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Simply Unlocking Explaining non-traditional DAC and SOP reserve movements to non-actuarial audiences

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“Most investors have limited understanding of the meaning and impact of retrospective DAC unlocking for FAS 97...”

With that introduction, the Financial Reporting Committee of the American Academy of Actuaries suggested that the Financial Accounting Standards Board (FASB) eliminate retrospective DAC unlocking.¹ Though FASB is considering this suggestion, they have tentatively decided to extend unlocking of reserve assumptions to traditional long duration contracts. If they settle on retrospective unlocking for reserves, we may see a greater scope of the requirement, even if it is removed from DAC.

Regardless of progress in FASB’s Targeted Improvements, we will continue to report unlocking results for several years. If we are to live with it for even a few more years, it’s worth some effort to improve our explanation. It’s worth even more if it helps us prepare for longer-term needs.

The goal of this article is to build a structure for actuaries to help non-actuaries understand the meaning and impact of retrospective unlocking. The key lies with a simple shift in how we explain the effect of any deviation from expected experience.

There are three steps to framing the dynamics of DAC and related liabilities for universal life-type contracts.² First, review some of the fundamental principles underlying FAS 97. Second, understand three key concepts—cash profits, net amortization rates, and historical ratio. Third, fit those concepts into simple, meaningful formulas for estimating results.

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With that framework, explaining actual results requires three more steps. First, apply the formulas to actual results. Second, identify the significant pieces. Third, fit the pieces into the framework to provide a narrative.

Remember, our purpose is to explain, not perform precise calculations. We can, therefore, afford the luxury of approximation. We can also combine DAC and related liabilities and explain their total bottom-line effect. Think of the question as, “What is the total offset to a variance from normal experience?” or, “What is the total effect of unlocking?” Usually, these approximations will explain nearly 100 percent of actual movements if applied separately to each cohort. They can even work well when applied using reasonably calculated averages for a book of business, except when large variances occur on individual cohorts that differ significantly from average in age or in net amortization rates. Even then, an aggregate estimate may serve as a useful anchor from which to explain actual results.

UNDERLYING PRINCIPLES

In part, insurance accounting is built upon the *matching principle* (that costs be matched with revenue). Beginning with FAS 60 and continuing with FAS 97, GAAP recognizes that insurance contract sales produce an asset and a liability, and that the two are linked. The obvious liability is the company’s contractual obligations. The asset is the company’s ability to profit from pooling of contracts with similar risks.

FAS 60 and FAS 97 capitalize and amortize acquisition costs to align the expense with revenue. FAS 97 recognizes, however, that universal life-type contracts have too many moving parts to reasonably match revenue using a fixed schedule or fixed assumptions. FAS 97 therefore requires frequent reassessment of the incidence of costs and revenue, and adjusting the valuation accordingly.

Dynamic FAS 97 unlocking preserves the matching principle by sacrificing some of the smoothness of amortized cost. It also makes today’s valuation *independent of prior assumptions*.

Together, these principles mean unlocking has little effect on earnings early in the life of a portfolio. As the business ages, however, a greater adjustment is needed for the balance sheet to be independent of the old assumption.

SOP 03-1 complicated FAS 97 mathematics, but it did not alter the fundamental principles. In fact, it sought to return to principle in light of new product designs—to better match the cost of benefits with revenue.

KEY CONCEPTS

Cash Profits

Cash profits (CP) are the amounts explicitly recognized as “estimated gross profit” in FAS 97—investment, mortality and expense spreads, surrender charges, and “other expected assessments and credits, however characterized.” SOP 03-1 introduced additional liabilities (SOP reserves) and stipulated that “estimated gross profits used for the amortization of deferred acquisition costs shall be adjusted to reflect the recognition of the liability. . . .” That adjustment converts cash profit into estimated gross profit.

By separating the reserve adjustment from cash profit, we can explain movements in relation to actual contract experience. The change in the amortization rate disappears from the explanation and the reserve change becomes part of the explained, not the explanation.

To understand movements of DAC and related liabilities, we need to separate cash profits into three components—the ABC of cash profits:

- A. Non-deferred Assessments include the general account investment spread and all fees, loads and charges, except front-end loads (deferrable revenue).
- B. Deferrable Benefits are claims under a contract provision for which an SOP reserve is required.
- C. Non-deferred Costs include any claims under a contract provision for which an SOP reserve is not required and any non-deferred expenses incurred to acquire or administer the business.

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Two other cash items relevant to FAS 97 movements, but not in cash profits, are deferrable expenses (DE) and deferrable revenue (DR). (For this analysis, sales inducements can be included in DE. Though amortized into benefits rather than expenses, their bottom-line effects are the same.)

