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## Two New Bases, One Big Transformation—Thoughts on Concurrent Implementation of two Accounting Bases

By Aisling Metcalfe, Gavin Stewart and Alex Zaidlin

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# The Financial Reporter

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To join the section, SOA members and non-members can locate a membership form on the Financial Reporting Section Web page at <http://www.soa.org/sections/financial-reporting/financial-reporting-landing/>.

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# Chairperson's Corner: Giving Thanks and Looking Ahead

By Simpa Baiye

I'm incredibly honored to serve as the chair of the financial reporting section following two years on the council and five years of SOA council membership. Wearing the esteemed green jacket and stepping figuratively into the shoes of Bob Leach (our outgoing chair) represents a wonderful opportunity to serve and comes a couple of decades after a decision to become an actuary at the ripe old age of 13. (Thanks to Dad and Mom for the early career talk!)

I'd like to thank Bob Leach for his sterling leadership of the council in the past year and for his tireless and effective service on the council. We also had two section council members who rolled off the section council this quarter: I'd like to thank outgoing members David Ruiz and Ashwini Vaidya for their work over the past three years in putting together professional development opportunities and (more recently) for serving in their respective roles as treasurer and webcast coordinator. I look forward to seeing all outgoing council members take advantage of volunteer opportunities as friends of the council. I'm also pleased to acknowledge our newly elected council members as of the October 2018 Annual Meeting: Douglas Van Dam, Mark Walker and Robert Winawer. Congratulations to you and welcome to the council!

## WHAT TO EXPECT IN THE COMING YEAR

The next couple of years herald the interpretation and implementation of significant changes in financial reporting standards both in the United States and on the international front (e.g., IFRS 17, US GAAP targeted improvements), and within national boundaries (e.g., variable annuity reserves and

capital, life PBR). In addition to providing relevant *The Financial Reporter* content, the section council will work to provide professional development opportunities in the following areas:

- **Professional development sessions:** The council will sponsor relevant sessions at the Life and Annuity Symposium in Tampa, Fla. and at the 2019 SOA Annual Meeting & Exhibit in Toronto, Ontario. We will continue to fully support the Valuation Actuary Symposium and US GAAP seminars.
- **Research and textbook sponsorship:** We continue to support research initiatives that are relevant to the professional challenges and opportunities of section members. These include areas such as simplified underwriting and earnings emergence under various accounting bases. Efforts are well underway toward publishing an IFRS 17 textbook and an update to the US GAAP textbook. Many thanks to Tom Herget and Jim Milholland for their ongoing work in this regard.
- **Webcasts, podcasts and the regulatory resource webpage:** Webcasts and podcasts will be scheduled on a regular basis and will complement meeting session topics throughout the course of the year. We will look to conduct "town hall" style webinars for the appropriate topics. The regulatory resource webpage (<https://www.soa.org/resources/regulatory-resource/default/>) will remain a valuable one-stop shop for curated content governing life and annuity products.

We appreciate your input on these opportunities and would encourage you to get involved in any way that you can. Writing articles, helping create meeting sessions, and helping recruit volunteers for sponsored research are but a few ways in which you can get involved in the coming year. Let us know if there are other opportunities to meet your needs that we have not considered. Have a great holiday season ahead and a good year in 2019! ■



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# Two New Bases, One Big Transformation—Thoughts on Concurrent Implementation of two Accounting Bases

By Aisling Metcalfe, Gavin Stewart and Alex Zaidlin

For insurers that are public filers reporting under US GAAP, the Financial Accounting Standards Board (FASB) has confirmed that the effective date of Accounting Standards Update (ASU) 2018-12, Targeted Improvements to the Accounting for Long-Duration Contracts, also referred to as “US GAAP Targeted Improvements,” will be Jan. 1, 2021. This coincides with the effective date of IFRS 17. The latter will impact multi-national insurers who also have to report in certain jurisdictions under IFRS, or U.S. subsidiaries of multi-national insurers located in different jurisdictions which complete consolidated reporting under IFRS.

While these two standards are very different, the approach to implementing each accounting change has similarities, and can even result in significant synergies derived from implementing the two bases concurrently. Typically, one of the standards will be more relevant to a company than the other. For example, insurers domiciled in the United States with international offices may be more concerned with detailed, fully operationalized implementation of the US GAAP Targeted Improvements.

This article focuses on considerations for those companies that will be implementing both IFRS 17 and US GAAP Targeted Improvements, but the practical considerations are common to

A holistic roadmap can be developed, with interdependencies and interaction points accounted for in detail.

both implementations and will also be of interest to readers who are only implementing one of these changes.

## SYNERGIES OF DUAL IMPLEMENTATION

There are many synergies to concurrent program management. It is less disruptive to have a single agenda to facilitate change and adoption management. A single transformation team across both reporting bases can help drive momentum and keep costs down. Stakeholder engagement tends to be more effective, since combining multiple priorities into one project plan makes it easier to track progress against the project timeline and reduces competing needs. Additionally, significant budget and resource savings can be realized when supporting multiple major initiatives in one project plan.

A holistic roadmap can be developed, with interdependencies and interaction points accounted for in detail. Where model platforms are consistent between the two programs, a consistent model enhancement testing strategy and acceptance process will better clarify requirements for all stakeholders. Assumptions and inputs can be aligned more closely, bringing efficiencies to the assumptions setting process. IFRS 17 requires a current measurement approach, which involves updating assumptions. Under the Targeted Improvements, insurance entities must review assumptions for traditional and limited-payment contracts, and if there is a change, update the assumptions used to measure cash flows at least annually. Additionally, the discount rate must be updated at each reporting date. Applying IFRS 17 and Targeted Improvements together for traditional and limited-payment contracts may allow the development of an assumption setting process that can be used for both standards.

Concurrent implementation allows for software and vendor selection covering both reporting bases and therefore provides an opportunity to choose a single software solution. To the extent that cash flows are the same under the two bases (where there are no differences in contract boundaries between the two standards), significant savings in model runtime can be realized since best estimate cash flows will only need to be projected once. There should also be savings on the design and development of the solution for the data supporting the multiple bases. The expectation is that the data solution will be defined so that it is flexible, historic, granular and detailed enough to meet the requirements for U.S. and international reporting bases. This will avoid rework, which typically comes with high cost.

The process for bridging between metrics can be established prior to implementation. Where practical, a consistent set of reporting and analysis tools may be defined. On-cycle reporting effort and elapsed time can be reduced, provided that the process is built without excessive steps to quantify minor differences.



Communication with senior management and investors can be improved as a result of consistent analysis across metrics.

## PLANNING

Generally, most entities will begin their process by digesting the standard to understand its general principles. Then management will want to determine an initial assessment of the impact on its business, operations, people and financial reporting. This assessment may include things such as:

- Financial assessment;
- Operational assessment;
- Educational and change management needs analysis; and
- A roadmap for moving into the design and implementation stages.

The financial impact assessment involves agreeing on key methodology and design decisions, and governance for capturing these decisions. A financial impact assessment should be carried out for key product groups, focusing on impact on financial key performance indicators (KPIs), profitability and dividend payment ability. It is helpful to use a simplified prototype model as well as sample policy-level calculators to understand the impact of key methodology and design decisions on the company's business. Using the prototype model as well as consistently formatted policy-level calculators for IFRS 17 and US GAAP Targeted Improvements would optimize the modeling process, standardize ongoing model updates and allow for easier and more transparent communication with key stakeholders. The financial impact assessment may try to maximize alignment of methodology and design decisions between the two programs.

The operational impact assessment involves creating an illustrative current and future state of IT, actuarial, accounting and reporting processes to understand potential impacts and identify gaps in the current processes. A target process should be

designed, and the assessment should clarify changes required to current close processes, new processes to be implemented and assure appropriate resourcing and technology exist to support these. This stage includes a gap analysis on current data, assumptions, systems and reporting processes. Many of the processes for the two bases may be able to be implemented in parallel, which could help reduce resource strain. One of the key objectives of the operational impact assessment stage is to identify synergies in the business as usual processes and streamline future state design of IFRS 17 and US GAAP reporting to the extent possible.

In order to set up an implementation plan a company needs to analyze the transition options and determine a realistic path forward, based on the financial and operational assessments, including availability and accessibility of historical data, assumption data, technology infrastructure, resource skill and availability, actuarial and accounting system capabilities, and budget constraints. A transition roadmap will detail decisions, resources, dependencies and budget required to meet the implementation timeline. Ideally this would include time for parallel runs. A plan to educate key stakeholders about the upcoming changes and their respective roles in the transformation processes can help to smooth the way to a successful implementation. Each functional area of the company should be clear on the upcoming changes to their routine processes, as early education can help ensure buy-in from stakeholders.

Planning to implement both bases is more complex and needs to manage competing priorities and resource constraints. The plan should aim to consolidate and streamline similar processes, including possible cross-use of resources. Early educational programs will be especially important in this case, as a two-basis implementation is more complex than one, and a more impactful message to stakeholder and management will be needed.

