

MILLIMAN RESEARCH REPORT

# Proposed Changes to US GAAP

An Impact Analysis of Proposed Targeted Improvements

June 2017

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## Table of Contents

<b>EXECUTIVE SUMMARY .....</b>	<b>1</b>
PURPOSE OF STUDY .....	1
PROPOSED CHANGES .....	1
OUR OBSERVATIONS AND CONCLUSIONS .....	1
Term and other FAS60 products.....	1
Universal life, single premium fixed deferred annuities, and other FAS97 products .....	2
Participating whole life .....	2
GMxBs and variable annuities .....	2
Loss recognition.....	2
Industry preparedness and expectations .....	3
WHAT IS NEXT? .....	3
<b>METHOD OF STUDY .....</b>	<b>3</b>
<b>PROPOSED CHANGES TO ADDRESS STAKEHOLDER CONCERNS.....</b>	<b>3</b>
STAKEHOLDER CONCERN 1: IMPROVE THE TIMELINESS OF REFLECTING EMERGING EXPERIENCE AND ITS DEVIATION FROM EXPECTED IN THE CALCULATION OF THE LIABILITY VALUE .....	3
STAKEHOLDER CONCERN 2: SIMPLIFY THE AMORTIZATION OF DAC.....	4
STAKEHOLDER CONCERN 3: SIMPLIFY ACCOUNTING OF OPTIONS AND GUARANTEES .....	4
STAKEHOLDER CONCERN 4: IMPROVING DISCLOSURES .....	4
<b>IMPLEMENTATION TIMELINE .....</b>	<b>4</b>
<b>ILLUSTRATIVE EXAMPLES.....</b>	<b>5</b>
OVERVIEW .....	5
PRODUCTS MODELED .....	5
SCENARIOS MODELED .....	5
ILLUSTRATIONS BY PRODUCT.....	6
Term specifications and assumptions .....	6
Term reserves.....	6
Term DAC.....	8
Term GAAP income and GAAP equity.....	10
UL & FDA.....	12
UL and FDA impact to DAC due to the proposed changes.....	13
UL and FDA impact to SOP03-1 reserves due to the proposed changes.....	17
PAR WL.....	17
Par WL reserves .....	18
Par WL DAC .....	20

<b>GMXBS AND VARIABLE ANNUITIES.....</b>	<b>22</b>
<b>LOSS RECOGNITION .....</b>	<b>22</b>
<b>TERM LOSS RECOGNITION .....</b>	<b>23</b>
<b>UL LOSS RECOGNITION .....</b>	<b>24</b>
<b>INDUSTRY SURVEY .....</b>	<b>25</b>
INDUSTRY PREPAREDNESS .....	25
DAC AMORTIZATION.....	25
INDUSTRY EXPECTATIONS .....	26
INDUSTRY CONCERNS .....	27
<b>CONCLUSION .....</b>	<b>28</b>

## Executive Summary

### PURPOSE OF STUDY

The Financial Accounting Standards Board (FASB) has proposed significant changes to GAAP accounting standards for long duration insurance contracts to address several stakeholder concerns. FASB released an exposure draft, [Financial Services \(Topic 944\) - Targeted Improvements to the Accounting for Long-Duration Contracts](#), on September 29th, 2016 where they detailed their proposed changes and exposed it for comments. We have performed a study to understand and discuss:

- The impact of the proposed changes on earnings and equity for several illustrative product types
- The industry's preparedness to adopt the new guidance by surveying 14 significant life insurance and annuity writers

### PROPOSED CHANGES

We have summarized below FASB's proposal to address stakeholder concerns:

- Improve the timeliness of reflecting changes in underlying experience by unlocking and then periodically updating benefit and expense reserves for fixed premium / fixed benefit products. Use discount rates based on fixed-income instruments that reflect the duration characteristics of the future policy benefits. Update the discount rate periodically.
- Simplify the amortization of deferred acquisition cost (DAC) by amortizing DAC in proportion to insurance or benefits inforce without interest accrual on the DAC balance. Eliminate loss recognition testing. Instead, cap the net premium ratio at 100%.
- Use fair value methods to derive the reserves for all guaranteed minimum benefits associated with separate account contracts.
- Provide additional and detailed disclosures for liability balance roll-forwards to improve the effectiveness of required disclosures and provide more decision-useful information to financial statement users.

### OUR OBSERVATIONS AND CONCLUSIONS

We have summarized below our study results and observations of the impact of the proposed changes compared with current GAAP. While the terms FAS60, FAS97, and FAS120 are technically no longer in use, we use them here and elsewhere in this report, as they are part of the common vernacular.

#### Term and other FAS60 products

- Under FASB's proposed changes, provisions for adverse deviations (PADs) would be eliminated from the net premium and reserve calculation and the entire premium would be available to fund the reserves. Based on our research, we believe that this would tend to reduce the net GAAP liability (GAAP reserves less DAC) for all FAS60 products.
- Under the proposed changes, the discount rate used in the reserve calculations would be based on the yields of high quality, fixed-income instruments that reflect the duration characteristics of the future policy cash flows, which is in contrast to current GAAP where the discount rate is equal to the expected earned rate with a PAD. Hence this proposed change can result in a misalignment between the earned rates and discount rates used to calculate the reserves. Such misalignment can produce a mismatch between the value of the assets backing the liabilities and the value of the liability measured under the proposed GAAP. The earned rate can also underpin the dividend rate whereby a misalignment can occur between the rate underlying the dividend scale and the discount rate.
- The DAC would tend to be amortized at a faster rate due to the absence of interest rate discounting under the proposed approach.
- Because reserve assumptions would no longer be locked in, updating reserves due to changes in assumptions would produce an immediate GAAP income gain or loss.
- Reserves would be much more sensitive to deviation of actual experience from expected, since the net premium ratio would need to be reset based on actual experience to date.
- Under current GAAP, when deviation of actual experience from expected occurs during the current period, almost the entire amount of the variance affects the GAAP income immediately, whereas under the proposed changes, some of the variance may be partially offset by a corresponding update in the liability calculation.

- Companies may not have tracked the historical experience necessary to effect reserve net premium recalculation, since, under current GAAP, factors are not recalculated and saving past experience is not required.

#### Universal life, single premium fixed deferred annuities, and other FAS97 products

- Consistent with FASB's proposal, we believe that death benefit amount can be used to amortize DAC for universal life (UL) products. Similarly, for single premium fixed deferred annuities (FDA), we believe account value or policy count can be used to amortize the DAC. If the FDA or a variable annuity (VA) contract has GMxB<sup>1</sup> riders, besides policy count, perhaps a combination of account value and benefit base could be used as an appropriate basis to amortize the DAC.
- The new amortization basis under the proposed changes would result in DAC being less sensitive to experience deviations than it is under current GAAP.

#### Participating whole life

- Due to a possible misalignment between the discount rate and the earned rate underlying the dividend rate, the liability measurement could be understated or overstated relative to what would be needed to fund the benefits and anticipated dividends.
- In addition, the effect of updating discount rates would be recorded directly in other comprehensive income (OCI). The amount included in accumulated OCI would be the difference in the liability calculated at the current discount rate and the amount calculated using the discount rate at contract inception. This would exacerbate the mismatch in earnings between the discount rate and the projected dividends as interest rates change over time.
- The DAC under the proposed method would generally amortize at a faster rate due to the absence of interest accruals on the DAC balance.

#### GMxBs and variable annuities

- The proposed changes would require the reserving of all GMxBs using fair value methods. Under current GAAP, guaranteed minimum benefits that are deemed to be life contingent are generally valued under SOP03-1 and other GMxBs are fair-valued under FAS133.
- The proposed change would provide incentives for companies to hedge the fair value of all GMxBs to reduce volatility in the income statement.
- For companies that do not hedge, or that hedge their statutory results, the proposed change may cause an accounting mismatch that is different in magnitude and direction.

#### Loss recognition

- Proposed changes would eliminate loss recognition. The net premium ratio or the benefit ratio would be capped at 100%, which then ensured that reserves would always be sufficient to cover expected future benefit payments and maintenance expenses.
- The DAC calculation would be independent of the allocation of revenues to fund the benefit and maintenance expense reserves. Thus, there could arise a situation where the reserves net of the DAC balance would be lower than the gross premium valuation reserves. In such a situation there would be no adjustment to DAC or the benefit reserves. DAC amortization would be projected to contribute to losses in the future, which is in contrast to current GAAP where expected losses from DAC cannot be deferred and the balance is written down and an immediate loss is realized.

<sup>1</sup> Guaranteed minimum benefits associated with variable annuities are often referred to as GMxB, Guaranteed Minimum Benefits of type x: (GMDB [Death], GMAB [Accumulation], GMIB [Income], and GMWB [Withdrawal]).

### Industry preparedness and expectations

- Only one of our 14 survey participants said they had a plan in place to test, analyze, and implement the proposed changes. The remaining 13 participants said they had not completed any work beyond discussing the proposed changes with senior management.
- The survey participants largely agreed that it is appropriate to update reserves for traditional fixed premiums / fixed benefits products for actual experience and change in assumptions. Survey participants also generally agreed that a positive outcome of the proposed changes would be to simplify the DAC calculation.
- The main concern areas were: 1) Required attribution, disclosures, and documentation; 2) Transition to proposed changes; and 3) Update liability cash-flows and changes in discount rates relative to earned rate for fixed premium/ fixed benefit products.
- The main causes of concern were resource constraints, lack of additional guidance and clarity, and possible materiality of impact.

### WHAT IS NEXT?

As mentioned above, FASB released the exposure draft on Sept 29, 2016. Subsequently, FASB provided a 75-day comment period that ended on December 15, 2016. FASB held a roundtable discussion on March 15, 2017, to discuss the comments on its exposure draft. A summary of the comments received and FASB's outreach to users of financial statements is available on their website. Details of the roundtable discussion were not publicly available at the time of writing this report. FASB will deliberate on any changes to their proposals based on comments and responses to ensure a full retrospective application of the proposed accounting standard by year-end 2018. However, FASB has not released any definitive time table for completing their deliberations.

## Method of Study

We performed a two-part study to better understand the proposed guidance.

In the first part, we developed illustrations for four products: Term life insurance (Term), participating whole life insurance (Par WL), single premium fixed deferred annuities (FDA), and universal life insurance (UL), under several scenarios to illustrate the potential impact of the proposed changes to the GAAP income statement, the GAAP balance sheet, and GAAP equity. We illustrated comparisons of the GAAP income statements and elements of the GAAP balance sheet under the current standards versus the proposed standards.

In the second part of the study, we surveyed a total of 14 companies to understand the industry's preparedness and concerns in adopting these proposed changes. The survey participants are significant writers of annuity and life insurance business. The majority of the survey participants are publically owned companies and report on a U.S. GAAP basis. A few participants use U.S. GAAP only for internal management or other purposes. The aggregate statutory reserve for the 14 survey participants as of year-end 2016 was \$287 billion of life insurance reserves and \$386 billion of annuity reserves.

## Proposed Changes to Address Stakeholder Concerns

We have discussed below the major changes as proposed by FASB to address stakeholder concerns.

### STAKEHOLDER CONCERN 1: IMPROVE THE TIMELINESS OF REFLECTING EMERGING EXPERIENCE AND ITS DEVIATION FROM EXPECTED IN THE CALCULATION OF THE LIABILITY VALUE

**Proposed Changes:** To address this concern, FASB has proposed substantial changes to the reserving for fixed benefit / premium products. The products that are deemed as FAS60, FAS120, SOP95-1, and FAS97 limited pay contracts are the most affected. While the net premium reserve method would continue to apply, a revised net premium ratio would be calculated at each valuation date using actual historical experience and projected best estimate cash flows. The assumptions used to project cash flows would be evaluated at each valuation date and would not contain any PADs. The assumptions must be updated at least annually.

In contrast, under current accounting guidance, in the absence of loss recognition, the assumptions, and hence the reserve factors, are locked in and do not change. PADs are incorporated with the best estimate assumptions determined at the issue date of the insurance contract.

Under the new standards, the discount rate used to calculate the benefit and expense reserves would be based on the yields of high quality, fixed-income instruments that reflected the duration characteristics of the future policy benefits. We believe that the discount rate should be based on an AA quality yield curve, since the wording in the exposure draft is the same as is used for pension obligations, and for those the Securities and Exchange Commission (SEC) has deemed “high quality” to be AA. These discount rates would be updated quarterly. In contrast, under the current accounting requirements, the discount rates are based on earned rates of assets backing the product (with an appropriate PAD) and are locked in at the time of issue, unless loss recognition occurs.

#### STAKEHOLDER CONCERN 2: SIMPLIFY THE AMORTIZATION OF DAC

**Proposed Changes:** To address this concern, FASB has proposed that the DAC for all products be amortized in proportion to insurance or benefits in force and that no interest be accrued on the DAC balance. In contrast, under the current accounting requirements, DAC is amortized in proportion to estimated gross profits (EGPs), estimated gross margins (EGMs) or premiums, based on the product type and the outstanding DAC asset accrues interest.

FASB has proposed that there would be no loss recognition testing. Instead, the net premium used in calculating the benefit and expense reserves would be updated regularly and capped at 100%. The level of future revenues would no longer impact the amount of acquisition expenses deferred or the amortization of such expenses. Interestingly, this could result in a product that would have 100% of revenues used to fund benefits, from which losses would occur each year resulting from the related DAC amortization.