We thus have three deferrable items and three components of cash profits. Deferrable benefits (DB) are common to both. Because deferrable revenue is an assessment, it is included with non-deferred amounts in cash assessments (CA). Referring to non-deferred costs as cash costs (CC) we find:

$$\text{Net deferred} = DE - DR + DB$$

$$CP = (CA - DR) - DB - CC$$

Net Amortization Rates

Before SOP 03-1, net amortization rates were simply the expense (DAC) amortization rate minus the revenue (URL) amortization rate. Often called k-factors, we represent this as:

$$(a) \quad k = k^E - k^R$$

With SOP 03-1, additional reserve requirements complicate the dynamics, especially since the reserve accrues on a different basis (assessments) than used to amortize DAC and URL (gross profit). Further, with both URL and SOP reserves, assessments are a function of URL amortization and gross profit is a function of the reserve change. With amortization a function of gross profit and reserve change a function of assessments, URL and SOP reserve calculations depend on each other.

Ignoring the circular dependence, net amortization rates including the reserve accrual are more complicated than formula (a) but still not difficult. Part of the complication is that the net rate now varies among the three components of cash profits.

Since we include deferrable sales inducements in DE, k remains as defined in formula (a). With b representing the SOP 03-1 benefit ratio, we can now structure FAS 97 dynamics as shown in Table 1.

	(i) Cash Profit	(ii) Reserve Accrual ³	(iii) Gross Profit	(iv) DAC & URL Amortization	(v) Net Amortization
A	$CA-DR$	$(CA-DR) \times b$	$(CA-DR) \times (1-b)$	$(CA-DR) \times (k-k \times b)$	$(CA-DR) \times (k+b-k \times b)$
B	DB	$DB \times 1$			$DB \times 1$
C	CC		CC	$k \times CC$	$CC \times k$
Total	$(CA-DR)$ $-DB-CC$	$(CA-DR) \times b$ $-DB$	$(CA-DR) \times (1-b)$ $-CC$	$(CA-DR) \times (k-k \times b)$ $-k \times CC$	$(CA-DR) \times (k+b-k \times b)$ $-DB-CC \times k$

Key relationships shown in this table include:

- Each total is derived by subtracting rows B and C from A.
- Column (iii) combines the pieces of gross profit, subtracting (ii)'s reserve accrual from (i)'s cash profit.
- Column (v) net amortization is the sum of (iv)'s DAC and URL amortization and (ii)'s reserve accrual.

Column (v) shows (i)'s cash profit components together with their net amortization rates. Since we're ignoring the circular relationship between SOP reserves and URL, we'll call these tentative net amortization rates.

$$(b) \bar{k}_{CA} = k + b - k \times b$$

$$(c) \bar{k}_{CD} = 1$$

$$(d) \bar{k}_{CC} = k$$

The “CD” in formula (c) indicates that it applies to all deferred cash items (DE, DB and DR).

Explaining the three tentative net amortization rates is fairly simple.

- Non-deferred cash assessments result directly in amortization of DAC and URL at the net k-factor of formula (a) and in the accrual of the SOP reserve at the benefit ratio. The reserve accrual, as a cost component of gross profit, reduces DAC and URL amortization at the net k-factor. Thus, total amortization and accrual is the sum of direct effects (k+b) minus the secondary effect (k×b).
- Cash deferred items are all applied directly, dollar for dollar, to their respective intangible asset or liability. Hence, a net amortization rate of one.
- Non-deferred cash costs have a direct effect on amortization at formula (a)’s net k-factor but not on SOP reserve accrual.

If there are no front-end loads, there is no unearned revenue, k^R is zero, and formulas (b), (c) and (d) are all we need to calculate the net amortization and accrual for each type of income.

If an SOP reserve is not required, all benefits are in non-deferred cash costs, the benefit ratio is zero, and gross profit equals cash profit. In effect, we return to the simpler world before SOP 03-1 and all gross profit components produce amortization at formula (a)’s net k-factor.

Returning to the circularity between URL and SOP reserve, I have no short explanation of its effect on net amortization rates. However, one simple formula solves the circularity for all three net amortization rates:

$$(e) k_{cx} = \frac{\bar{k}_{cx} + b \times k^R}{1 + b \times k^R}$$

With non-negative benefit ratio and URL amortization rate, each net amortization rate is between the tentative

rate and one. As the product of the benefit ratio and the URL amortization rate approaches zero, the actual net amortization rates approach the tentative rates.