Table 1  
Comparison of US GAAP Targeted Improvements and IFRS 17

	US GAAP Targeted Improvements	IFRS 17
Implementation timeline	Required for public business entities for fiscal years beginning after 12/15/2020 (effectively 1/1/2021). Early adoption permitted.	Required adoption date of 1/1/2021. Early adoption permitted (if IFRS 9 and IFRS 15 have been implemented).
Measurement model	Multiple measurement models, depending on product type (e.g., traditional and limited-payment contract, non-traditional, participating contracts, market risk benefits). Models do not require explicit risk adjustment or contractual service margin.	The general measurement model applies to all groups of insurance contracts in the scope of IFRS 17. However, simplifications or modifications apply to groups of: <ul style="list-style-type: none"> <li>– insurance contracts measured using the premium-allocation approach;</li> <li>– investment contracts with discretionary participation features (DPF); and</li> <li>– reinsurance contracts held.</li> </ul> The way in which this model is applied to direct participating contracts, referred to as the variable fee approach, differs in certain ways as well. A simplified approach (premium-allocation approach) is available if certain conditions are applied. Generally, this approach may be applied to short-duration contracts. IFRS 17 does not introduce the concept of market risk benefits.
Assumptions	Cash-flow assumptions are best-estimate, reviewed at least annually for traditional and limited-payment contracts.	Liability assumptions are best estimate (central estimate, where stochastic modeling is required), updated at each reporting period. Assumptions include an explicit risk adjustment for non-financial risk.
DAC	DAC is to be amortized on a constant level basis and not tied to expected profit. DAC is written off for unexpected contract terminations, but is not subject to an impairment test. Shadow DAC adjustment no longer required.	DAC is implicit in the calculation of the liability. Insurance acquisition costs included in the IFRS liability calculation are different from insurance acquisition costs eligible for deferral under US GAAP.
Discount rates for determining the present value of future cash flows	Discount rate based on an upper-medium grade (low-credit risk) fixed income instrument yield, to be updated each reporting period.	The discount rate used should maximize the use of observable inputs and reflect the cash flows' characteristics and the contract's liquidity.
Transition arrangements	Transition method for liability for future policy benefits and DAC is to apply to contracts in force as of the beginning of the earliest period presented. May elect to apply retrospectively.	Transition methods include full retrospective (required if practicable), modified retrospective and fair value.
Disclosure	Enhanced and more granular disclosure requirements.	Enhanced and more granular disclosure requirements.

## GAAP TARGETED IMPROVEMENTS VS. IFRS: SUMMARY

Table 1 summarizes some of the US GAAP Targeted Improvements and IFRS 17 changes for key areas. For US GAAP Targeted Improvements, best-estimate cash flow projection models will need to be developed for all traditional and limited pay products, including long-term care and disability insurance. The need to incorporate historical information may make a grouped reserve calculation, rather than individual policy reserve calculations (e.g., GAAP factors), more appropriate. A new approach to DAC calculation (constant-level basis) will need to be developed; revamping the DAC process will require decisions related to data, amortization approach and contract grouping.

Both reserving bases use best estimate assumptions, although there are some differences in definitions, and in both cases there are changes to reporting and disclosure requirements.

As the table illustrates, there are significant differences between Targeted Improvements and IFRS 17. However, there are also many similarities, especially in assumption setting, and with careful planning these similarities provide opportunities for savings in both cost and effort.

## EXPLORING DATA NEEDS

A first step in determining data needs is to assess the current state, including data availability, accuracy and completeness, and in particular, whether the current data solution is granular and flexible enough for the new basis, including historic information as required. This could be done by surveying company offices (including international offices) and requesting details on the availability and granularity of data at each location. Since some of the data components for US GAAP and IFRS 17 are similar, a consolidated information survey would save resource time and allow for a comprehensive picture of the current state for each office. Next, the company needs to identify the desired future infrastructure, required data elements and data flow processes. New elements required by the US GAAP Targeted Improvements include historical actuals and grouping indicators, depending on product. IFRS 17 will also require historical actuals and data for grouping purposes. The CSM and loss component calculations will also require tracking and storing historical data. A gap analysis of the data requirements for the new basis will be needed. This process will include identifying the business owners of systems and data, and defining governance requirements. Some companies or business units may have already done much of this work for Solvency II.

Another initial approach is to use reverse engineering, i.e., to start with the elements required for the financial reports and disclosures, and work backwards from these to determine the data needed.

Depending on the measurement model, data needs for the two bases may be similar. While there are certain differences between IFRS 17 and US GAAP Targeted Improvements, notably in the definitions of contract boundaries and attributable expenses, some best estimate assumptions, e.g., mortality, are likely to be the same. Data underlying such assumptions should be consistent, including data to generate best estimate assumptions from the company's own experience. Both bases will require some sort of grouping of data: while mapping may be different, the process of consolidation will be similar. Both bases will probably require a platform to take data from actuarial and finance repositories to calculate DAC amortization and CSM. Discount rates under both bases will use market data and will need a process to integrate external data.

Implementing the data changes will require a plan and roadmap. It is often helpful to design a representative data flow prototype to demonstrate the desired future state processes on a smaller subset of data. After implementing the changes, extensive testing will be needed, including tests of data elements, user acceptance testing, and parallel testing of the new processes.

## MODELING AND SYSTEM CONSIDERATIONS

Both US GAAP Targeted Improvements and IFRS 17 use best-estimate cash flows. However, there are multiple measurement models for US GAAP Targeted Improvements but only one measurement model (with modifications) for IFRS 17. Targeted Improvements retains a net premium model (for products that do not follow deposit accounting), and there is separate determination of market risk benefits. For IFRS 17 the general measurement model applies to all groups of insurance contracts in scope. However, simplifications or modifications apply to groups of insurance contracts measured using the premium-allocation approach, investment contracts with DPFs, and reinsurance contracts. There are also certain differences in the way in which the general model is applied to direct participating contracts, referred to as the variable fee approach. Some actuarial modeling systems may be better positioned to model one basis or another. Companies will need to consider carefully which modeling system best aligns with their needs; ideally a single platform would be used for both bases.



Companies will also need to consider transition methods and whether changes in modeling approach need to be applied retrospectively. For US Targeted Improvements, some of the changes in modeling are applied for contracts in force as of the beginning of the earliest period presented or can be elected to be applied retrospectively if certain conditions are met (e.g., liability for future policy benefits and DAC). Other changes, such as market risk benefits, are applied retrospectively. Under IFRS 17, an entity will have to apply the standard retrospectively. However, if it is impracticable to use a full retrospective approach, it may choose between a modified retrospective approach or a fair value approach. The latter is not necessarily based on historical information. An entity can apply different transition approaches to different groups of contracts, if appropriate, under IFRS 17. In both cases, an entity would ideally implement the required changes in its models prior to the effective date to allow it to carry out parallel runs. Many IFRS 17 reporters are planning for a full year of parallel runs.

In addition to actuarial modeling system alignment, companies will need to choose a reporting solution. For US GAAP, many companies calculate DAC externally to actuarial systems. Additionally, the new regulation will require a significant increase in granularity of reporting and disclosures. For IFRS 17, a CSM calculating engine will need to be developed.

The process to implement the accounting change is similar for both cases, although the calculations and requirements are different. Companies first need to understand the current state of model processes and methodologies, and should begin by

creating an inventory of all actuarial valuation models, including DAC calculators for US GAAP. Then the company needs to identify the desired future state of model processes and methodologies and conduct a gap analysis including system functionality, model inputs, and required changes in reporting methodology. Some companies may be able to leverage Solvency II models for best estimate cash flows.

Next, the company will need to design a plan and roadmap to implement model changes. A system selection should be carried out, keeping the needs for both bases in mind. The option of keeping the existing system should receive the same level of scrutiny as the decision to move to a new system. The requirements for both bases should be lined up, and systems should be evaluated consistently against both bases. Some companies may have different modeling systems around the globe, and the accounting basis change could be a catalyst for aligning the models globally, using a standardized system and approach.

#### ASSUMPTION MANAGEMENT

The requirement to review assumptions for traditional and limited-payment contracts at least annually was the initial headline of US GAAP Targeted Improvements and many companies are considering changes to the way assumptions are stored, developed, governed and implemented into models. Companies will need to ensure that the assumptions used for different reporting bases are internally consistent; there may be valid reasons why assumptions are not identical, but a company should be able to explain how they are consistent with each other.

While both US GAAP and IFRS 17 use best estimate assumptions to generate cash flows, there are some differences in the way these assumptions are to be developed and used. The two bases have different definitions of contract boundary and expenses, and the discount rates are different. However, both bases will require financial data to be used in expense calculations, and although the definitions of acquisition expenses are different, the process is similar.