In contrast, under the current accounting requirements, DAC is amortized in proportion to premium, EGPs, or EGMs. Current GAAP requires loss recognition testing to ensure sufficiency of revenue to fund DAC amortization along with ensuring reserve adequacy. If the net GAAP liability is lower than the gross premium reserve, under current GAAP, management needs to address reserve inadequacy by considering a series of actions. Under current accounting requirements, net premium ratio / benefit ratio at the cohort level can exceed 100% provided the loss recognition requirements are met.

#### STAKEHOLDER CONCERN 3: SIMPLIFY ACCOUNTING OF OPTIONS AND GUARANTEES

**Proposed Changes:** FASB has proposed that all GMxB benefits associated with any separate account contracts be measured at fair value.

In contrast, under current accounting guidance, if the GMxB rider is deemed to be life contingent, the liability will generally be valued under SOP03-1.

Note that GMxBs associated with general account products such as fixed indexed annuities would continue to be valued as per SOP03-1.

#### STAKEHOLDER CONCERN 4: IMPROVING DISCLOSURES

**Proposed Changes:** FASB will propose significantly more involved disclosure requirements than currently required.

- Disaggregated roll-forwards of the liability balances would be required along with information about estimates and judgments including how they have changed and their effect on the measurement of the liability.
- For account value-based products, balances would need to be presented based on ranges of combinations of minimum guaranteed rates and current credited rates.

## Implementation Timeline

FASB has proposed a full retrospective application of the proposed accounting standard by year-end 2018. DAC would be set to the then-existing balance, with a new amortization schedule developed to amortize the balance prospectively.



## Illustrative Examples

### OVERVIEW

The proposed changes are substantial relative to the current accounting requirements. In order to better understand the implications of the proposed changes, we developed illustrations to compare GAAP income and elements of the GAAP balance sheet under the current standards versus the proposed standards. Four illustrative product types with plausible representative assumptions and product specifications are outlined below. Note that actual results will vary from product to product and with differing assumptions and emerging experience.

### PRODUCTS MODELED

We developed the illustrations for four products - Term, Par WL, FDA, and UL without any secondary guarantees. For the Term, UL and FDA products, we chose to model new business that we believe is representative of products currently sold by the industry. For Par WL, we chose to model an inforce block that we believe is reasonably representative of seasoned blocks that are currently inforce in the industry. We used a profits released model where the change in GAAP after tax equity equals the GAAP after tax income less shareholder dividends paid. Shareholder dividends paid are equal to the statutory earnings less the increase in required statutory capital.

### SCENARIOS MODELED

For each of the four products, we developed illustrations for a base scenario and sensitivities for expenses, earned rates, lapses, and mortality experience. For the FDA and UL, we illustrated the impact of decreasing the interest spread applied to investment income.

We performed the sensitivities to primarily illustrate the impact of:

- Periodically updating reserve assumptions and the net premium for traditional life and Par WL products
- Changing amortization basis of DAC for all products

We performed the sensitivities by changing the assumptions from the base for projection years 3 and beyond. In the table below we have summarized the sensitivities performed for the four products.

**FIGURE 1: SENSITIVITY RECAP**

ASSUMPTION	SENSITIVITY DESCRIPTION
MORTALITY	10% INCREASE FOR TERM, UL AND PAR WL, AND A 10% DECREASE FOR FDA
MAINTENANCE EXPENSES	10% INCREASE FOR ALL FOUR PRODUCTS
LAPSE	25% INCREASE FOR TERM, PAR WL AND UL, AND 25% DECREASE FOR UL AND FDA
EARNED RATE	50 BPS INCREASE AND DECREASE IN EARNED RATES FOR ALL PRODUCTS, WITH CREDITED RATE SPREAD MAINTAINED AND PAR DIVIDEND SCALE UPDATED
SPREAD ON INVESTMENT INCOME	REDUCE EARNED LESS CREDITED SPREADS BY 25 BPS FOR UL AND FDA

For the Term product, we performed an additional sensitivity where we increased the mortality by 100% in only projection year 3 to illustrate loss recognition impacts under current GAAP.

For the Par WL product, we performed an additional sensitivity on the discount rate to highlight the impact of a possible inconsistency between the discount rate and the earned rate and hence the credited rate underlying the dividends.

Under the proposed changes, there will be no recoverability or loss recognition testing. To understand the implication of the proposed change, we developed illustrations for a stress scenario where:

- Under current GAAP standards, loss recognition occurs and PADs, if applicable, are first removed, and then the DAC asset balance is written down, and finally the reserves are unlocked / increased to ensure that they are adequate.
- Under the proposed changes, DAC is not written down, and there are no additional reserves beyond the calculated reserves.

## ILLUSTRATIONS BY PRODUCT

For each product type, we highlighted illustrations with the largest impact.

For certain product types, a few of the sensitivities produced only modest impacts. This may be due to one or a combination of reasons such as product designs, the base assumptions used, and the degree of deviation from base assumptions.

### Term specifications and assumptions

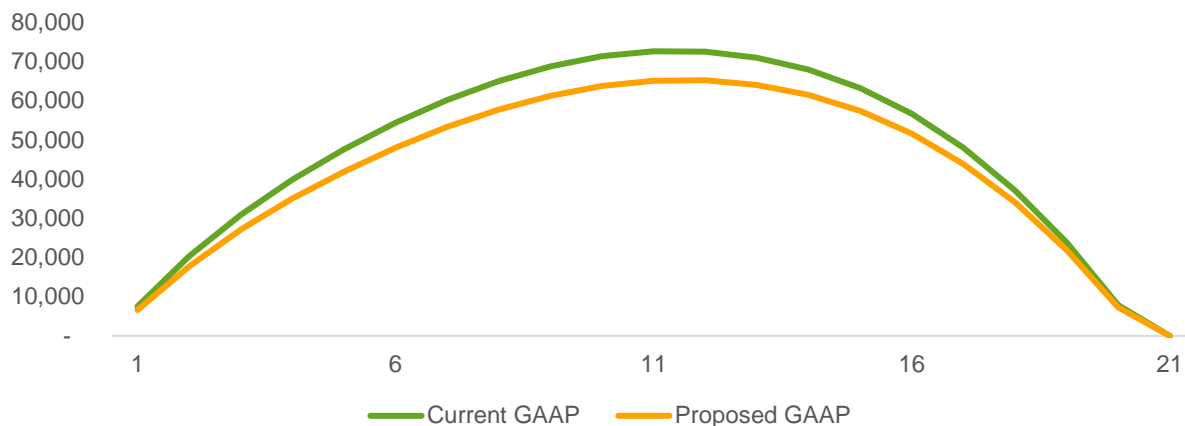
We modeled a 20-year term product. The key product specifications and assumptions are:

- The average face amount per policy is approximately \$560,000; average annual premium is approximately \$1,020.
- \$45 per policy and 1.5% of premium as maintenance expenses with an inflation rate of 2%.
- An acquisition expense of \$250 per policy and a commission rate of 105% of the first year premium.
- The mortality assumption is a multiple applied to the VBT 2008 ANB S&U table with mortality improvement assumed.
- The lapse rates vary by length of the term / level premium period; we assume that all policies lapse at the end of the level premium paying period.
- The earned rate assumption before PAD and the experience earned rate, is 4.5%. We also use this rate as the discount rate for the reserves under the new GAAP calculations.
- The F60 discount rate assumption is 3.5%.
- The mortality and maintenance expense PAD for current GAAP is 10%.

### Term reserves

As evident from the graph below, the benefit and expense reserves calculated under the proposed changes are lower than the reserves under current GAAP, since one of the proposed changes is the elimination of PADs when calculating the net premium reserves.

FIGURE 2: TERM GAAP RESERVES (BASE)

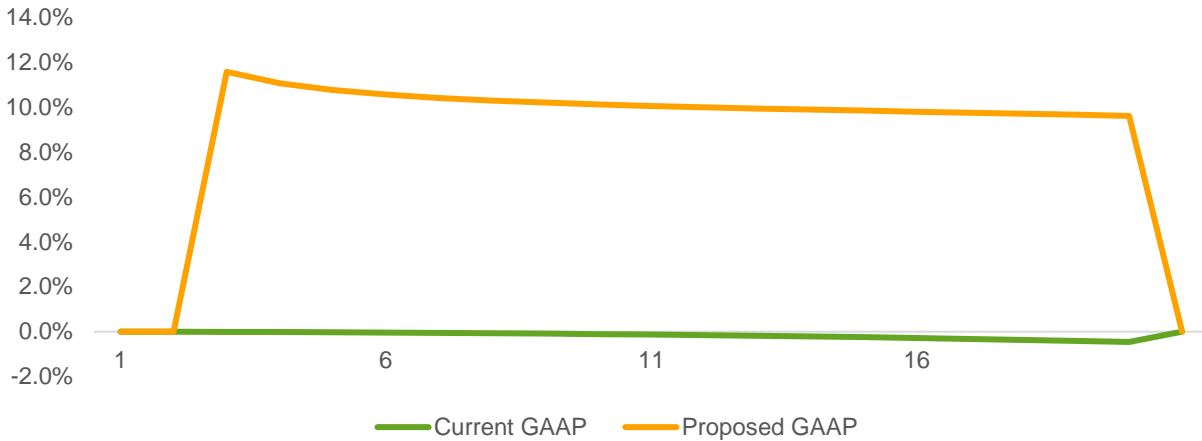


In the graphs below, for the mortality and expense sensitivities, we illustrate the percentage change in reserve levels compared with the reserve levels in the base case scenario. Current GAAP results reflect locked-in reserve factors, but GAAP reserves change due to differing amounts of inforce. Under proposed GAAP, we reflect both changes in actual experience and reserve assumptions simultaneously.

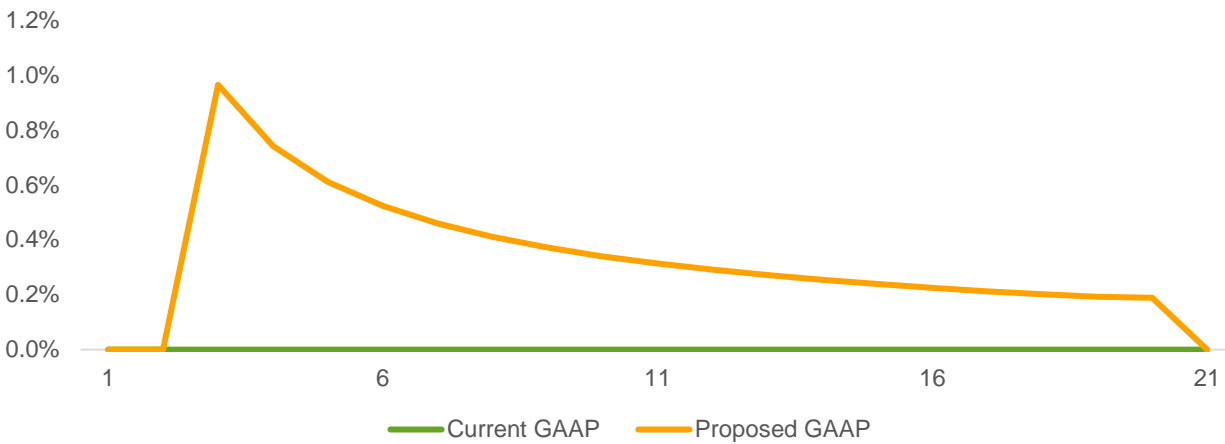
From the expense and mortality sensitivity, it is evident that increased mortality and expense assumptions produce:

- A substantial increase in projected reserve levels when calculating reserves using the proposed method.
- Lower projected reserve levels due to increased mortality under current GAAP. Increased mortality lowers the face amount inforce that is applied to reserve factors that continue to stay locked in.
- No change to projected reserve levels due to increased expenses under current GAAP. Increased expenses do not affect projected inforce amounts, and reserve factors also remain unchanged.

