life Insurance Capital Adequacy Test guidelines recently promulgated by Canada's Office of the Superintendent of Financial Institutions.

It is important to take note of what the resource is **not**. From the beginning, the SOA established the principle that the information provided is from primary sources—recognized regulatory bodies, such as the NAIC, the Academy and others. We have purposefully avoided interpreting these documents—that is the job of the actuarial professionals who use this resource.

Some questions you may have:

**How can I find this resource?** Go to [www.soa.org/regulatoryresource](http://www.soa.org/regulatoryresource). Or from within the SOA website, there are two ways to find it:

- At the bottom of each page you will find the Regulatory Resource under “Resources,” and
- Under the “Digital Tools” navigation menu drop down, the Regulatory Resource can be found under “Actuarial Practice.”

The Financial Reporting Section home page also provides a direct link to the resource. Once you're there, you may want to add it to your favorites.

**How does the SOA maintain the currency of this resource?** Teams meet monthly to discuss updates to content and other potential changes to optimize the user experience.

**I didn't find anything on the resource about an important regulatory issue. What should I do?** While the teams who maintain the resource represent a range of knowledge and practice areas, we are not omniscient! We will gladly consider any feedback, including suggestions for improvement to source information or additional relevant topics. Each page of the resource features a link that can be used to contact us with your thoughts.

**Gee, this sounds like something that could be right up my alley. How can I get involved?** We welcome your participation! Feel free to reach out to the author or to Joe Wurzburger at the SOA ([jwurzburger@soa.org](mailto:jwurzburger@soa.org)). ■



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# Financial Reporting Research Update

By Jim Hawke 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 March 2017, on projects in process, on the horizon, and recently completed.

## ON THE HORIZON...

Expansion of the 2015 report on Earnings Emergence Under Multiple Financial Reporting Bases to examine additional products and accounting changes is being considered. The original report looked at deferred annuities and term life insurance. The expanded report would add universal life and make updates for principles-based statutory reserves, targeted US GAAP changes, and the expected final version of IFRS for insurance products.

## CURRENTLY IN PROCESS...

PBA Change Attribution Analysis—this project will study the drivers of change in principles-based reserves. The project oversight group has selected a researcher and work is in the middle project stage.

Simplified methods for principle-based reserve calculations—the project oversight group has selected the researcher and work is in the middle project stage.

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 is in the late stages and we anticipate publication very soon. The POG received comments from regulators and is making final adjustments.

## COMPLETED IN 2017 ...

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>

## COMPLETED IN 2016 ...

Nested Modeling—A company survey on the use of nested stochastic modeling and an analysis of ways to reduce run time and improve the efficiency of nested simulations: <https://www.soa.org/Research-Reports/2016/nested-stochastic-modeling>

PBA Implementation Guide Update and PBA Beginning Tales: <https://www.soa.org/Research/Research-Projects/Life-Insurance/research-2013-pba-implementation-guide.aspx>

Retention Management: <https://www.soa.org/Research/Research-Projects/Life-Insurance/research-quantitative-retention.aspx>

Predictive Analytics Call for Papers: <https://www.soa.org/News-and-Publications/Publications/Essays/2016-predictive-analytics.aspx>

## COMPLETED IN 2015 ...

Transition from Low to High Interest Rates: <http://www.soa.org/Research/Research-Projects/Life-Insurance/research-2015-rising-interest-rate.aspx>

Multiple Measurement Bases: <http://www.soa.org/Research/Research-Projects/Life-Insurance/2015-earnings-emergence.aspx>

VBT/CSO Impact Study: <http://www.soa.org/Research/Research-Projects/Life-Insurance/research-cso-impact-study.aspx>

Tail risk/correlation of risk primer: <http://www.soa.org/Research/Research-Projects/Life-Insurance/2015-extreme-events-for-insurers.aspx>

Many of these projects were co-sponsored with other sections and organizations. Please visit the SOA research website for more information, or contact Jim Hawke or Ronora Stryker. ■



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