For US GAAP, the discount rate is based on an upper-medium grade (low-credit risk) fixed income instrument yield. IFRS 17 requires that a curve is used; this curve should maximize the use of observable inputs and reflect the characteristics of the cash flows and the contract's liquidity.

The process to ensure that the assumption setting process is rigorous and fit for the new reporting basis is essentially the same for US GAAP and IFRS 17. The initial stage is to identify the various assumption types and formats required for US GAAP and IFRS 17 calculations for each of the company's products. Then, for each of these assumptions, a process must be set up to review and update the assumption in accordance with the

requirements of the new framework. Dual basis implementation may be a catalyst for changes in how companies manage assumptions. Companies could consider designing a structured assumption repository that would automate and streamline the assumption update process. Such a repository can help with ensuring that assumptions are stored, managed and catalogued in a consistent manner, and could also be used for other purposes such as storage of PBR assumptions. Such a repository would also allow a company to store and revert back to historic assumptions, if needed.

Experience study calculations will need to be more robust and automated due to the increased demand for company-own experience and the increased frequency of assumption updates. New technology may need to be developed or purchased. Companies have been exploring cloud computing as it allows storage and quick retrieval of the large amounts of data required for experience studies. Close collaboration between the data management and experience analysis teams will be required as company experience will be required for experience studies and assumption updates.

## REPORTING AND DISCLOSURES

Under US GAAP Targeted Improvements, there will be new qualitative and quantitative disclosure requirements for interim and annual financial statements. These include on a disaggregated basis for the liability for future policy benefits and DAC, rollforwards of beginning and ending balances, and information about significant inputs judgments, assumptions and methods used in measurement. Additionally, the profit and loss will now reflect changes in the cash flow assumptions and the portion of the change in the fair value of market risk benefits not related to instrument-specific credit risk of market risk benefits in a liability position; previously there was no profit and loss impact for traditional business unless loss recognition occurred.

Under IFRS 17 an entity must disclose reconciliations that depict how the net carrying amounts of insurance contracts changed during the period arising from cash flows and amounts recognized in the statements of financial performance. For example, it will be required to reconcile the opening balances to the closing balances of the estimates of the present value of future cash flows, the risk adjustment for non-financial risk and the CSM.

An important part of the reporting process is the analysis of the results so as to get a proper understanding of the drivers. New analysis reports need to be designed to satisfy the disclosure requirements, particularly analysis of change, reconciliation across metrics, and forecasting. Analysis should include any impact on internal management reporting or KPIs; these may have wider implications and receive a good deal of high-level attention.

For each basis, companies should consider the need to develop a reporting package consolidating all the newly required disclosures and analysis reports. This will involve calibrating existing sources to produce the required information and developing a roadmap and action plan to determine sources for missing information, at the appropriate level of granularity. A company may consider consolidating disclosure requirements into a single data repository with historic disclosures filed accordingly. Business intelligence platforms can be useful tools to create dynamic reporting and disclosure dashboards.

Actuarial teams will require additional analysis time to gain comfort with results defined in new ways—more expertise will be required to solve the complex issues, and more reconciliation will be needed between different metrics. Additional time for analysis can be gained by automating the model output and generation of disclosure components; this will require collaboration with the IT department.

## CONCLUSION

Many changes are coming to the day-to-day work of actuaries, and significant transformation will be needed. The overall process for implementing changes to an accounting basis is similar whether the basis being changed is US GAAP or IFRS 17. Implementing two sets of changes at the same time could increase strain on resources, but using the right technology allows processes to be automated and streamlined. Implementing either basis will require improvements in process and governance for most companies and implementing both changes concurrently provides an opportunity to design structures which work well for both bases. ■



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# GAAP Targeted Improvements—Traditional Contract Analytics

By Steve Malerich, Rebecca Scotchie and Rob Winawer

**O**n Aug. 15, 2018, the Financial Accounting Standards Board (FASB) released Accounting Standards Update (ASU) 2018-12, Targeted Improvements to the Accounting for Long-Duration Contracts.

For traditional contracts, the old standards tied the measurement of both assets and liabilities to premium revenue with interest accretion and assumptions fixed at issue. The updates break this integration. This article discusses the changes and different update methods that will be needed, as well as analytical formulas and their benefits.

Under the new standard, deferred acquisition cost (DAC) amortization will be on a constant level basis without interest accretion. Reserves, however, will continue to accrue in proportion to premium revenue with interest. Deferred profit liabilities for limited-pay contracts will still amortize based on amount of insurance in force with interest accretion, but the amount deferred will no longer be reduced for acquisition and maintenance expenses. Accrued interest will reflect market upper-medium grade yields, rather than the company's own portfolio yields.

Actual cash flows will have no effect on DAC amortization but will need to be included in the recalculation of reserve net premium ratios. Experience variances and assumption changes affecting the projection will require prospective adjustment of the DAC amortization rate but retrospective adjustment of the liabilities. Expected future expenses will no longer be considered when calculating a current DAC amortization rate. Maintenance expenses will no longer be considered when calculating reserves. Loss recognition testing will no longer apply



to traditional reserves, but net premium ratios will be capped at 100 percent for each cohort.

With these changes, the new standards require three update methods for different circumstances.

- The prospective update method spreads the effect of a change across future income and is required for amortization of new acquisition expenses and for changes in the expected term for DAC amortization.<sup>1</sup>
- The immediate update method applies the full effect of a change to the current balance, and is required for the effect of excess lapses on DAC and for updates to the discount rate assumption used in the liability calculations. This method will effectively apply, as well, when the net premium ratio is held constant between annual assumption reviews or at the 100 percent cap.
- The retrospective update method allocates a change among past and future income in proportion to the relevant base, and is required for updates to the cash flow assumptions used in liability calculations, including effects of assumption changes as well as true-up for actual experience.

Annual remeasurement will be disclosed in financial reports as of the beginning of the current reporting period. Changes in liabilities attributed to interest rate updates will be reported as other comprehensive income. All other remeasurement will be

based on the original discount rate used at contract issue date and reported through net income.

Specific applications of these methods to different conditions, and benefits related to earnings attribution, control, forecasting and sensitivity testing, and bias avoidance, are explored below.<sup>2</sup>

Note that applying the calculations discussed in this article sequentially or simultaneously to multiple causes of change is partly a matter of necessity, partly of preference. Sequential measurement is necessary when switching between immediate and prospective DAC effects, and between retrospective and immediate reserve effects. In these situations, specific circumstances will usually dictate which effect to measure first. For sequential measurements, “Prior” rates in the following formulas will include the effects of changes measured earlier in the sequence and “New” sums and present values in the denominators must be measured without the effects of changes measured later in the sequence.

For multiple causes requiring the same update method, simultaneous measurement is possible. Amounts of each change in the numerators must each be calculated separately, but “Prior” rates exclude effects of all simultaneous changes and “New” sums and present values include effects of all simultaneous changes.

## DAC ASSET

For the DAC asset, the new standards:

- Remove discounting and interest accretion from all DAC calculations.
- Do not allow expected future expenses to be considered in the current amortization rate.
- Require prospective update of the DAC amortization rate for new acquisition expenses and for changes in expected term.
- Require immediate update of the unamortized balance for excess terminations.
- Do not explicitly address lower terminations. Whether they should be treated as negative excess terminations or as a change in expected term is unclear.

## Prospective Updates

New acquisition expenses are added to the unamortized DAC balance. The amortization rate is updated prospectively for the new balance and for changes in expected term (as captured within the sum of projected amounts in force), whether for assumption changes or for additions to the amortization basis associated with the new expenses.

$$[1] \Delta DAC = \text{New Expense}$$

$$[2] \Delta k^E = \frac{[\text{New Expense} - k_{\text{prior}}^E \times \Delta \Sigma \text{in Force}]}{\Sigma \text{in Force}_{\text{New}}}$$

Where:

$\Delta DAC$  is the change in the unamortized DAC balance.

$\text{New Expense}$  is the newly deferred acquisition expenses.

$\Delta k^E$  is the change in the expense amortization rate.

$k_{\text{prior}}^E$  is the amortization rate before the change.

$\text{in Force}$  is the constant basis used for amortizing DAC.

$\Delta \Sigma \text{in Force}$  is the change in the sum of projected amounts in force.

$\Sigma \text{in Force}_{\text{New}}$  is the sum of projected amounts in force after the change.

When adding new acquisition expenses, formula [2] reveals that the amortization rate won't change if the ratio of new expense to the sum of incremental in force equals the prior amortization rate. Otherwise, the difference is spread over the remaining projected amounts in force through an adjustment to the amortization rate.

When updating the expected term, formula [2] shows an intuitive relationship between the changes in projected in force and in the amortization rate. If amortization continued at the old rate, too much or too little would be amortized over the new remaining term. The amortization rate is adjusted to eliminate the difference.