**FIGURE 3: TERM CHANGE IN GAAP RESERVE FROM BASE (MORTALITY INCREASE)**

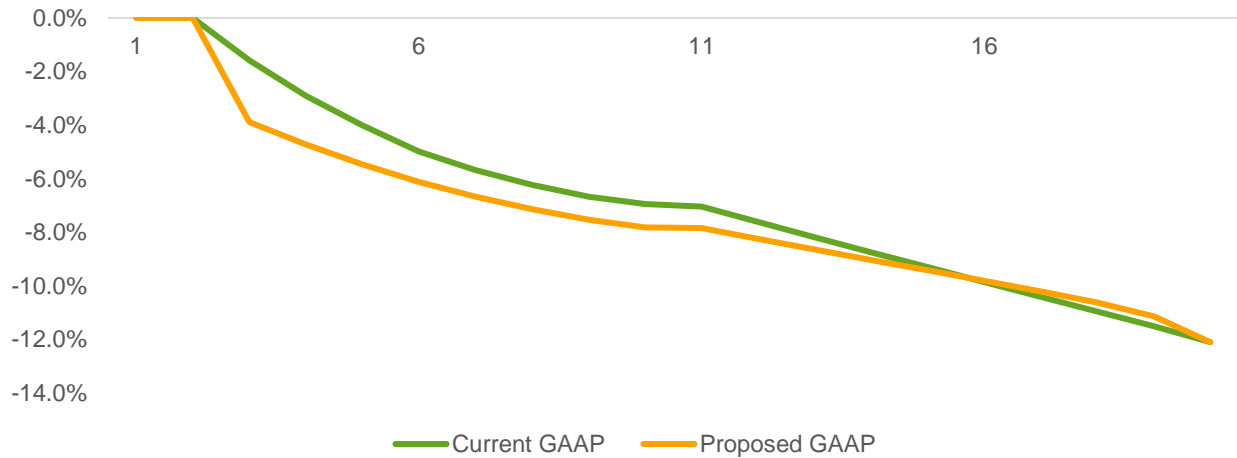


**FIGURE 4: TERM CHANGE IN GAAP RESERVE FROM BASE (EXPENSE INCREASE)**

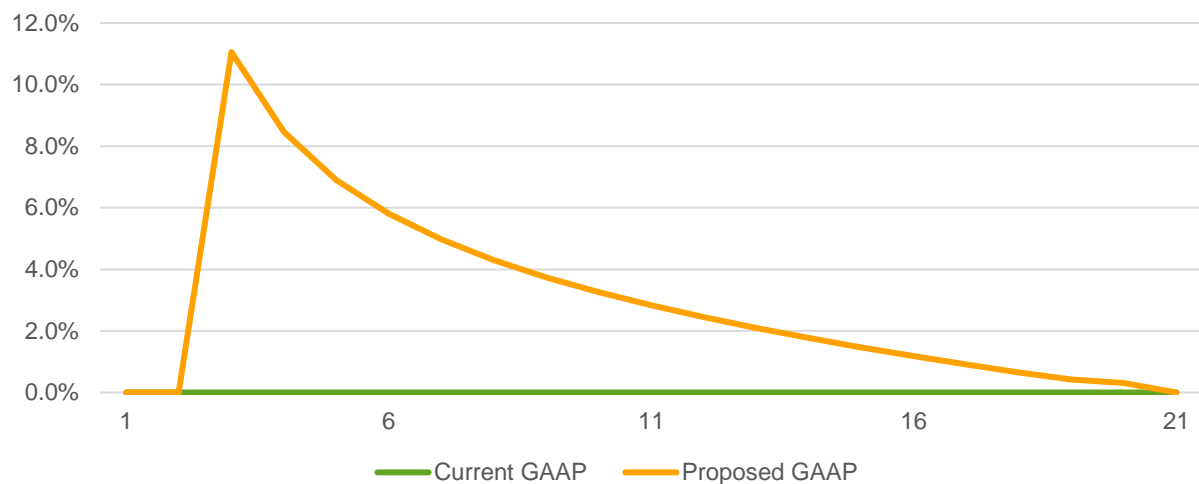


From the graphs below, it is evident that for both current and proposed methods, increased lapses decrease reserves due to lower expected face amount inforce and thus lower mortality benefits. The discount factor and hence the reserves under the proposed changes are sensitive to change in asset earned rates and interest rate levels. However, the reserves calculated under current GAAP will remain insensitive to earned rates and interest rates since the discount rate is locked in.

**FIGURE 5: TERM CHANGE IN GAAP RESERVE FROM BASE (LAPSE INCREASE)**



**FIGURE 6: TERM CHANGE IN GAAP RESERVE FROM BASE (EARNED RATE DECREASE)**



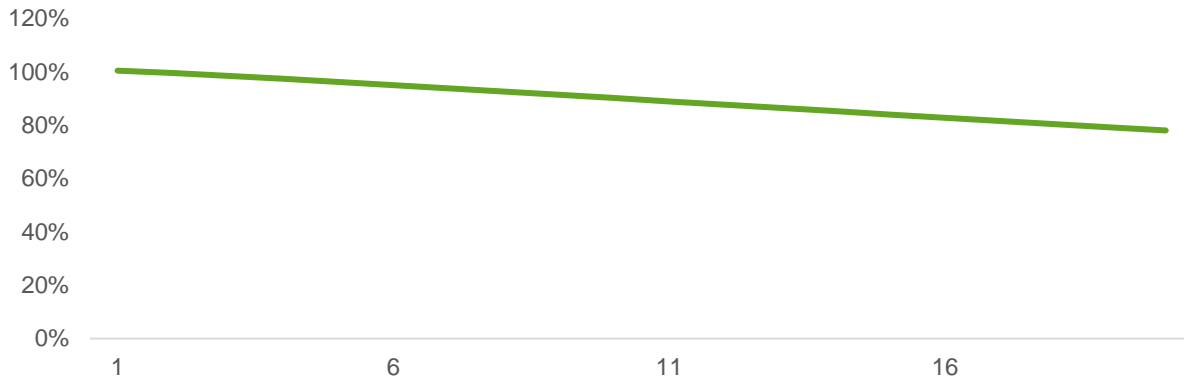
**Term DAC**

The proposed changes require that the DAC be amortized in proportion to benefits or insurance inforce. Insurance inforce is projected using assumptions without any PADs, in contrast to current GAAP, under which the amortization revenue is projected using assumptions with PADs. Removing PADs results in an increase of the projected DAC balances when compared with the DAC balances under the current method.

The proposed changes do not allow for accumulation of interest on the outstanding DAC balance. Removing interest rate discounting results in a decrease of the projected DAC balances when compared with the DAC balances under the current method.

In this example, the impact of interest rate discounting on DAC is significantly more than the impact of PADs. Hence DAC balances under the proposed GAAP are lower than the DAC balances under current GAAP.

**FIGURE 7: TERM RATIO OF DAC BALANCE: PROPOSED METHOD VS CURRENT GAAP**



In the illustrations shown below, under the proposed method, our models produce a DAC that is less sensitive to changes in mortality and lapse assumptions compared with the sensitivities under current GAAP. Upon increasing the mortality or lapse assumption, the projected amortization basis decreases for both current and proposed GAAP. However, under the proposed method, the k-factor increases when updated for the increase in mortality and lapse assumptions, which is in contrast to the current method where the k-factor is locked in at contract issue date. The increased k-factor under the proposed method dampens the impact of the lower projected amortization basis thus rendering the DAC under the proposed method less sensitive to the change in assumptions.

**FIGURE 8: TERM CHANGE IN DAC FROM BASE (MORTALITY INCREASE)**

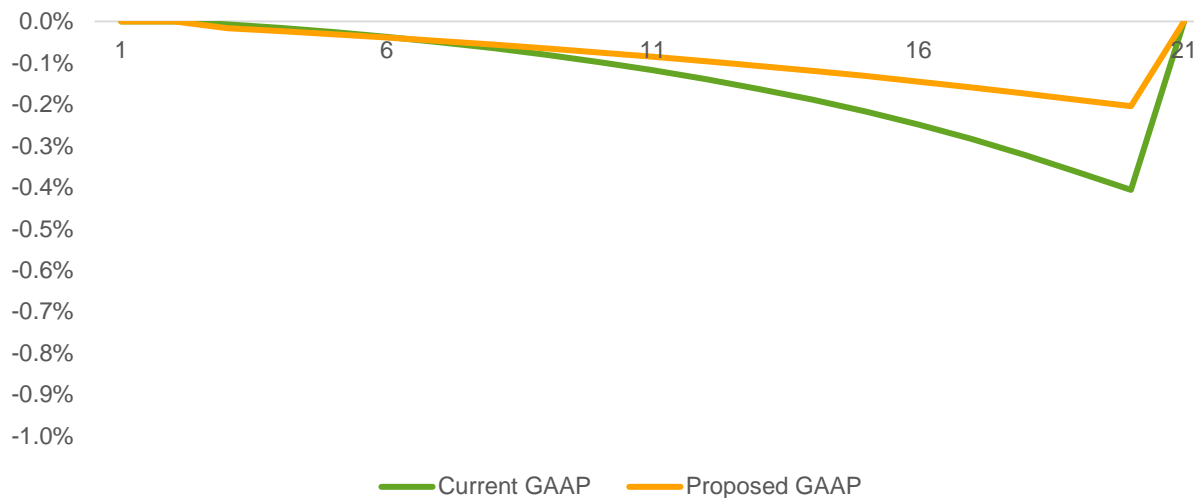
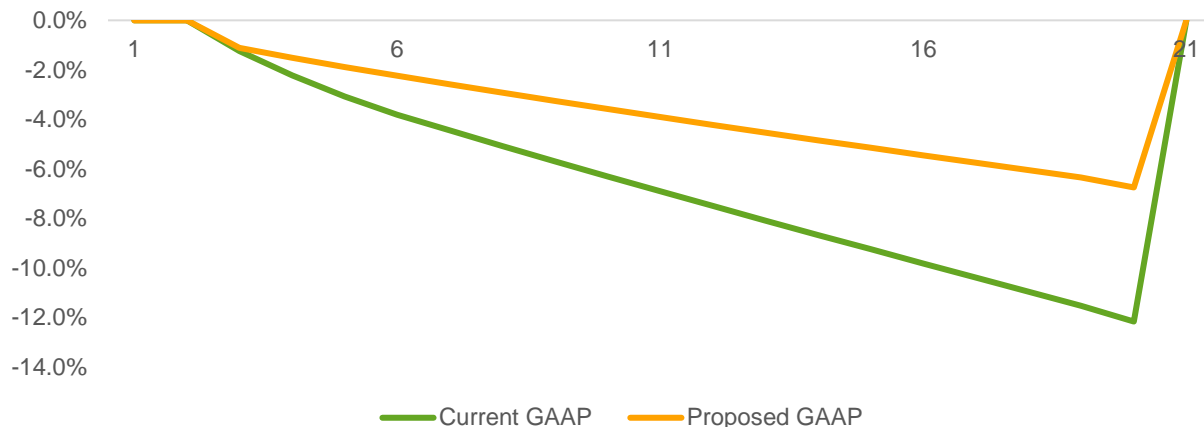


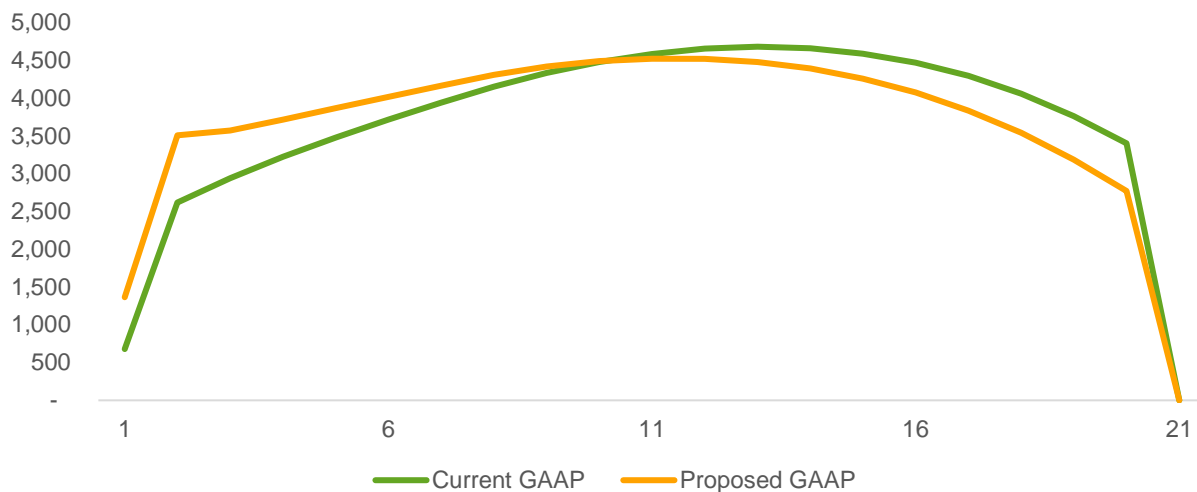
FIGURE 9: TERM CHANGE IN DAC FROM BASE (LAPSE INCREASE)



Term GAAP income and GAAP equity

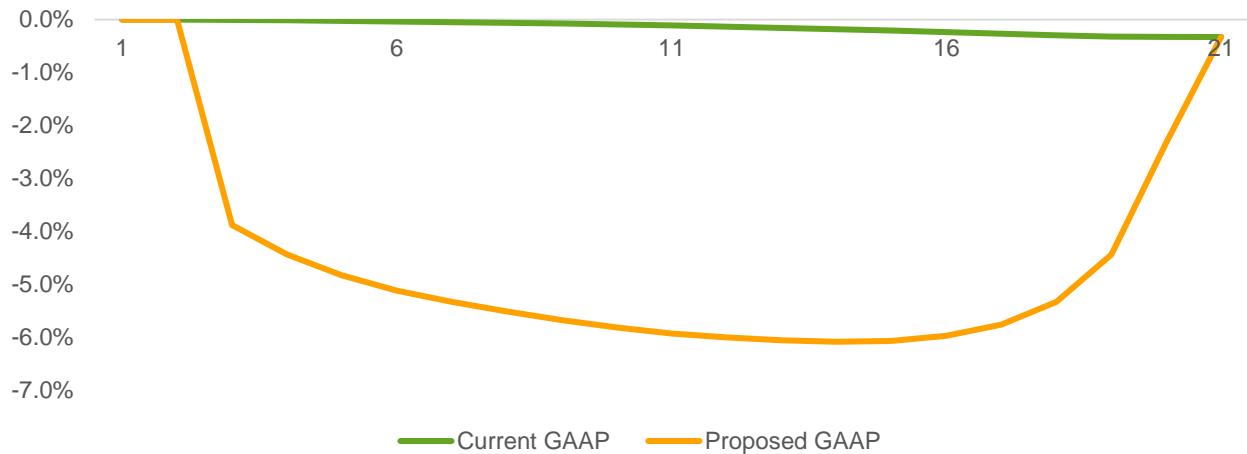
As explained above, under the proposed standards, the reserves will reduce and the DAC balance will decrease, resulting in a decrease in the net GAAP liability under the proposed changes versus under current GAAP. The total income under both current and proposed methods is exactly the same over the life of the product. However, under the proposed method, the lower projected net GAAP liability would result in an acceleration of GAAP income. The graph below illustrates the result.