## Immediate Updates

Excess terminations require immediate adjustment to the unamortized balance, as shown in formula [3] below, but do not affect the amortization rate.

$$[3] \Delta DAC = [k_{\text{prior}}^E \times \Delta \Sigma \text{in Force}]$$

$$[4] \Delta k^E = 0$$

Applying the adjustment to the change in projected in force captures both the immediate effect of the excess terminations on the amount remaining in force and their effect on the remaining expected term as captured by the projected amounts in force. This will more properly relate the change in expected term to its cause—excess lapse in this case.<sup>3</sup>

## LIABILITIES

For the benefit reserve and deferred profit liability, the new standards require:

- Immediate update of the liabilities for a current inventory of contracts in force, except when updating for actual cash flows and assumption changes.
- Immediate update of the liabilities when the net premium ratio reaches the 100 percent cap.
- Immediate update of the liabilities for the current discount rate.
- Annual review of cash flow assumptions and update of assumptions when appropriate.
- Recalculation of the net premium ratio, before or during the annual assumption review process, using actual cash flows in place of expected cash flows.
- Retrospective update of the liabilities for actual cash flows and assumption changes, using the original discount rate.

### Immediate Updates

Immediate update of liabilities, under the three conditions described above, does not affect the net premium ratio or the deferred profit amortization rate. The benefit reserve and total liabilities will change as noted in the formulas below.

$$[5] \quad \Delta V = [\Delta PV(Benefits) - b_{prior} \times \Delta PV(Premiums)]$$

$$[6] \quad \Delta b = 0$$

$$[7] \quad \Delta L = [\Delta PV(Benefits) - \Delta PV(Premiums) + k_{prior}^R \times \Delta PV(in Force)]$$

$$[8] \quad \Delta k^R = 0$$

Where:

$\Delta V$  is the change in the benefit reserve.

$\Delta PV(Benefits)$  is the change in the present value of expected benefits (excluding expected change for the passage of time).

$b_{prior}$  is the net premium ratio from the prior valuation.

$\Delta PV(Premiums)$  is the change in the present value of expected gross premiums (excluding expected change for the passage of time).

$\Delta b$  is the change in the net premium ratio.

$\Delta L$  is the change in total liabilities (benefit reserve plus deferred profit liability).

$k_{prior}^R$  is the deferred profit amortization rate from the previous valuation.

$\Delta k^R$  is the change in the deferred profit amortization rate.

*in Force* is the basis used for amortizing the deferred profit liability (not necessarily the same in force basis used for DAC amortization).

$\Delta PV(in Force)$  is the change in the present value of expected in force amounts (excluding expected change for the passage of time).

With an unchanging net premium ratio, formula [5] looks much the same as a normal reserve formula—the present value of future benefits minus the present value of future net premiums. Under the immediate update method, incremental present values translate directly into incremental reserve. The same is true for total limited-pay contract liabilities in formula [7].

### Retrospective Updates

Changes in cash flow assumptions and true up for actual cash flows require retrospective updating of the liabilities, the net premium ratio, and the deferred profit amortization rate as of the beginning of the current reporting period.<sup>4</sup> An historical ratio is used in formulas [9] and [11]. It measures the age of the business and matches a portion of the update to past revenue.

$$[9] \quad \Delta V = [\Delta PV(Benefits) - b_{prior} \times \Delta PV(Premiums)] \times h_{New}(Premium)$$

$$[10] \quad \Delta b = \frac{[\Delta PV(Benefits) - b_{prior} \times \Delta PV(Premiums)]}{AV(Premium) + PV_{New}(Premium)}$$

$$[11] \quad \Delta L = [\Delta PV(Benefits) - \Delta PV(Premiums) + k_{prior}^R \times \Delta PV(in Force)] \times h_{New}(in Force)$$

$$[12] \quad \Delta k^R = - \frac{[\Delta PV(Benefits) - \Delta PV(Premiums) + k_{prior}^R \times \Delta PV(in Force)]}{AV(in Force) + PV_{New}(in Force)}$$

$$[13] \quad h_{New}(x) = \frac{AV(x)}{AV(x) + PV_{New}(x)}, \text{ with 'x' representing "premium" or "in Force"}$$



Formula elements are as defined before, except:

$AV(Premium)$  is the accumulated value of actual gross premiums collected since issue.

$PV_{New}(Premium)$  is the present value of all expected future gross premiums in the new projection.

$AV(in\ Force)$  is the accumulated value of actual in force amounts for each period since issue.

$PV_{New}(in\ Force)$  is the present value of all expected in force amounts for each period in the new projection.

$\Delta PV(Benefits)$  is the change in the present value of expected benefits.

$\Delta PV(Premiums)$  is the change in the present value of expected gross premiums.

$\Delta PV(in\ Force)$  is the change in the present value of expected amounts in force.

Since GAAP considers the use of actual experience to be part of an assumption update, these present value changes must also include variances from expected experience. How actual variances affect the update depends on the timing of the true up measurement.

- For annual true up, variances since the prior true up are accumulated at the original discount rate to the beginning of the current reporting period. The current liability true up will also include immediate release of the accumulated excess benefits and immediate accrual of the net premium ratio multiplied by the accumulated excess premium.
- For immediate true up, variances will be discounted at the original discount rate to the beginning of the current reporting period, with normal release and accrual in the current period then treating the variances as if they were expected.

Except for matching a portion of the change to past revenue, accomplished by the historical ratio, formulas [9] and [11] are identical to the immediate method's formulas [5] and [7] where 100 percent of the change is applied immediately to the reserve.

### Adverse and Favorable Trends in Experience

If assumptions go unadjusted for actual experience, trends that differ from underlying assumptions will cause gradual change in the net premium ratio. Since changes in the net premium ratio push the reserve in the opposite direction, the drift in the ratio will create bias in the reserve. As bias accumulates, potential for a future assumption change grows. By the time the trend is recognized, the accumulated bias can become large.

The following simple measure, with zero representing the time when current assumptions were set, can provide warning.

$$[14] \quad \text{Accumulated True Up} = (b_{New} - b_0) \times PV(Premium)$$

The accumulated amount over an extended time period may signal a need to update assumptions and may provide a rough estimate of the potential effect from an assumption change.

To reduce assumption update volatility caused by accumulated bias, projected claims can be adjusted based on extrapolation from actual claim variances.<sup>5</sup>

$$[15] \quad \Delta Claims = \frac{[AV(Excess\ Claims) - \text{Expected } AV(Excess\ Claims)]}{h_{New}(in\ Force)}$$

$$[16] \quad \text{Expected } AV(Excess\ Claims) = AV(in\ Force) \times \frac{AV_{Prior}(Excess\ Claims)}{AV_{Prior}(in\ Force)}$$

Where all accumulated values are based on the original discount rate and:

$\Delta Claims$  is the adjusted variance from expected claims to be included in  $\Delta PV(Benefits)$  in formulas [9] to [12].

<i>Excess Claims</i>	is actual claims minus expected claims based on cash flow assumptions.
$AV(\textit{Excess Claims})$	is the accumulated value of excess claims since the most recent cash flow assumption update.
$AV(\textit{in Force})$	is the accumulated value of actual in force amounts for each period since issue.
$AV_{\textit{prior}}(\textit{Excess Claims})$	is the accumulated value of excess claims as measured at the most recent prior extrapolation date.
$AV_{\textit{prior}}(\textit{in Force})$	is the accumulated value of actual in force amounts as measured at the most recent prior extrapolation date.
<i>in Force</i>	is the basis used for extrapolation. <sup>6</sup>

The method to adjust projected claims based on trends described in this section adds complexity to the liability calculations, but reduces volatility and makes analysis of variances simpler. For example, claim variances will have no effect on the total liability of limited pay contracts. Similarly, claim variances will have minimal effect on the benefit reserve for other contracts if premiums are a constant proportion of the amount of insurance in force for the entire life of the cohort. In each case, the claim variance is divided by an historical ratio in formula [15] then multiplied by an identical or nearly identical historical ratio when inserted into formulas [11] and [9], respectively. The resulting adjustment is then offset by the release of reserve for actual claims.

## BENEFITS OF ANALYTICAL FORMULAS

The analytical formulas described in this article can prove helpful for a variety of purposes.

### Earnings Attribution

When deviation from expected cash flows or persistency can be measured separately, applying the appropriate formulas to each variance will measure its effect without having to recalculate the reserve multiple times in sequential valuation runs. Residual differences between the sum of the influences and the ending reserve should be small and may be allocated among the causes or identified as a residual.

### Control

When the effects of deviations from expected cash flows or persistency are calculated incrementally, either by desire or by necessity, these formulas can be applied as a check of those measurements. Control tolerances can be expressed in dollar amounts and results can easily be summed for aggregate controls. Whether

separate or in aggregate, assessing materiality will be easier than would be possible with percentage tolerances or simple trends.

Observing trends in these may help to identify inconsistencies between assumptions and emerging experience sooner than experience studies.

## Forecasting and Sensitivity Testing

These formulas can be used with cash flow forecasts and sensitivities to estimate the corresponding reserve and DAC effects.

## Bias Avoidance

Accumulated bias that develops in liabilities until assumptions are unlocked can be avoided by the methodological extrapolation outlined above. ■



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## ENDNOTES

- 1 DAC amortization over expected term may be performed either on an individual contract or a grouped contract basis. Calculations in this article apply most naturally to the grouped contract approach.
- 2 Space limitations do not allow us to show derivations of the formulas in this article. To get a copy of the derivations, contact one of the authors.
- 3 Formula [3] may seem to be more complicated than a proportionate write-off based on amount remaining in force rather than projected in force. A simple write-off, however, would not account for the effect of the terminations on the remaining expected term and a change in the amortization rate would also be needed.
- 4 Using prior present values in the denominators of formulas [10], [12] and [13] would usually produce good approximations. For controls or sensitivity testing, the prior projection would have the added benefit of making the historical ratios (formula [13]) independent of the new projection.
- 5 Until here, we've been referring to benefits, which include both insurance claims and surrender benefits. This extrapolation is applied only to insurance claims. See "Unlocking 2.0" (*The Financial Reporter*, December 2017).
- 6 "Unlocking 2.0" uses the amount of insurance in force as an extrapolation basis but adds that another basis may be judged appropriate under some circumstances.



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# GAAP Targeted Improvements: Diving Into Details

By Steve Malerich

**A**mid the major improvements to GAAP for long-duration contracts, Accounting Standards Updates No. 2018-12 (the ASU) includes some subtle refinements of existing provisions and some simplifications that require careful consideration. This article discusses the details of two subtle refinements (related to maintenance expenses for traditional contract reserves and the inclusion of interest in assessments for non-traditional contract reserves), and two simplifications (related to DAC amortization and loss recognition testing).

## SUBTLE REFINEMENTS

Some refinements were made to add clarity where inconsistent practices have emerged. Though greater consistency was the reason for these changes, they are included as changes to accounting standards. Any change in practice should be treated as a change in accounting principle—not a correction of error and not a change in estimate—and the transition provisions applied.

### Maintenance Expenses

For traditional contracts, FAS 60 had two paragraphs describing expenses to include and to exclude from the reserve calculation. This has been interpreted to include maintenance expenses when inflation makes them non-level.

The ASU combines these two paragraphs into one (944-40-30-15) with some modification. (In this and following excerpts

The ASU includes some subtle refinements of existing provisions and some simplifications that require careful consideration.

from the ASU, new wording is indicated as underlined text, and wording that has been removed is indicated with strikethrough.)

Expense assumptions used in estimating the liability for future policy benefits shall be based on estimates of expected nonlevel costs, such as termination or settlement costs, and costs after the premium-paying period. Renewal expense assumptions shall consider the possible effect of inflation on those expenses. However, expense assumptions shall not include acquisition costs or any costs that are required to be charged to expense as incurred, such as those relating to investments, general administration, policy maintenance costs...

The ASU clarifies that regardless of inflation, the cost of routine policy maintenance is not included in the reserve calculation.

### Assessments—Interest Spread

For universal life (UL) contracts, SOP 03-1 was interpreted by some to include additional reserves as “policyholder balances” when measuring the investment margin to include in gross profits and assessments.

With the elimination of gross profit as a basis for amortizing DAC, assessments had to be defined without reference to gross profit. This was accomplished by deleting gross profits from paragraphs 944-40-30-22 and 30-27, and inserting the language formerly in 944-30-35-5 to describe investment margin. To resolve the differing interpretations, FASB also added a paragraph reference.

For contracts in which the assets are reported in the general account ~~and that include investment margin in their estimated gross profits~~, the investment margin (that is, the amounts expected to be earned from the investment of policyholder balances less amounts credited to policyholder balances [see paragraph 944-40-25-14]) shall be included with any other assessments for purposes of determining total expected assessments....

Paragraph 944-40-25-14 describes policyholder account values. Additional (SOP 03-1) reserves are defined in paragraphs 944-40-25-27 and 25-27A. Therefore, the only interest to include in assessments is the investment margin earned on policyholder account values.

## SIMPLER METHODS

Two other areas require close attention to detail. Deferred acquisition cost (DAC) amortization, though simplified, requires interpretation of a complex interrelationship among the new provisions. Loss recognition may also be simpler, but getting there requires careful consideration of new flexibility.



### Amortization of Deferred Acquisition Costs

DAC must be amortized over expected term (944-30-35-3A) under assumptions that are consistent with reserve measurement (944-30-35-3). Paragraph 35-3A also sets the ideal technique as a straight-line, individual contract basis (subparagraph a). Cohort-based amortization is permitted, as long as it approximates the ideal (subparagraph b).

Amortizing an individual contract over expected term using reserve assumptions means the amortization rate must anticipate future terminations. When a contract terminates, its unamortized DAC balance is immediately written off.

Since individual contracts either terminate or persist in their entirety, we must expect that some will persist and some will terminate in any given year. We find that, for a pool of individual contracts, we effectively amortize twice for terminations—first through an amortization rate that anticipates some and then through the write-off of remaining DAC on actual terminations.

Straight-line has turned into accelerated amortization. Strict application of the standard as worded produces a result that is contrary to the standard.

The easiest way to avoid accelerated amortization would be to calculate expected term assuming no terminations before maturity. Then, every lapse is excess and the full effect of lapse

is captured in the release of DAC upon actual termination of each contract. To do that, however, would mean ignoring the requirement to be consistent with reserve assumptions.

Another way involves something the ASU doesn't address directly but implies in an illustration (944-30-55-7B). For this cohort illustration to match the result of individual contract calculations, we would have to adjust persisting contract balances upward for the fact that they didn't terminate. On the individual contract, this would appear to be slower than straight-line. For a collection of contracts, however, the upward adjustment would be counterbalanced by the release on terminating contracts. For the entire pool, amortization is consistent with straight-line and expected term, though revisions of the remaining expected term (944-30-35-3B) will bend the line.

Based on my discussion with FASB staff during their outreach and my observations of FASB deliberations, I believe the second approach to be most consistent with FASB intent—with one caveat.

If the expected termination rate is high enough, the true-up adjustment could cause the unamortized balance on a persisting contract to increase, even after taking current amortization. If actual terminations are near expected levels, such an increase will be offset by the heavy release on terminating contracts. If, however, actual terminations are much less than expected, the heavy release won't happen and the total unamortized balance

could increase. That would conflict with the standards. We'll need some constraint or adjustment to prevent that increase.

### Loss Recognition Testing

Loss recognition remains a requirement (944-60-15-5) for UL and participating contract reserves, and for the present value of future profit (PVFP) associated with any acquired blocks of long-duration contracts.

Under FAS 60, a gross premium reserve discounted at the expected asset yield had become the norm for loss recognition. Except for any unamortized PVFP, however, the ASU eliminates loss recognition testing for traditional insurance contracts. And, some of the provisions that led to this practice are either gone or altered in a way that no longer supports this norm.

Rather than prescribe any practice, existing or new, FASB added disclosure requirements (944-60-50-2):

For annual reporting periods... an insurance entity shall disclose the following:

- a. The amount of a liability that is established as a result of ... loss recognition testing ... and a description of the factors that led to the establishment of the liability
- b. Information about the methodology used when performing premium deficiency testing ...
- c. Whether the entity considered anticipated investment income when performing premium deficiency testing ...



This gives companies more flexibility in how to test and measure loss recognition. I say “companies” because company policy should place some limits on actuarial discretion to ensure consistency among products and across time.

Some obvious approaches are to use projected cash flows or margins—discounted at expected asset yield, at an expected crediting rate, or at an observable market rate.

Except for exclusion of maintenance expense, discounting cash flows at expected asset yield would match the current gross premium reserve.

A simpler alternative might be discounting margins at the crediting rate (for UL) or at the market rate (for traditional PVFP). The new reserve disclosures should already include everything needed for such measures, thereby eliminating the need for separate loss recognition models.

If a company prefers to minimize the incidence of ongoing losses (after maintenance expenses and DAC amortization) from unprofitable business, it might decide to not consider

anticipated investment income. This wouldn’t guarantee the avoidance of ongoing losses, but it would allow investment margins to mitigate such drain.