FIGURE 10: TERM GAAP INCOME (BASE)

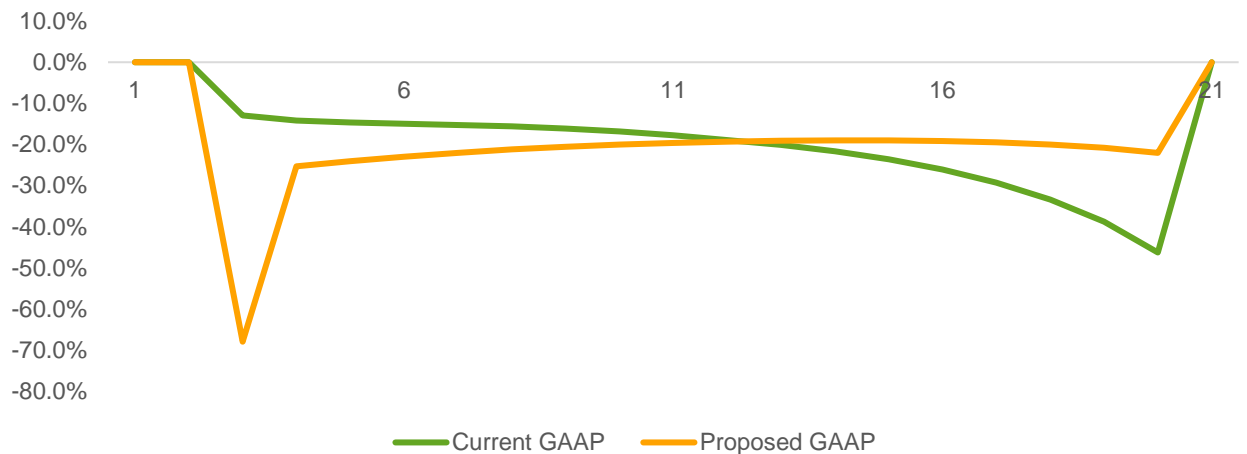


As illustrated in the graphs below, the proposed changes would result in the GAAP income and GAAP equity being relatively more sensitive to changes in assumptions. This is primarily driven by the update of net premium reserves due to assumption changes which causes an immediate income gain or loss followed by a relatively smoother income pattern compared with the current GAAP where assumptions are locked.

**FIGURE 11: TERM CHANGE IN GAAP EQUITY FROM BASE (MORTALITY INCREASE)**



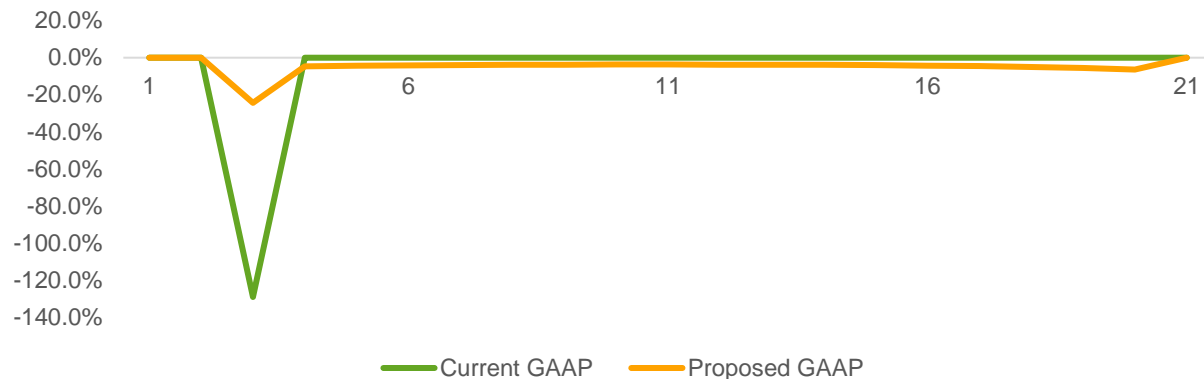
**FIGURE 12: TERM CHANGE IN GAAP INCOME FROM BASE (MORTALITY INCREASE)**



The net premium ratio and assumptions are locked in under current GAAP. Unless a loss recognition event takes place, the reserve per unit of insurance in force will not change when actual experience differs from that assumed in the reserve calculation or when expectations as to future experience change. Under the proposed approach, the reserve per unit would be recalculated at each valuation date using actual historical experience and current expectations for future experience. Thus, when current period variances in experience occur, the entire amount of the variance affects the GAAP income today. Under the proposal, some of the variance would be offset by a corresponding update in the reserve calculation.

We increased the mortality assumption in projection year 3 (only) by 100% to simulate deviation of actual experience from expected. In all other projection periods we left the mortality assumption unchanged. The illustration below showing the results of our simulation is consistent with our reasoning above for “one-off” adverse deviation in experience from the expected.

FIGURE 13: TERM CHANGE IN GAAP INCOME FROM BASE SCENARIO (+100% MORTALITY IN YEAR 3)



#### UL & FDA

Similar to traditional fixed premium/benefit products, for interest sensitive products the proposed changes would require DAC to be amortized in proportion to benefits or insurance inforce. The DAC would not accrue interest.

To illustrate impact of the proposed changes to the DAC calculation for flexible premium, interest sensitive products, we have modeled a UL contract with no secondary guarantees and an FDA with no GMxB. For the UL product, we used the death benefit inforce; for the FDA product, we used account value to amortize the DAC.

The key product specifications and assumptions associated with the UL product are:

- Average face amount is \$422,000.
- Premium is set to target premium in year 1, with 5% annual premium suspense in policy years 2 and later. No pour-in premium. Average premium inforce in the first policy year is \$4,500.
- Commissions are 80.0% in policy year 1, 6.0% in policy years 2–5, 4.0% in policy years 6–10, and 0% thereafter.
- Acquisition expenses are \$120 per policy, \$0.50 per unit, and 20% of first year premium.
- Maintenance expenses are \$25 per policy, 2% of all premium, and \$8 per death claim.
- Earned rate is 5.0%; credited rate is 4.0%.
- Surrender charges grade to zero over 15 years.
- Mortality is 75% of the VBT 2001 ALB S&U table.
- Surrender rates are 15% in year 1, 10% in year 2, 5% in year 3, and 3% thereafter. No dynamic lapses or partial withdrawals were modeled.

The key product specifications and assumptions associated with the FDA product are:

- A multi-year guarantee annuity with a guarantee period of five years with an average single premium of approximately \$62,000.
- A credited rate of 2.5% during the guarantee period and a minimum guarantee credited rate of 0.5%.
- The assumed earned rate is 4.5% and the spread is 2%.
- The surrender charge schedule grades from 8% to 5% over the guarantee period. There is no surrender charge after the guarantee period.



- The assumed lapse rate grades from 0.5% to 2% during the guarantee period followed by a shock lapse of 59% in policy year 6, followed by an ultimate lapse rate of 25% for policy years 7 and beyond.
- The mortality assumption is the Annuity 2000 Basic table.
- The commission rate and acquisition expense as a percentage of premium is 5.0% and 0.8%, respectively.
- The per policy acquisition expense is \$250, and the maintenance expense assumption is \$85 per policy, with an inflation rate of 2% per year.

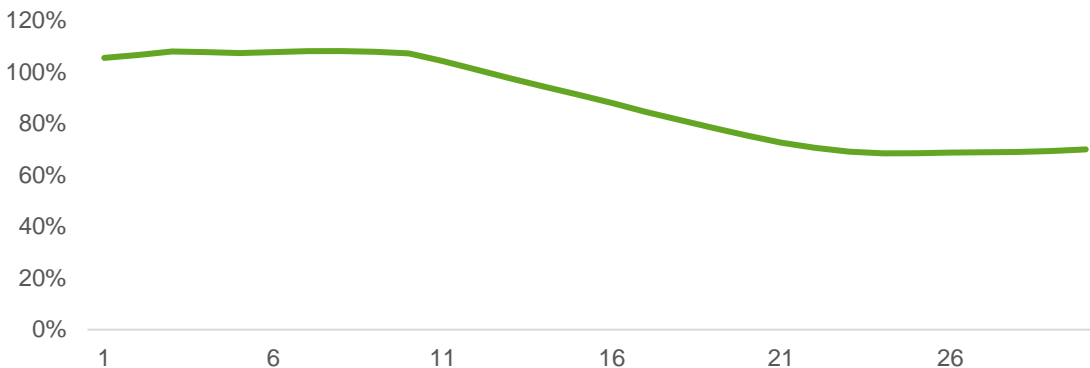
**UL and FDA impact to DAC due to the proposed changes**

In the illustrations below we show that, unlike the Term product, the DAC balance calculated under the proposed changes would not always be lower than DAC calculated under current GAAP. This phenomena is exaggerated for the UL product. We believe that this could be due to a combination of:

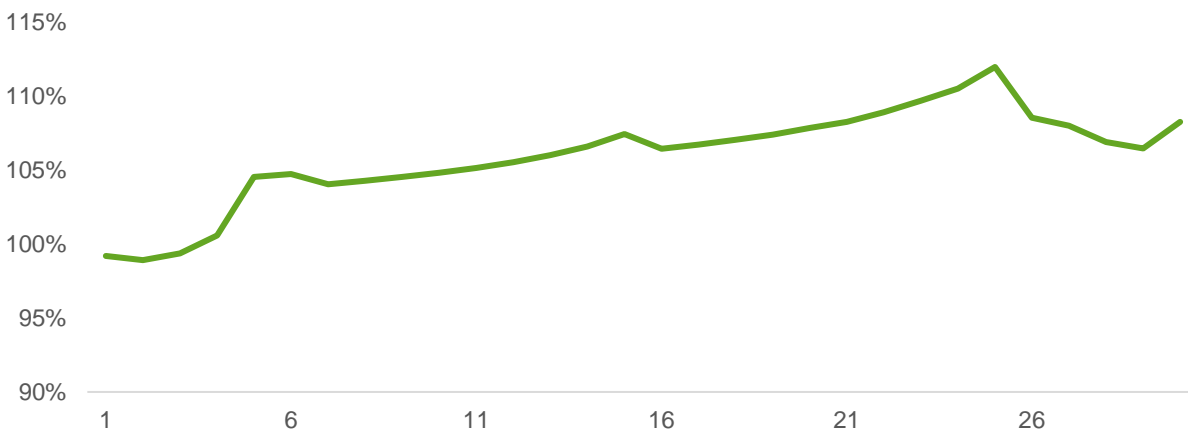
- The product specifications and assumptions that we used produced a nonlinear relationship between EGPs (which are the amortization basis for current GAAP) and the amortization basis used for calculating DAC under the proposed changes.
- Projected EGPs can increase or decrease from one projection period to the next. However, the amortization basis under new GAAP, i.e., death benefit inforce and account value, generally would tend to decrease after the contract was past the premium paying period.

As mentioned above in the illustrations for the term product, the proposed changes would not allow for accumulation of interest on the outstanding DAC balance. Hence the amortization basis would not be discounted for interest, in contrast to the current GAAP where DAC accumulates interest and hence the amortization basis is discounted for interest when calculating DAC.

**FIGURE 14: UL RATIO OF DAC BALANCE (BASE)**

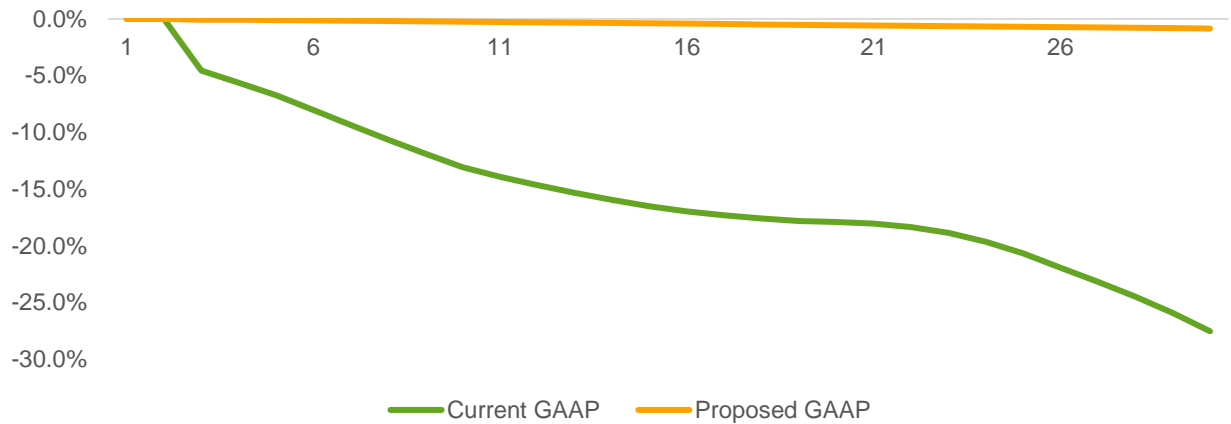


**FIGURE 15: FDA RATIO OF DAC BALANCE (BASE)**

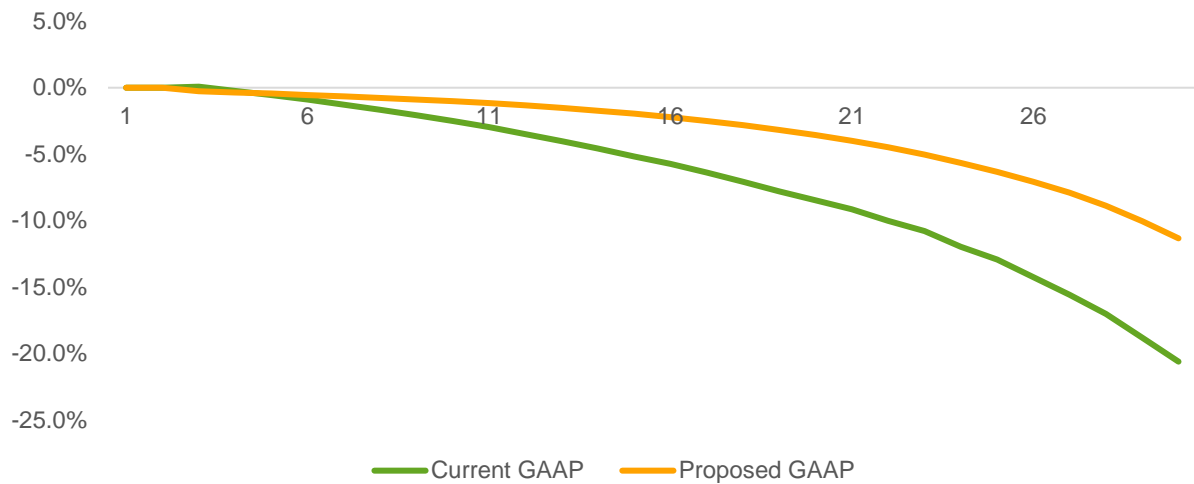


We believe that the amortization basis under current GAAP (EGPs) is much more sensitive to changes in assumptions compared with the amortization basis under the proposed GAAP, where we used account value for both UL and FDA. Hence, DAC under the proposed methodology would change only modestly when experience deviated from expected, when compared with the analogous situation under current GAAP. We illustrate this phenomenon in the graphs below.

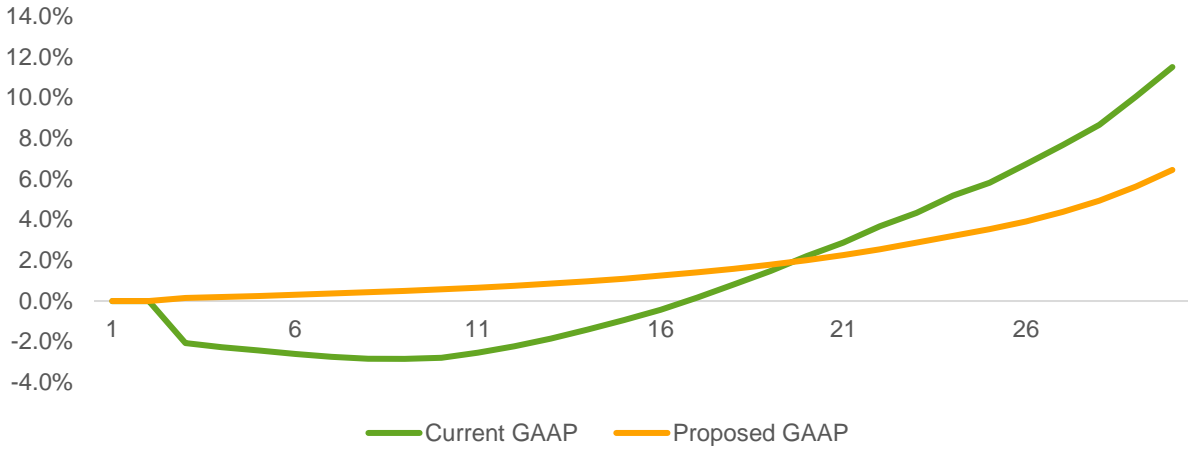
**FIGURE 16: UL CHANGE IN DAC FROM BASE (MORTALITY)**



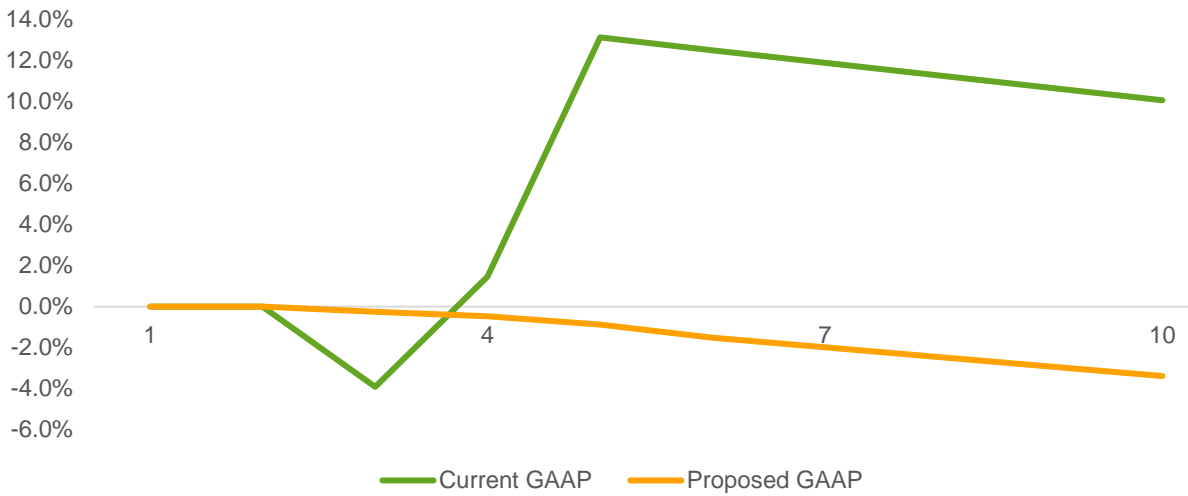
**FIGURE 17: UL CHANGE IN DAC FROM BASE (EARNED RATE DECREASE)**



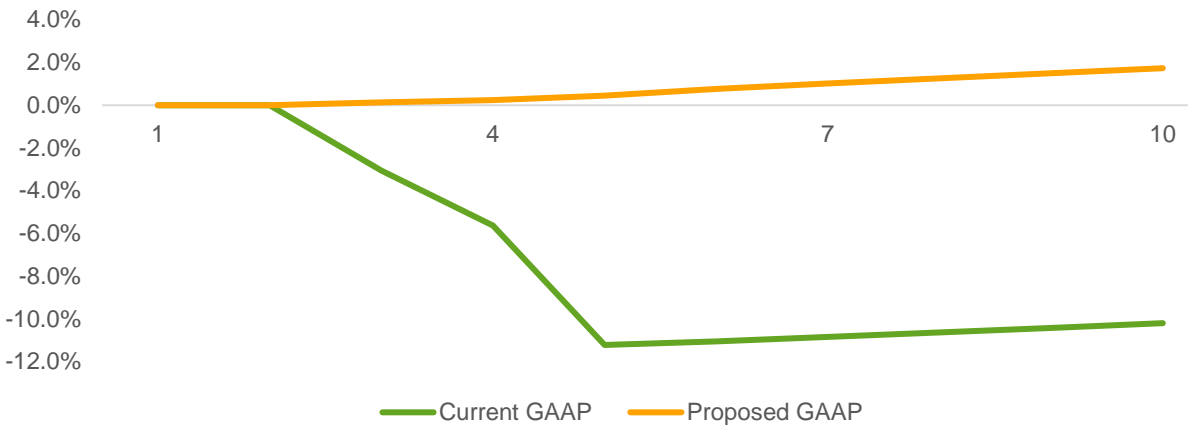
**FIGURE 18: UL CHANGE IN DAC FROM BASE (SPREAD DECREASE)**



**FIGURE 19: FDA CHANGE IN DAC FROM BASE (EARNED RATE DECREASE)**



**FIGURE 20: FDA CHANGE IN DAC FROM BASE (SPREAD DECREASE)**



**UL increase in mortality sensitivity:** The EGPs would be impacted on a dollar-for-dollar basis for the increase in projected net-amount-at risk benefits paid upon increasing the mortality assumption. However, the death benefit inforce, which is the amortization basis under the proposed method, is less impacted on a percentage change basis. Thus the impact due to the mortality sensitivity on the amortization basis and hence DAC would be more muted under the proposed method.

**UL earned rate decrease sensitivity:** Upon decreasing the earned rates, the projected EGPs would be lowered (due to spreads being earned on smaller account values) and cause a faster amortization of DAC compared with the base scenario under the current method. This is in contrast to the current method where amortization basis (death benefit inforce) is lowered at a much slower rate. Upon a decrease in earned rates, the credited rates and projected account value are reduced, thereby decreasing the death benefit inforce for the option B UL only.

**UL spread decrease sensitivity:** Upon decreasing the spreads, under the current method, the k-factor increases due to lower EGPs and a higher discount rate (due to increased credited rates). The increased k-factor leads to a faster amortization of DAC during the first 20 projection years. However, after the 20th year, the increased k-factor is not sufficient to offset the decreased EGPs leading to lower amortization and hence increased DAC compared with the base scenario. This is in contrast to the proposed method where the increase in spreads would modestly increase the amortization basis due to the increase in projected death benefits inforce for option B UL. Hence under the proposed method, DAC would be amortized at a slower rate compared with the base scenario when the spread was increased.

**FDA earned rate decrease sensitivity:** We have used account value as the amortization basis for FDA under the proposed method. Compared with the current method, the amortization basis (account value) and hence DAC under the proposed method would be less impacted due to a decrease in earned rates primarily for two reasons:

- We modeled a five-year MYGA where the credited rates and thus, the account value, would be unchanged during the guarantee period when the credited rate was fixed.
- After the guarantee period, the shock lapses would result in substantial account value released because of surrenders under both base scenario and the sensitivity. Therefore, there would not be sufficient account value remaining for the impact of lower earned rates to have material effect.

This is in contrast to the current method where the amortization basis (EGPs) is substantially reduced upon lowering the earned rates. Therefore, the DAC is much more sensitive under the current method to change in assumptions. The earned rate decrease sensitivity results in a decrease followed by an increase in the projected DAC balance compared with the base scenario. This anomalous pattern is due to a combination of the following factors:

- The EGPs and effective DAC at end of years 1 and 2 remain unchanged since they are considered historical when simulating a scenario of an assumption change in the future. However the k-factor increases substantially since the PV of EGPs decrease due to the lowering of earned rates. The relatively high k-factor, when applied to the unchanged EGPs during projection years 1 and 2, produces a substantially lower DAC in projection year 3 despite lower EGPs and results in a lower amortization in year 3.
- After projection year 3, the continued lower projected EGPs leads to a lower amortization of DAC and therefore increased DAC balance levels compared with the base scenario. The increase in k-factor is not sufficient to offset the impact of lower projected EGPs, resulting in a lower amortization amount and higher projected DAC balances compared with the base scenario.

**FDA spread down sensitivity:** As with the earned-rate down sensitivity, the DAC under the proposed method would be less sensitive to changed spreads than under the current method. In contrast, under the current method, the projected DAC balance in all projection periods is lower than the DAC balance as projected in the base scenario. This is primarily due to two factors:

- During the guarantee period, the EGPs are unchanged since the credited rate is fixed. However, the k-factor decreases due to lower projected EGPs after the guarantee period. This higher k-factor produces a high amortization during the guarantee period, because the EGPs are not changed.
- After the guarantee period, the increase in k-factor is large enough to cause a greater amortization for the sensitivity scenario compared with the base case.

### UL and FDA impact to SOP03-1 reserves due to the proposed changes

Under current GAAP, for UL products with secondary guarantees and for FDAs with GMDB or GMWB benefits, an additional SOP 03-1 liability value is required for any benefits in excess of account value released.

Similar to FAS60 product's net premium ratio, the proposed changes would require that SOP03-1 benefit ratio be capped at 100%.

We have not modeled the proposed benefit ratio cap, since currently, companies approximately reflect the cap through loss recognition.