To achieve that objective for UL, discount either margins without interest spread or cash flows at the crediting rate. To achieve it for traditional PVFP, discount either margins or cash flows at the market rate. This would not violate the prohibition of taking losses to produce future income (944-60-35-5) since any expected future gains would be a product of investment strategy, not contract performance. ■

*I would like to thank Jason Pfister, FSA, for his valuable assistance in identifying potential complications of alternative approaches to compliance with the new DAC amortization standards.*



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# Transition Expedient for Market Risk Benefits Under GAAP Targeted Improvements

By Gary Hu and Gregory Goulding

In an effort to establish one measurement model and improve uniformity across companies, the recently published Financial Accounting Standards Board (FASB) guidance provides a new accounting classification for certain benefit features called market risk benefits (MRBs). These features provide protection to the contract holder from other-than-nominal capital market risk and expose the insurance entity to other-than-nominal capital market risk. If a contract contains multiple MRBs, they are bundled together and valued as a single compound market risk benefit. The FASB requires retrospective application to MRBs for all prior periods and requires that companies maximize the use of relevant observable information as of contract inception. If the retrospective application requires assumptions in the prior period which are unobservable or unavailable, a company may use “hindsight” (subject to interpretation) in determining those assumptions. This article discusses challenges inherent in the retrospective application and introduces a potential expedient for performing the calculation.

## CHALLENGES

The attributed premium (AP) method is commonly used for the GAAP fair value calculation to achieve a zero reserve value at the contract inception by solving for an AP factor. Ideally, the FASB requirement for retrospective recalculation would require using the models and assumption sets (insurance and economic) at contract inception, generating both compound claim (i.e., for a combination of benefits such as living and death benefits) and fee streams enabling us to solve for the compound AP-factor that would equate reserves to zero at inception. However, this may entail excessive cost to organize and be difficult to validate. The data required to do these calculations may not be available in all cases without complex actuarial judgment and validations. Problems that a company may face in pursuing the calculation regime for various blocks of policies described above include:

- Actuarial models that reproduce the living benefit scenario cash flow streams (i.e., fees and claims) underlying the AP factor calculations at issue may not be available. This

challenge could arise if a company has experienced various actuarial model conversions.

- Assumption sets may not be available corresponding to all AP factors.
- A company might not have calculated the guaranteed minimum death benefits (GMDB) or guaranteed minimum income benefit (GMIB) scenario cash flows streams (i.e., fees and claims) based on the fair value model in the past.
- Validation of new AP factors may be hampered by difficulty in reproducing existing AP factors.

## DESCRIPTION OF CIRCUMSTANCES FOR POTENTIAL EXPEDIENT

We describe below an expedient we refer to as the “ratio approach” that companies might consider as a practical interpretation of retrospective calculations under the right conditions and might be compatible with FASB’s allowed expedient of using hindsight. The ratio approach applies to the transition adjustment for contracts in the following circumstances:

- The contracts contain a living benefit already valued using the standard fair value technique, with a locked-in AP factor determined at contract inception as the ratio of the present value of excess benefits divided by the present value of fees. The present values are based on risk-neutral scenarios with adjustments for risk margins and own-credit risk.
- The contracts also contain a GMDB or GMIB benefit, currently valued under the insurance accrual model (i.e., SOP 03-1), using real word scenarios. These benefits are classified as MRBs under the Accounting Standards Update (ASU).
- The dominant benefit in the contracts are the living benefits.

## RATIO APPROACH

As an interpretation of hindsight, we seek to leverage the information inherent in the AP factor for the living benefit calculated at issue and the current relationship at transition between living and compound benefits. For example, assume that a variable annuity was issued in 2010 that contained both a GMDB accounted for under SOP 03-1 and a guaranteed minimum withdrawal benefit (GMWB) accounted for as an embedded derivative at fair value. Under the ASU, both benefits would be market risk benefits, but the original assumptions and/or models used to determine the attributed premium for GMWB at inception may no longer be available. Since the GMWB attributed premium was locked-in at inception, that attributed premium would contain much of the information about the assumptions that had been used at inception. As such, it may be possible to estimate the attributed premiums for the new compound MRB as follows:

$$a = \frac{PV \text{ at transition of future GMDB + GMWB claims at fair value including risk margins}}{PV \text{ at transition of future GMDB and GMWB Fees}}$$

$$b = \frac{PV \text{ at transition of future GMWB claim at fair value including risk margins}}{PV \text{ at transition of future GMWB Fees}}$$

$$AP \text{ Factor}^{\text{compound MRB}} = AP \text{ Factor}^{\text{GMWB}} \times \frac{a}{b}$$

where  $AP \text{ Factor}^{\text{compound MRB}}$  represents the estimated attributed fee for the compound market risk benefit upon transition and  $AP \text{ Factor}^{\text{GMWB}}$  represents the attributed fee for the GMWB embedded derivative at inception. Note that a company may conclude that the risk margin in the calculation in “a” may be less than that used for “b.”

Since the ratio method is an expedient to ideal calculations, it is advisable to assess whether it adequately reflects the intentions of the ideal calculations. The ratio method implicitly assumes that the ratio relationship between the compound and single benefit is reasonably stable between issue date and transition. We should consider, for example, the effects of changes in policyholder behavior assumptions over time, or changes in economic assumptions.

In order to maximize the use of observable information from the time the market risk benefits were issued, the present values could be based on the yield curves from when the market risk benefits were issued, rather than the yield curve at the transition date. The attributed premium for the compound market risk benefit combining the GMDB and GMWB determined in this manner would capture the information about economic and demographic assumptions from the

GMWB attributed premium but would assume that the relative levels of benefits and fees remained reasonably stable during the period between issue and transition.

## CONCLUSION

The ratio method may offer a practical expedient in retrospective adjustments required by the ASU in certain cases. As it is an interpretation, a company should evaluate the expedient considering specific circumstances. This may be evaluated through sampling or other means to demonstrate the reasonableness of the approach. ■



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# IFRS 17 Digest

By Graydon Bennett

Last year the International Accounting Standard Board (IASB) at long last issued the final version of “IFRS 17: Insurance Contracts”—a standard 20 years in the making. The publication provided some welcome clarity and sounded the starting gun for detailed preparation required to achieve a successful implementation on Jan. 1, 2021.

Insurers will be required to make choices that will have material implications for their financial results. Early engagement with auditors should result in a smoother journey toward implementation and will assist insurers in making the best choices for their business.

IFRS 17 is extensive and demands more than a couple of pages to fully describe its requirements and potential impact. Nevertheless, there are a few aspects of the new standard which I highlight in this digest article.

## GENERAL MODEL AND THE CSM

For most contracts, IFRS 17 mandates the use of the general model (formerly known as the building block approach) to value insurance contracts. The general model requires that the entity calculate a discounted best estimate of fulfilment cash flows and a risk adjustment (which are analogous to, but may well differ from, the Solvency II best estimate liability and risk margin, respectively), as well as a contractual service margin (CSM) defined as “the unearned profit the entity will recognize as it provides insurance services in the future.”

The CSM is designed to eliminate any initial profit recognition and is released as profit over the life of the contract as the risk runs off. The details relevant to the calculation of the CSM are outside the scope of this article, but it is worth mentioning that adjustments in respect of interest accretion, cash flow changes, and others will need to be calculated at every reporting period until the policy has run off.

## PREMIUM ALLOCATION APPROACH

While the general model is the default approach under IFRS 17, an alternative methodology is permitted in certain cases. The premium allocation approach (PAA) will be of particular

interest to general insurers writing yearly renewable contracts and insurers writing group protection policies.

This simplification applies only to the unexpired portion of the contract, or the “liability for remaining coverage,” and replaces the complicated calculation of the CSM with a liability that is broadly determined using premiums received less associated acquisition costs.

The liability for incurred claims, however, does not benefit from any simplification and is thus determined as the discounted best estimate of fulfilment cash flows plus a risk adjustment to account for uncertainty.

## ONEROUS CONTRACTS

The new standard requires contracts that are expected to be loss-making, so-called onerous contracts, to be identified at initial recognition (i.e., the earlier the start of coverage and premium receipt) and any loss to be recognized immediately. By contrast, any unearned profit for profitable contracts will be recognized as a liability to be released as insurance services are provided.

Unlike the current onerous contracts test, IFRS 17 will not permit profitable contracts to offset unprofitable contracts and therefore the entire loss attributable to an onerous contract must be recognized at initial recognition.

## UNIT OF ACCOUNT

The level of granularity required is also prescribed by the new standard. The primary requirement is to identify portfolios, which are defined as groups of contracts exposed to similar risks and are managed together.

The portfolios must then be divided into groups comprising contracts issued within the same 12-month period. However, because of the onerous contracts test, these groups must also be subdivided according to their expected profitability.

Insurers will be required to make choices that will have material implications for their financial results. Early engagement with auditors should result in a smoother journey toward implementation.



The increased level of granularity will doubtless have an impact on data system requirements and processes, as well as on financial results themselves. Users of financial statements will need to understand the implications of the grouping requirement, and this is one area where agreement with auditors will be essential.

#### ACTUARIAL SUPPORT

IFRS 17 will require a collaborative approach across a company's finance, actuarial and support functions. The new standard brings with it not only a change in calculation methodology, but also an increase in disclosure requirements. Entities will be required to reconcile the opening and closing CSM balances for each group of contracts and will likely look to their actuarial functions to assist with this and other analyses.