### PAR WL

Under the proposed changes, a benefit reserve would need be calculated for expected dividend payments using best estimate assumptions along with expected death benefits, surrender benefits, and expenses. Similar to Term, the proposed changes would require updating reserves for changes in assumptions, updated discount rates, and replacement of expected with actual / historical amounts. In contrast, under the current GAAP, reserves are calculated in accordance with FAS120 or SOP95-1, where the benefit reserves are based on the assumptions underlying the dividend fund, or the guaranteed non-forfeiture basis if there is no underlying dividend fund. The reserve factors calculated at issue are locked in unless a loss recognition event occurs.

The proposed changes would require the discount rate be used in reserve calculations to be based on the yields of high quality fixed-income instruments that reflect the duration characteristics of the future policy benefits. In contrast, under current GAAP, the discount rate is set to the dividend fund interest rate, or the guaranteed interest rate used in calculating the cash value if the dividend fund rate is indeterminable. Thus, the proposed change may result in a disconnect between the discount rate and the rate underlying the dividend fund.

The proposed changes would require DAC to be amortized in proportion to benefits or insurance inforce, in contrast to current GAAP where DAC is amortized in proportion to EGMs.

To illustrate the impact of the above changes, we have modeled a seasoned inforce block. The key product specifications and assumptions are:

- A level premium, dividend paying business.
- Average face amount per policy is approximately \$100,000; average annual premium is approximately \$1,500.
- A 2% commission. A \$50 per policy expense (with 2.5% annual inflation), and a 1.61% percent of premium maintenance expense.
- Mortality is based on the 2001VBT. Average mortality grades from approximately 65% to 100% of 2001VBT over the first 20 policy years, then up to 125% over the next 20 years, and up to 150% over the following 20 years.
- Lapse rates are 4% and occur on premium due dates.
- Dividends assume an initial 5% dividend interest rate with adjustments based on movement in average portfolio yield and projected mortality and expenses.
- Dividend scale is adjusted dynamically based on projected earned rates, mortality rates, and expenses.
- No policy loans are assumed.
- Earned rate is 5%.

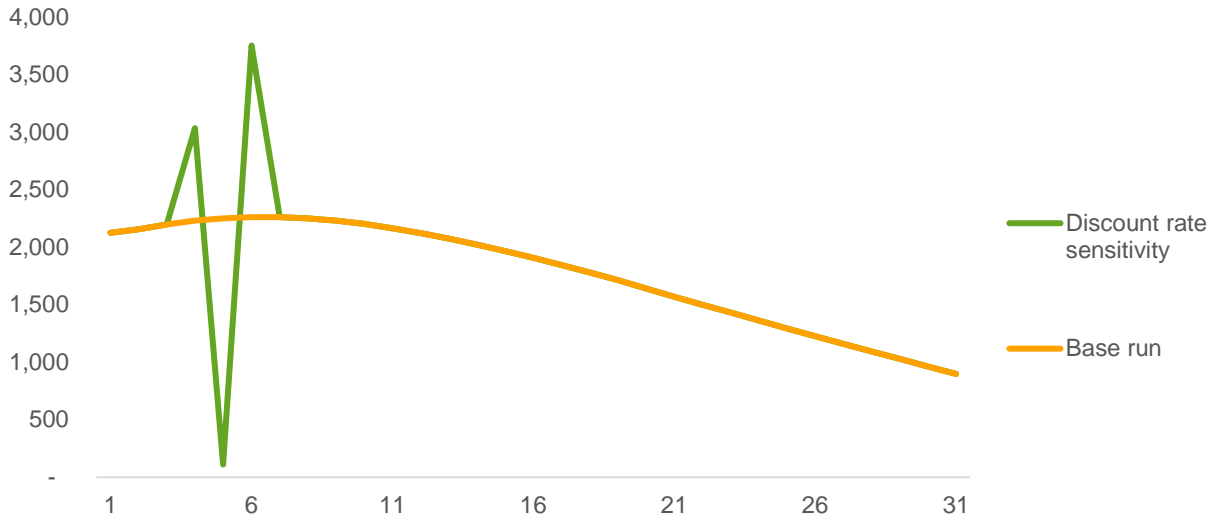
As stated above, the discount rate used to calculate the reserves under the proposed method was based on high quality fixed-income investment yield assets that reflect the duration characteristics of the future policy benefits.

As a result, the liability measurement could be understated or overstated relative to what would be needed to fund the benefits and anticipated dividends.

In addition, the effect of updating discount rates would be recorded directly in OCI. The amount included in accumulated OCI would be the difference in the liability calculated at the current discount rate and the amount calculated using the discount rate at contract inception. This would exacerbate the mismatch in earnings between the discount rate and the projected dividends as interest rates changed over time.

To illustrate this significant issue, we shocked the discount rate assumption in projection years 3, 4, and 5 while leaving the earned rate assumption the same. In our illustration, the GAAP book value of the assets backing the liability was assumed to remain unchanged, and the value of liability either decreased or increased based on an increase or decrease to discount rates thus causing a significant impact to the GAAP income and equity.

FIGURE 21: PAR WL GAAP EQUITY (DISCOUNT RATE CHANGE COMPARED WITH BASE SCENARIO: Y3:+1%, Y4: -2%, Y5: +2%)

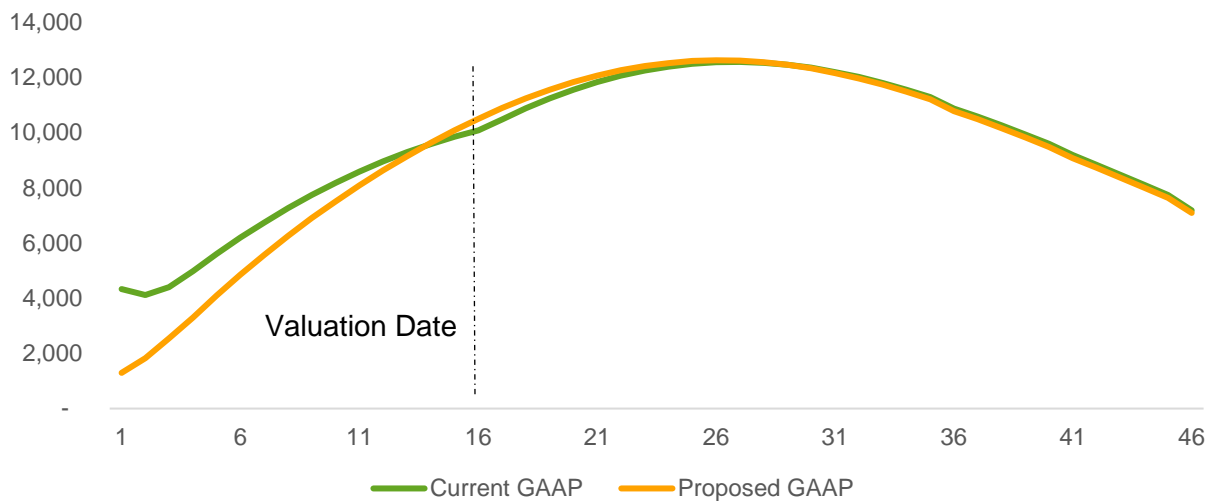


**Par WL reserves**

As mentioned above, under the proposed changes, a benefit reserve would need to be calculated for expected dividend payments using best estimate assumptions along with expected death benefits, surrender benefits, and expenses.

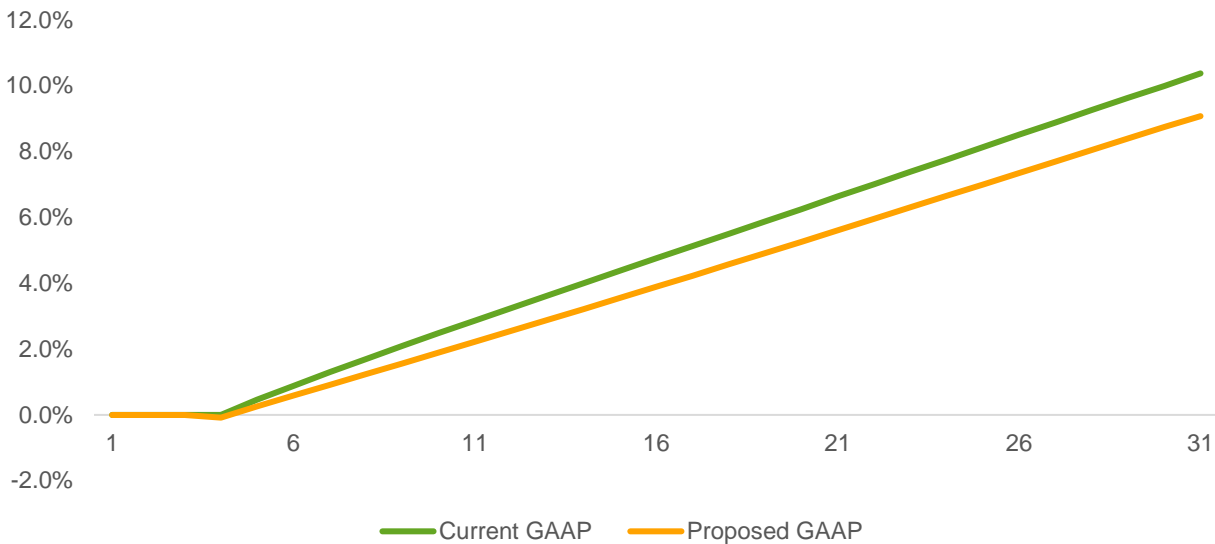
As shown in the illustration below, the prospective reserves levels did not change significantly due to the proposed changes.

FIGURE 22: PAR WL GAAP RESERVE (BASE)



We see a similar phenomenon for the sensitivities. We have shown below the change in reserve levels compared with the base case for both current and proposed GAAP. In general, reserves did not change significantly due to sensitivities under current GAAP because reserve factors are locked in. For proposed GAAP, reserves would not change materially because dividend scales were assumed to adjust to reflect changes in anticipated experience. Note that for the earned rate sensitivities, both the earned rate and the discount rate changes were +/- 50 bps.

**FIGURE 23: PAR WL CHANGE IN GAAP RESERVES FROM BASE (EARNED RATE INCREASE)**



**FIGURE 24: PAR WL CHANGE IN GAAP RESERVE FROM BASE (MORTALITY INCREASE)**

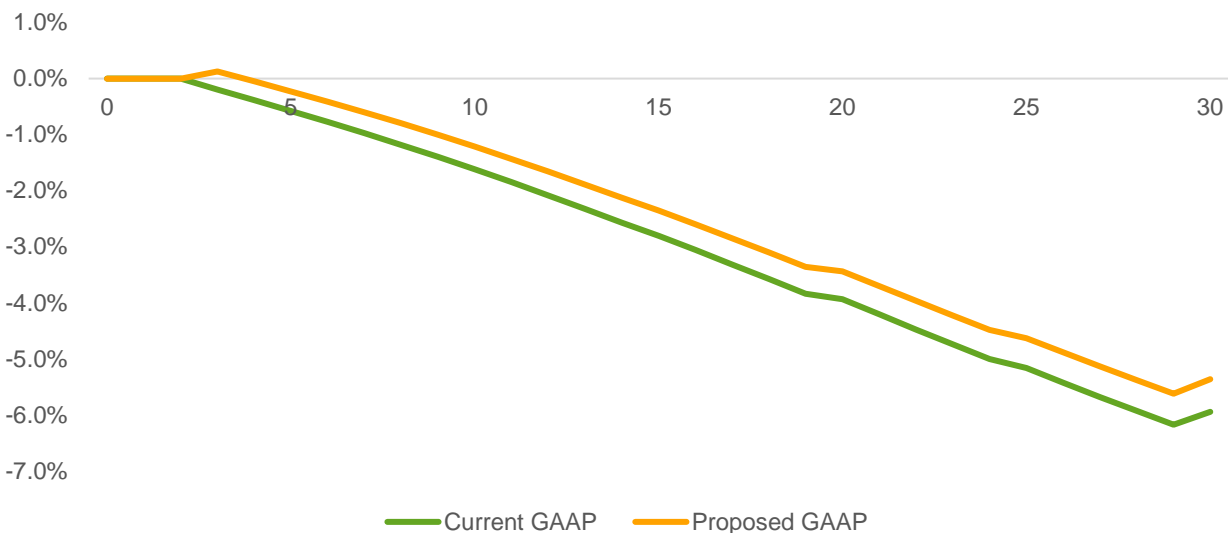
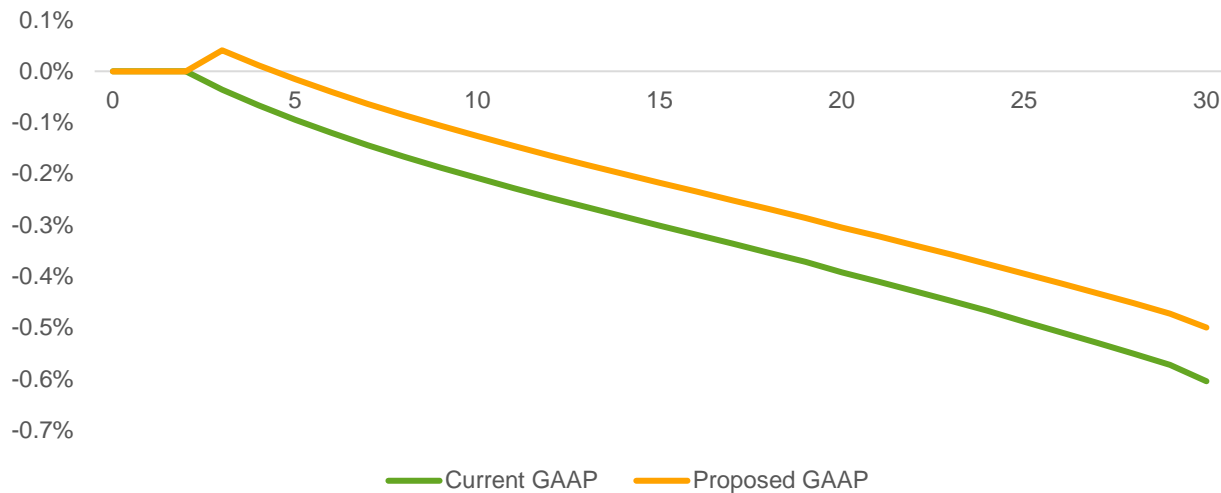


FIGURE 25: PAR WL CHANGE IN GAAP RESERVE FROM BASE (EXPENSE INCREASE)



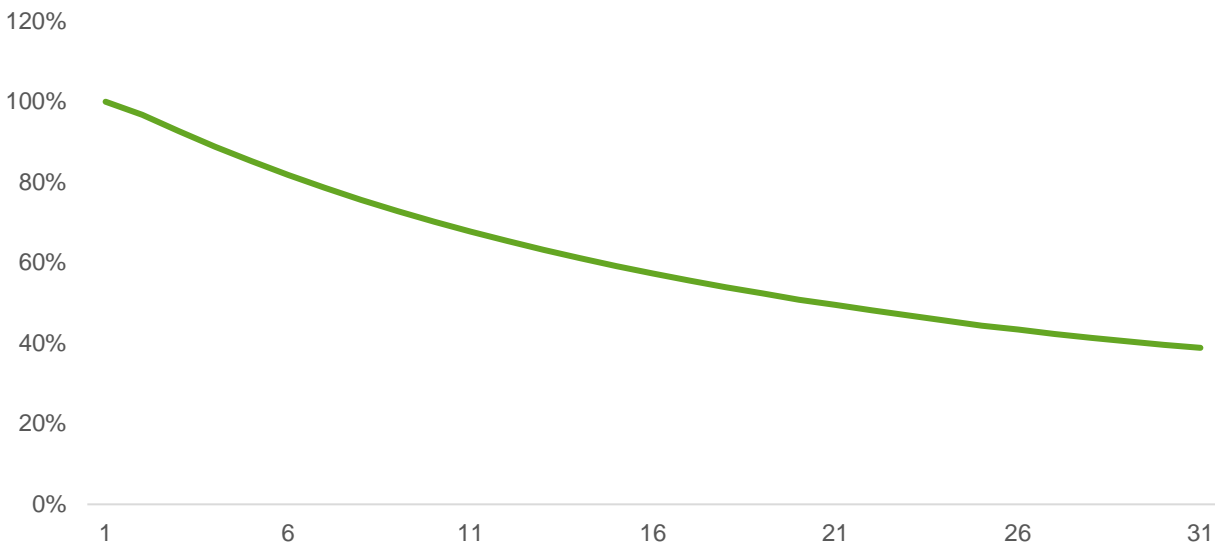
Par WL DAC

Under the current method we calculated the k-factor as of the issue date and the DAC is amortized in proportion to EGMs. The outstanding DAC balance accumulates interest.

The proposed changes would require amortization of the outstanding DAC balance for inforce blocks, as of the transition date, using the proposed method. Since we are modeling an inforce block, and to be consistent with the method used to amortize DAC at the time of transition, we amortized the outstanding DAC balance produced by the current GAAP method as of the valuation date using death benefit inforce as the amortization basis to calculate DAC under the proposed method. The DAC balance does not accumulate any interest.

Thus, the starting DAC balance under both methods as of the valuation date are the same. However DAC under the proposed method would not have any discounting of the amortization basis due to interest, which would result in DAC being amortized at a faster rate compared with current GAAP. The graph below illustrates our results.

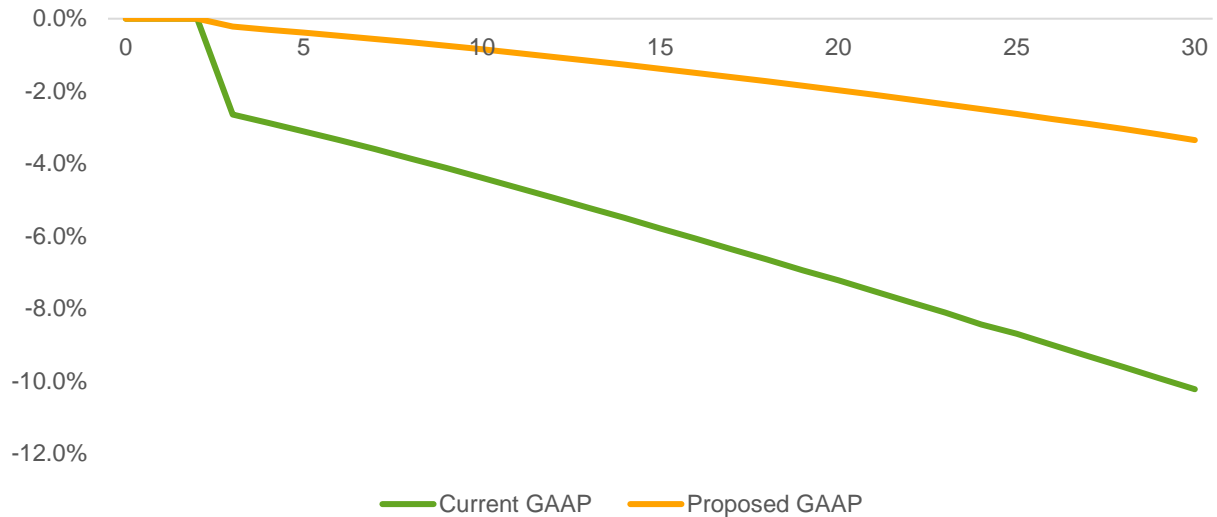
FIGURE 26: PAR WL RATIO OF DAC: PROPOSED VS CURRENT GAAP (BASE)



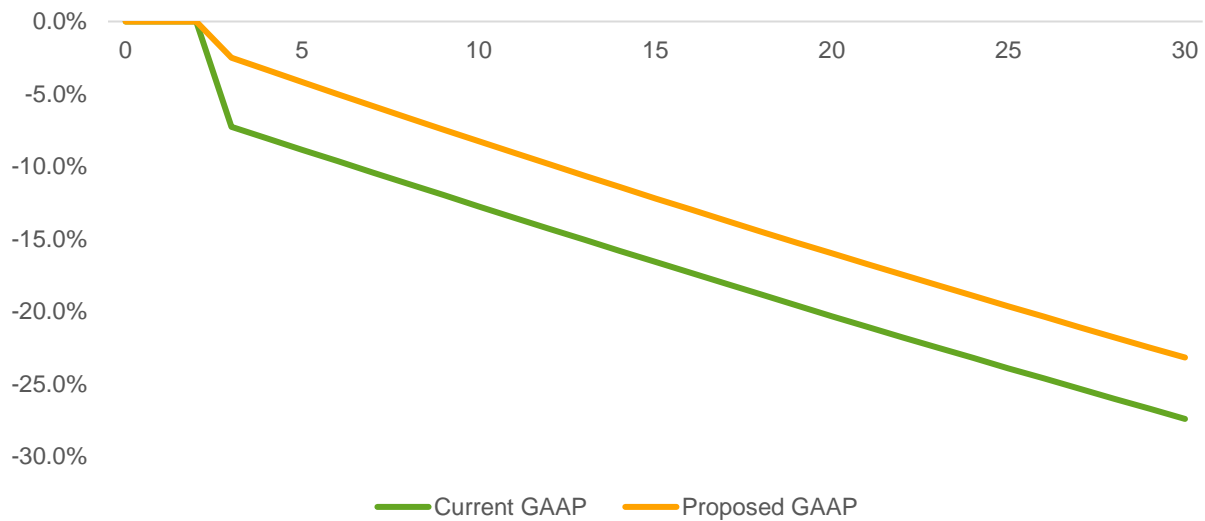


Similar to UL and FDA, DAC for Par WL under current GAAP is more sensitive to changes in assumptions compared with DAC calculated under proposed GAAP. This phenomena is due to the amortization basis under current GAAP being more sensitive to changes in assumptions compared with the amortization basis under the proposed method.

**FIGURE 27: PAR WL CHANGE IN DAC FROM BASE (MORTALITY INCREASE)**



**FIGURE 28: PAR WL CHANGE IN DAC FROM BASE (LAPSE INCREASE)**



**Mortality increase sensitivity:** The percentage decrease in the amortization basis compared with the base due to an increase in mortality assumption is much larger under current GAAP. Hence, DAC under current GAAP is amortized at a faster rate.

**Lapse increase sensitivity:** The amortization basis under current GAAP (EGMs) is lowered due to surrender benefits paid. The amortization basis under the proposed method (death benefit inforce), also decreased but at a slower rate compared with EGMs. Hence, DAC under current GAAP decreases at a faster rate compared with the proposed method upon increasing the lapse rate.

## GMxBs and Variable Annuities

FASB's proposed changes would require all GMxBs associated with separate account contracts, whether provided by a rider or as part of the base contract, to be measured at fair value, in contrast to current GAAP where any benefit deemed as life contingent are generally valued using SOP03-1. Due to this proposed accounting change, we believe that the reserve levels would be much more volatile, since the reserve calculations using fair value methods would be much more sensitive to market movements as compared with reserves calculated using SOP03-01.

Many VA writers do not hedge some or all of their GMxBs. For these companies, there are no hedge gains / losses to offset the change in fair value of reserves (liability). The proposed changes may create incentives for such companies to reevaluate their hedging strategy and philosophy.

Secondly, post the 2008 financial crisis, many VA writers have preferred to hedge their statutory balance sheet and solvency requirements as opposed to the fair value / economic value of the GMxB riders and benefits. For these companies, there would continue to be a mismatch between the hedge gains/losses and the change in GAAP liability value, though the mismatches may now be different in direction and magnitude due to the proposed changes. It is possible that these companies would continue to prioritize their statutory balance sheet and surplus stability rather than using hedging to manage their GAAP income volatility.

Since there is already sufficient knowledge and experience in the VA industry for hedging market risk, the industry in general has a good understanding of the impact of fair value measurement of GMxBs. Therefore, we did not model or develop illustrations to further discuss the impact of the proposed changes.

## Loss Recognition

Under the proposed changes, DAC would be amortized in proportion to insurance or benefits inforce. It would no longer be tied to the expected profitability of the underlying contracts. Benefit reserves would be updated on a regular basis so that they were always based on current assumptions. The benefit ratio / net premium ratio would be capped at 100%. Thus, there would be no need for a loss recognition test to be performed.

We believe that it will take some time for the industry to get used to decoupling the DAC from the expected profitability of contracts.

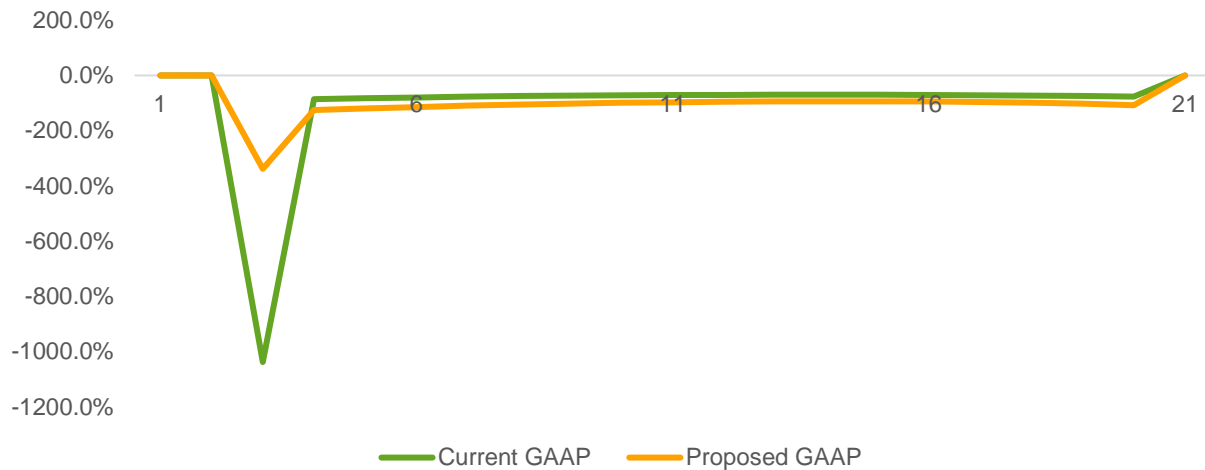
If there occurs a situation where the benefit ratio or the net premium ratio would need to be capped at 100%, the losses due to DAC amortization would be realized overtime, which is in contrast to current GAAP where DAC is a part of the loss recognition testing, resulting in a greater immediate loss due to potential DAC write down.