Lastly, the requirement for retrospective application of the standard is likely to be a challenge for most insurers, although some simplifications are permitted. The volume of data and

complexity of the calculations required are expected to be tremendous. Insurers would be wise to start planning sooner rather than later.

#### CONCLUSION

While implementation is still a couple of years away, we now have a clear view of what the new standard will mean. Insurers should start considering the issues raised by IFRS 17 and begin making plans for implementation. An early engagement with auditors and close collaboration with other stakeholders including actuaries will be vital to a smooth transition. ■



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# IAA Monograph on IFRS 17 Risk Adjustments

By Douglas Van Dam

In May 2018, the International Actuarial Association (IAA) published a textbook-sized monograph on “*Risk Adjustments for Insurance Contracts Under IFRS 17*.” Work on this monograph had begun well before IFRS 17 was finalized in May 2017. IFRS 17 is a principle-based global reporting standard for insurance contracts. The Risk Adjustment (RA) is part of the general measurement model, which applies to both long-duration contracts and to the claim reserves for short-duration contracts. IFRS 17 describes the purpose of the RA, and some characteristics the RA should have, but it does not have any rules on how the RA is to be calculated. One of the purposes of this monograph is to provide some techniques and methods for meeting the obligation to calculate the RA.

This monograph will be an important resource for anyone responsible for calculating the RA under IFRS 17. It is also a valuable tool for anyone who wants to know what the RA represents and how it affects the period-to-period financial reporting of companies subject to IFRS 17. It is suitable for beginners and those with some experience. Even for actuaries familiar with risk margins under Solvency II, it is a good resource for explaining the differences between the risk margin and the RA.

The monograph begins with an introduction and description of the principles underlying the RA. Techniques, effects of risk mitigation, validation, and re-measurement are topics covered. Disclosure is an important aspect of IFRS 17 and RA disclosure has its own chapter.

The final chapter has several very helpful case studies. The spreadsheets to support the case studies come along with the book. As actuaries, we like to get into the numbers, and this is a good way to test some simple examples. The first example is a cost of capital technique applied to a simple 5-year term. The second example is a Wang Transformation applied to a deferred annuity, with a comparison to a cost of capital technique. The next example is a confidence level technique applied to a block of group long-term disability. Next is a Wang Transformation applied to commercial auto liability, and this is again compared with a cost of capital technique for the same block. The final example is an aggregation of risk adjustments using copulas.

The monograph was commissioned by the Insurance Accounting Committee (IAC) of the IAA. The Financial Reporting section provided partial funding for this work. The monograph can be ordered on the IAA website, [www.actuaries.org](http://www.actuaries.org), under Publications and Overview. It is available both in print and as an e-book. The other two monographs featured on that page, “Stochastic Modeling” and “Discount Rates,” were also commissioned by the IAC and received partial funding from the Financial Reporting Section. ■



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# Insights Into Life PBR Emerging Practices

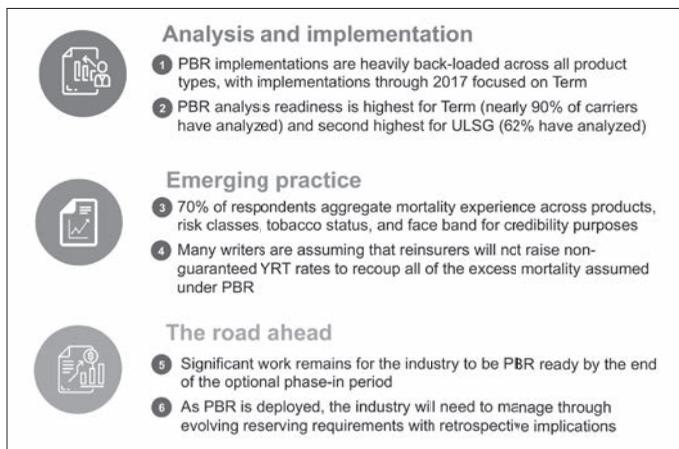
By Kevin Carr II, Andrew Radel and Chris Whitney

In the second quarter of 2018, Oliver Wyman surveyed the life insurance industry on emerging life principle-based reserve (PBR) practices. Forty direct writers and reinsurers with 80 percent market coverage<sup>1</sup> participated. This article highlights key takeaways and provides a deeper dive on select PBR emerging practices.

## KEY TAKEAWAYS

Figure 1 highlights key takeaways from the survey related to analysis and implementation of PBR, emerging practices, and the road ahead.

Figure 1  
Survey Key Takeaways



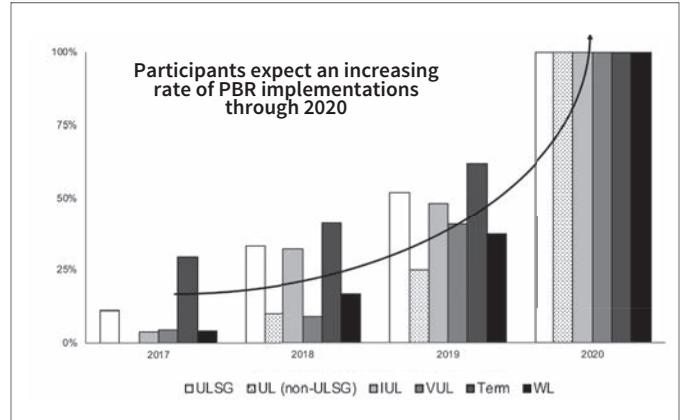
(1, 2, 5) : PBR implementations are surprisingly back-loaded and achieving full readiness by 2020 will be arduous for most of the industry

(3, 4, 6) : Another potential challenge is additional regulatory prescription in areas where discretion is currently being applied

## PBR IMPLEMENTATIONS ARE HEAVILY BACK-LOADED

Figure 2 summarizes actual PBR implementations through 2017 and planned implementation through the remainder of the optional phase-in period. The percentages were calculated as (number of participants with at least one product in category on PBR) / (total participants with products in category).

Figure 2  
Percentage of Participants With Products on PBR by Year End



Very few products were moved to PBR during 2017. Most of the moves were for Term, which is the easiest to implement. Planned go-live implementations remain surprisingly low for 2018 and 2019. We believe that the back-loading of PBR implementation is driven by the following:

- Competitive pressures and prevalence of reserve financing solutions for Term and to a lesser extent ULSG, for which reserve reductions decrease tax leverage;
- Resource constraints and the level of effort required to move products to PBR, including additional reporting and disclosure requirements; and
- While analysis and re-pricing are taking place, PBR requirements are still an evolving target and many participants are consciously delaying their actual implementation.

## PBR READINESS IS HIGHEST FOR TERM, FOLLOWED BY ULSG

Table 1 summarizes the percentage of participants that have analyzed the impact of PBR across product types as of year-end 2017.

Table 1  
Percentage of Participants That Have Analyzed the Impact of PBR by Product Type as of 12/31/17

Product Type	Percentage
Term	86%
Universal Life with Secondary Guarantee (ULSG)	62%
Indexed Universal Life (IUL)	54%
Whole Life (WL)	33%
Universal Life without Secondary Guarantee (UL)	30%
Variable Universal Life (VUL)	27%

Most Term writers and almost two-thirds of ULSG writers have analyzed the impact of PBR on these products. Other products are behind, with half of IUL writers and less than a third of WL, UL and VUL writers having performed analysis for these products. We believe these results are driven by the following:

- Expected reserve relief on protection-oriented products due to elimination of deficiency reserves and increase in the valuation interest rate (100 basis points) for the revised formulaic reserve floor (NPR);
- A portion of the IUL market is protection oriented<sup>2</sup>, making the impact of PBR similar to ULSG; and
- Accumulation oriented products (WL, UL and certain IUL and VUL) are structured to pass mortality, investment and other margins to the policyholder, making it likely for the NPR to dominate. The NPR defaults to pre-PBR methodology for these products, and PBR has little impact on reserves.

**THE INDUSTRY IS EXPOSED TO AREAS WHERE DISCRETION CAN BE APPLIED**

The continuous evolution of PBR requirements was listed as a driver of delayed implementation in the previous section. Regulators are actively discussing changes to the Valuation Manual with a goal of making substantial revisions for inclusion in the 2020 requirements.