## Term Loss Recognition

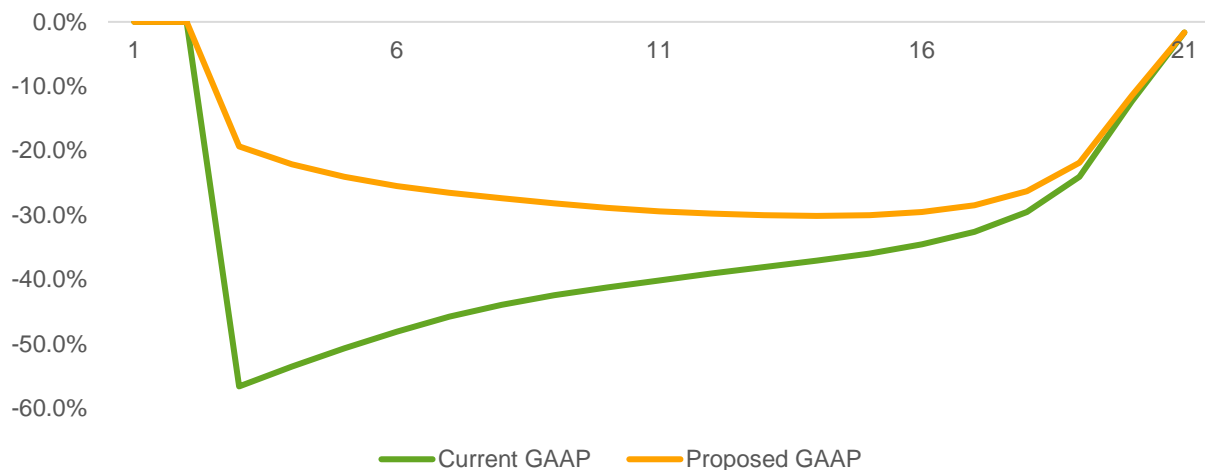
To illustrate the above, we simulated a loss recognition scenario by increasing the mortality by 50% for projection year 3 and beyond for the term product.

In the graphs below, we illustrate the impact of following the steps as mandated by current accounting standards to address loss recognition, i.e., removing PADs, followed by writing down DAC, and increasing reserves to ensure their adequacy to pay for future liabilities. This in contrast to the proposed method, where reserves would be updated to take into account the future adverse mortality. Hence under the proposed changes, an immediate loss to GAAP income would be recognized. DAC would not be written down and the amortization of the DAC would be realized as losses in future earnings.

**FIGURE 29: TERM CHANGE IN GAAP INCOME FROM BASE (ADVERSE MORTALITY)**



**FIGURE 30: TERM CHANGE IN GAAP EQUITY FROM BASE (ADVERSE MORTALITY)**

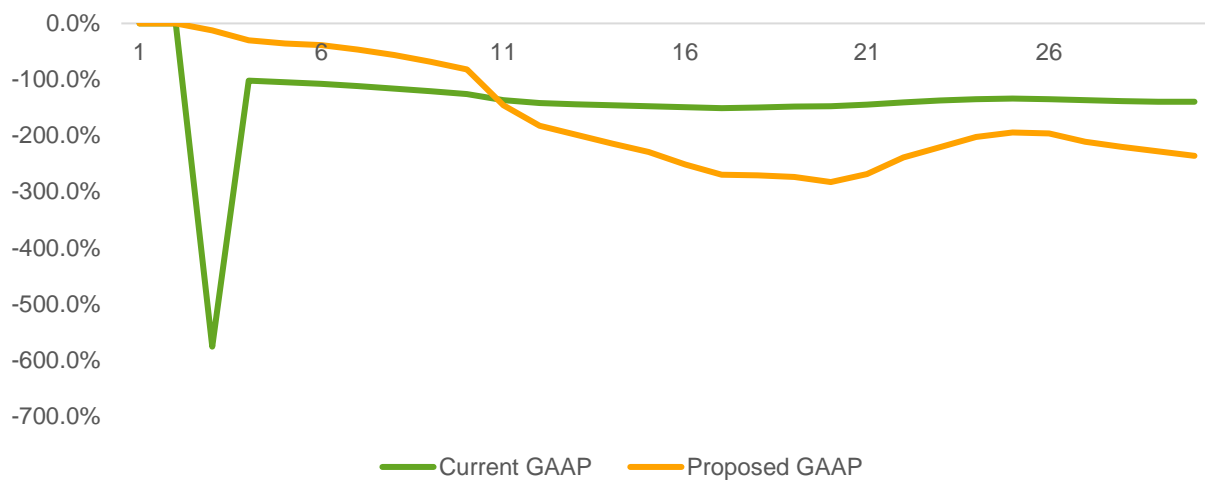


## UL Loss Recognition

We simulated a loss recognition scenario for the UL product by increasing the mortality by 70% from projection year 3 forward. With a 70% increase in mortality from projection year 3, the account value would be less than the gross premium reserve (GPV). We realize that a 70% increase in mortality is unlikely. We also recognize that other factors such as spread compression combined with increase in expenses could create an equivalent degree of loss of margin with a more plausible mortality deviation. We have confined our illustration to mortality for the sake of simplicity.

In the illustration below, we show that under current GAAP a loss recognition event is triggered and an immediate loss is recognized through 1) writing down of the DAC balance followed by, 2) establishing a liability in addition to the account value to ensure that the total net liability equals the GPV. This is in contrast to the proposed GAAP, where due to the absence of loss recognition, losses are recognized in emerging earnings because the reserves, which are set to account value, are not increased and DAC is not written down.

FIGURE 31: UL CHANGE IN GAAP INCOME FROM BASE (ADVERSE MORTALITY)



## Industry Survey

The second part of our study is a survey of leading annuity and life insurance writers on their preparedness to implement and expectations of the financial and nonfinancial impacts due to the proposed changes.

Fourteen companies participated in our survey, with several of them among the top 10 producers of annuity and life insurance business. Eight of these companies are publicly owned and report on a U.S. GAAP basis. The remaining six companies use U.S. GAAP for internal management purposes.

We have summarized and highlighted below the responses to our survey results.

### INDUSTRY PREPAREDNESS

We asked our survey participants a few high-level questions to understand the industry's preparedness and work they had completed to date to understand and analyze the implications of the proposed changes.

We asked the participants if they had:

- A plan in place to understand and eventually implement the proposed changes?
- Tested the impact of any of the proposed changes?
- An existing process or a clear plan in mind to produce the required attribution, disclosures, and documentation?
- Discussed the proposed changes with their auditors?

Only one of the 14 participants said they had a plan in place to test, analyze, and implement the proposed changes. The remaining 13 participants said they had not completed any work beyond discussing the proposed changes with senior management.

While six of the 14 participants stated they had not tested the implications of any of the proposed changes, two participants said they had performed quantitative testing; six participants stated they had performed qualitative testing. We believe that any qualitative or quantitative testing performed by the survey participants has been limited to aiding the discussion among senior management and auditors.

All 14 participants responded that they did not have an existing process or a clear plan in mind to produce the required attribution, disclosures, and documentation.

Eleven of the 14 participants said they had limited their discussion with their auditors to a very high level. The remaining three participants had more detailed discussions. Some of the comments provided were:

- Yes, focusing on the issue most important to us.
- Yes, we've had several discussions about the ED proposals and its implications with our auditors (including their National Office representatives) in an effort to collectively understand the potential implications of the ED.
- Yes, we discussed the company's key concerns expressed in our December 2016 comment letter to the FASB. Key concerns relate to (1) Policyholders Dividends, (2) Unlocking, (3) Discount Rate Determination and Changes, (4) Policy Loans, (5) Disclosures, and (6) Effective Date and Transition.

### DAC AMORTIZATION

Since the FASB is proposing a significant simplification to the method of DAC calculation, we asked the survey participants what they intended to use as a basis for amortizing the DAC for various products.

- For whole life and term products, the preferred choice is death benefit inforce, followed by policy count.
- For both variable and general account universal life, the preferred choice is death benefit inforce, followed by policy count and account value.
- For deferred annuities, the popular choice is account value, followed by policy count.
- For immediate annuities and structured settlements, the preferred choice is annuity benefits inforce, followed by policy count.

Some of the comments made by the participants for the basis of DAC amortization were:

- For deferred annuities we would likely use straight line, although we may decide that account balance is appropriate for fixed deferred annuities.
- Items noted as "Account Value" will be considered for a straight-line amortization approach.
- Annuities (fixed deferred, fixed indexed, and variable): Our interpretation is that the straight-line approach should be used for these products, because they do not have an explicit amount of insurance inforce.
- For LTC and DI we may use an estimate of the amount of insurance benefit available, although straight line is not out of the question.
- There are issues with increasing benefits or counts due to paid-up additions, contract modifications, and open-portfolio impact. Probably easier to amortize over the remaining life of the block of business.
- Disability insurance and long-term care: Monthly benefit.

### INDUSTRY EXPECTATIONS

We asked a few questions in our survey to understand what the expectations of the industry are due to the proposed changes. We asked the survey participants:

- How much elapsed time do you anticipate needing for implementation of the proposed changes for financial reporting?
- What will be the biggest benefit of the proposed changes?
- Do the proposed changes materially impact pricing, product strategy, hedging, inforce management, and reinsurance?
- What is your best estimate for impact to GAAP equity from this transition?

Eleven of the 14 participants said they would need more than 12 months to implement the proposed changes while the remaining participants said they would need four to 12 months.

Four participants said, either they see limited benefits or it is too early to have an opinion. The remaining 10 participants said that main improvements due to the proposed changes are:

- DAC amortization would be simplified.
- Unlocking of reserves due to assumption change and for actual experience would be meaningful, appropriate, and would allow for alignment of change in reserve with actual experience.
- Changes would facilitate hedging of the fair value all GMxB benefits.
- The proposed change to the discount rates would allow for greater alignment of value of liabilities to asset value for nonparticipating traditional business.

Nine participants said that the proposed changes would materially impact their in-force management and / or hedging practice. Five participants said that the proposed changes would impact one, or a combination of, pricing, product strategy, and reinsurance.

Three participants said they expect the proposed changes to decrease their GAAP equity by more than 10%. While these three participants have not stated the reasons for their expectation, we believe that one or a combination of the following reasons may cause their GAAP equity to reduce by more than 10%:

- Changes to the discount rates.
- Fair valuing of all GMxBs in separate account contracts.
- Unlocking the reserve factors for fixed premium / fixed benefit products.

The remaining 11 participants said that it is too early to determine the impact to GAAP equity.

## INDUSTRY CONCERNS

We asked our survey participants what aspect of the proposed changes are the most cause for concern.

Twelve participants are concerned about the unlocking of liability cash flows when reserving for fixed premium / fixed benefit products, primarily for two reasons:

- Difficulty in implementation due to resource constraints
- Possible material impact to GAAP equity and income

Nine participants expressed concern about possible material impact to GAAP financials due to a nonalignment of discount rates and the earned rates. Half of the survey participants expressed concern about fair value reserving for all GMxBs due to the possible materiality of impact to GAAP financials. A combination of a need for additional resources, perceived ambiguity about the proposed changes, and possible material impact to GAAP financials are causing almost all of the survey participants to be concerned about required attribution, disclosures, and documentation and the transition guidance.

Some of the comments made by the participants when responding to our questions about their concerns are:

- We have a concern that the new rules will create additional volatility in results.
- The removal of the PADs at transition will result in the immediate recognition of those earnings with no future emergence of those earnings over time.
- The definition of the discount rate to be used, if it remains "high-quality, fixed-income yield," is of concern. This term has previously been defined by the SEC as Moody's AA or above. Such rates would not properly reflect the liquidity risk inherent in most traditional contract liabilities.
- Our key concerns and causes are: 1. Policyholders dividends - ownership dividends are not insurance liabilities, 2. Retrospective unlocking - introduces noneconomic volatility in earnings; is costly and complex, 3. Policy loans - should be part of the insurance liability measurement due to net settlement, 4. AA Discount rate - it adds margins to the rate that do not reflect the priced liability risks.
- Unlocking liability cash flow assumptions for FAS 60 products: Will create significant additional costs, both at implementation and on an ongoing basis (tracking historical data at the cohort level, attributing and explaining unlocking impacts, etc.). Retrospective adjustment will increase earnings volatility, but we don't feel that the added volatility reflects the economics of the business. Discount rate: Lack of a deep and liquid market for AA bonds may lead to anomalies in the movement of discount rates from one period to the next.

## Conclusion

Based on the results of our modeling, and responses to our survey, we conclude that:

- The changes proposed by FASB are significant. The products that would be most affected by the proposed changes are fixed premium / fixed benefit products and VAs. Interest sensitive products such as UL and FDA would be relatively less impacted.
- Our modeling supports the survey participants' general belief that the proposed changes would accomplish FASB's goals to improve the timeliness of reflecting changes in underlying experience in the liability for future benefits and simplify the DAC amortization.
- The following aspects of the proposed changes are most concerning to the industry:
  - Required attribution, disclosures, and documentation
  - Transition guidance provided
  - Unlocking of liability cash flows and changes in discount rates relative to earned rate for fixed premium / fixed benefit products
  - Fair value measurement of all guaranteed minimum benefits for separate account contracts
- The cause for concerns are attributed to difficulty in implementation because of resource constraints, perceived ambiguity in the description of the improvement, and possible materiality of impact from transition guidance.



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