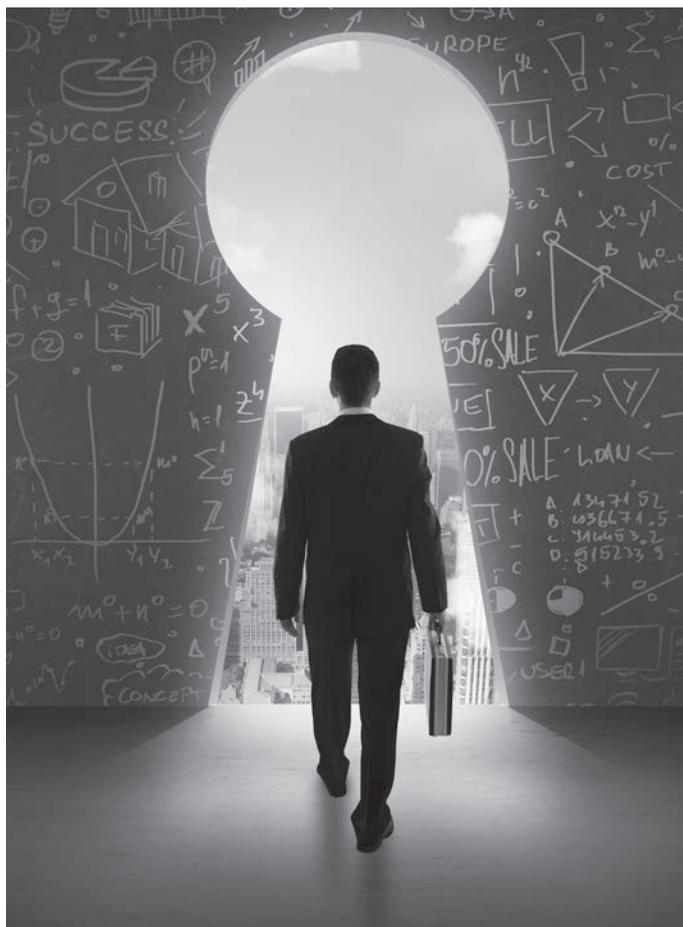
Two key areas where changes could emerge are: 1) mortality experience, and 2) the treatment of non-guaranteed yearly renewable term (YRT) rates.

**Mortality Experience**

The mortality assumption used in the calculation of the modeled reserve under PBR is developed using a blend of company and industry experience with prescribed margins based on the credibility of the underlying experience. Discretion can be applied when setting the aggregation level used to determine credibility.

Survey participants were asked if they aggregate their experience across any of the following four attributes when determining

Regulators are actively discussing changes to the Valuation Manual with a goal of making substantial revisions for inclusion in the 2020 requirements.



their credibility for PBR: product, tobacco usage, risk class, face amount (band).

Seventy percent of participants aggregate across all four attributes and 90 percent of participants aggregate across three or more, which produces higher (favorable) credibility levels. As most participants view the prescribed mortality margin as being excessive, they are unlikely to adopt a position on credibility which further increases this margin.

Regulatory discussion on this topic has focused on the potential for vastly different results depending on the level of aggregation used. Additional guidance is expected on the approach to determining what experience can be aggregated together and on the additional supporting analysis and demonstrations that may be required.

**Treatment Of Non-guaranteed YRT Rates**

PBR requires that insurers calculate their reserves with and without reinsurance, with the reinsurance reserve credit equal to the difference in these two amounts.

For non-guaranteed YRT reinsurance, the current scale of rates is typically based on best estimate mortality rates with future improvement and insurers must make an assumption around how reinsurers will react to the adverse mortality required under PBR.

VM-20 provides general guidance on the modeling of reinsurance cash flows, stating, “The company shall assume that the counterparties to a reinsurance agreement are knowledgeable about the contingencies involved in the agreement and likely to exercise the terms of the agreement to their respective advantage, taking into account the context of the agreement in the entire economic relationship between the parties.”

Survey participants were asked about the approach they use to model non-guaranteed YRT rates. Two-thirds of participants responded that they assume less than 100 percent reaction from the reinsurer to the adverse mortality and one-third assume no change to the current scale of rates.

This issue was discussed by regulators at the Summer NAIC meeting, with a white paper from the American Academy of Actuaries and several comment letters on the issue discussed by the Life Actuarial Task Force (LATF). While no definitive guidance was given at this meeting, a desire for a common approach to modeling non-guaranteed YRT rates was shared amongst the regulators who reacted to the discussion. The chair of LATF said it will be a priority to reach consensus on additional requirements for inclusion in the 2020 version of the Valuation Manual.

## THE ROAD AHEAD WILL BE CHALLENGING FOR MOST

Life PBR is upon us, with just a year before the optional phase-in period ends and implementation is mandatory. Significant work remains as PBR implementations are back-loaded for all but a handful in the industry.

Requirements will continue to evolve and the expectation is that changes will be retroactive, making it important to understand the range of subjectivity in decisions made and to stay close to emerging discussions.

With all this activity, it will be important to step back and skillfully manage all areas impacted. This includes creating optionality in the product cycle, modeling and assumption setting that can be effectively and rapidly acted upon as regulations and practices converge. ■



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### ENDNOTES

- 1 Based on 2016 individual life insurance sales, adjusted to reflect any market exits, mergers and acquisitions which occurred between 2016 and 2018.
- 2 *Wink Sales & Market Report*, 2nd Quarter, 2018 shows IUL sales with a primary pricing objective of death benefit, guaranteed death benefit or no lapse guarantee account for nearly 12 percent of the market as of 2Q 2018 and nearly 17 percent of the market as of 2Q 2017.

# Financial Reporting Research Update

By David Armstrong and Ronora Stryker

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

## CURRENTLY IN PROCESS ...

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

“Simplified Methods for Principle-based Reserve Calculations”—this project is in the late stages, and the Project Oversight Group expects to finalize the draft report by the end of the year.

“The Application of Credibility Theory in the Canadian Life Insurance Industry”—this survey of credibility practices of Canadian life insurers will compare and contrast credibility methods used by the companies. The Financial Reporting Section contributed to the funding for this project. Work is in the late project stage.

“The Use of Predictive Analytics in the Canadian Life Insurance Industry”—this project will survey Canadian life insurers on the

use of predictive analytics in practice. The Financial Reporting Section contributed to the funding for this project. Work is in the late project stage.

“Delphi Study of Economic Variables”—this study uses a Delphi Study framework to gather insights on the thought processes experts employ to estimate future values of economic variables. Work is in the early project stage.

“Macroeconomics Based Economic Scenario Generation”—this project intends to find a practical way to improve economic scenario generators by studying the causes of economic development, economic volatility and capital market volatility. Work is in the early project stage.

## COMPLETED IN 2018 ...

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

## COMPLETED IN 2017 ...

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

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

“Actuarial Model Governance: A Survey of Actuarial Modeling Governance and the Industry Evolution Report”—this is an update to the original 2012 report co-sponsored by the

Financial Reporting and Modeling Sections. <https://www.soa.org/Research-Reports/2017/2017-01-actuarial-model-governance/>

### REQUEST FOR RESEARCH PROPOSALS

Do you have an idea for a research topic you would like to see the Financial Reporting Section consider for funding? If so, we want to hear from you! For more information, please contact Dave Armstrong or Ronora Stryker. ■



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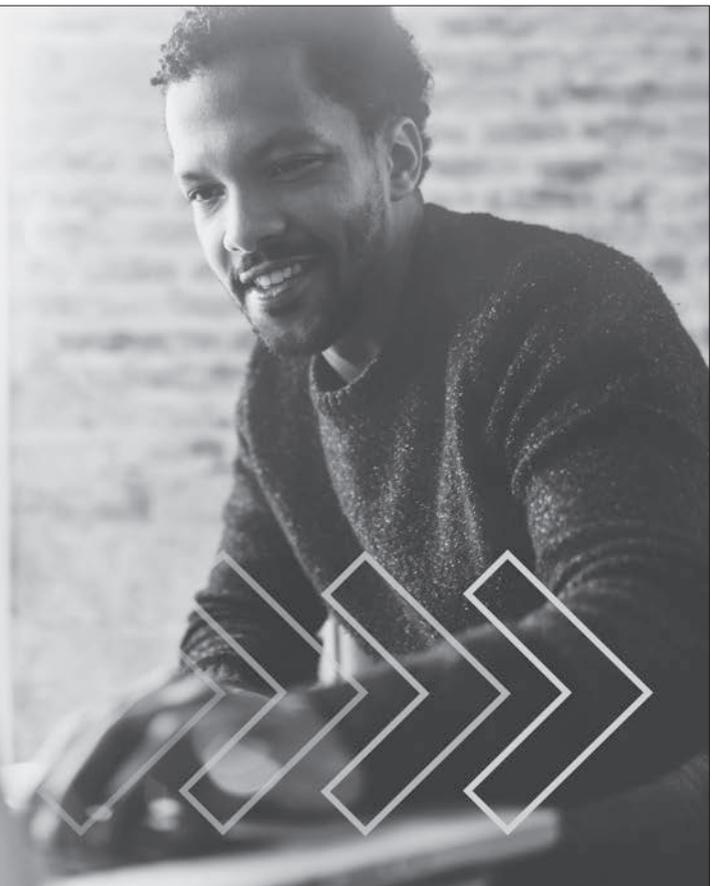
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