Inserting formulas (b), (c) and (d) into (e) produces actual net amortization rates.

$$(f) k_{CA} = \frac{k + b - k \times b + b \times k^R}{1 + b \times k^R}$$

$$(g) k_{CD} = \frac{1 + b \times k^R}{1 + b \times k^R} = 1$$

$$(h) k_{CC} = \frac{k + b \times k^R}{1 + b \times k^R}$$

Most of our audiences don’t need the precise details of calculating net amortization rates. For those who want to understand why three rates are needed, the earlier explanation should suffice (ignoring the circular relationship). For those who want to understand movements, however, it is important to know approximate values of the three net amortization rates and their applicability to cash profits.

Historical Ratio

The historical ratio is a simple measure of the age of the business. It grows from zero at inception to one when the business ends.

The ratio is simple to calculate—divide the present value of all prior gross profit by the present value of all prior and estimated future gross profit. The time to which profit is discounted (or accumulated) is unimportant, as long as it’s the same for all pieces. My preference is the time of the prior valuation. We can then accumulate history (AVGP) and discount the future (PVGP) so that:

$$(i) h_p = AVGP / (AVGP + PVGP)$$

Alternatively, we can express the historical ratio in terms of cash profits using similar notation.

$$(j) h_p = (AVCP - SOP) / (AVCP + PVCP)$$

If interest accrual on the SOP reserve is excluded from gross profit or offset by an interest adjustment at the crediting rate, formulas (i) and (j) are equivalent. Other methods of applying the SOP may result in slight differences, but either formula can be used.

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When estimated for an established, open book of long-duration business, perhaps including multiple cohorts, the ratio will be fairly stable. At a high level, people who regularly review the business should know the approximate overall historical ratio.

PUTTING THE PIECES TOGETHER

Whenever product cash flows or their projection differ from expected, there is a change from expected amortization, accrual or deferral. The change includes a true up and may include an adjustment to normal amortization. While some prefer to see amortization and true up separately, others prefer to see a net “DAC effect” or “marginal amortization” for the variance. With these tools, we can accommodate either preference.

To effectively explain any variance, current period or present value, it needs to be identified by the three types (deferrable, other assessment or other cost). If more than one has a significant variance, then each must be known.

However the analysis is presented, remember that these formulas measure the combined effect on DAC and related liabilities, including the reserve. If anyone wants to know, for example, the effect on DAC apart from the effect on the SOP reserve, we can accommodate, but that is not needed to explain the bottom-line effect.

Calculations are nearly precise if either the net amortization rate or the historical ratio (but not both) include the variance and if variances of multiple types are applied sequentially.

Such precision, however, would significantly complicate the analysis and would make the explanation dependent upon the explained.

For this purpose, simpler is better—calculate both without variances.

Estimating Amortization and True up Separately

To see true up separately from amortization, we begin with amortization. Once a current cash variance is identified, its effect on total amortization and accrual is simply the product of the variance and the net amortization rate:

$$(k) \text{ Additional amortization} \approx \text{Variance} \times k_{cx}$$

For a variance in a current cash item, a true up will partly offset the additional amortization. For a change in the projection, only the true up is significant. Whatever the difference, true up is approximately the product of the variance, the net amortization rate, and the historical ratio:

$$(l) \text{ True up} \approx \text{Variance} \times k_{cx} \times h_p$$

Estimating the Net DAC Effect

To see the effect of a deviation from expected current cash items in a single number, we simply combine formulas (k) and (l), subtracting true up from amortization:

$$(m) \text{ DAC effect} \approx \text{Variance} \times k_{cx} \times (1 - h_p)$$

For a change in the projection, with no significant effect on normal amortization, the DAC effect is the same as formula (l):

$$\text{True up} \approx \text{Variance} \times k_{cx} \times h_p$$

(Substitute Unlocking or Cumulative effect for True up if you prefer; the formula is the same regardless of terminology.)

EXAMPLES

Having built the framework for understanding, we turn now to examples illustrating its application to real world situations.

Example 1 – A Claim Variance

We begin with a cohort of fixed universal life insurance contracts for which an SOP reserve is required.

From our prior valuation, we find the amounts in table 2 (pg. 7, top).

	Accumulated Value	Present Value		Expected
Deferrable expenses	30,000 <i>AVDE</i>	0 <i>PVDE</i>	300% <i>k^E</i>	0
Cash assessments ⁴	25,000 <i>AVCA</i>	42,000 <i>PVCA</i>		1,500
Deferrable revenue	15,000 <i>AVDR</i>	10,000 <i>PVDR</i>	250% <i>k^R</i>	1,000
Deferrable benefits	3,000 <i>AVDB</i>	20,000 <i>PVDB</i>	34.3% <i>b</i>	500
Other cash costs	4,000 <i>AVCC</i>	5,000 <i>PVCC</i>		300
Cash profits	3,000 <i>AVCP</i>	7,000 <i>PVCP</i>		-300
Intangible asset		25,855 <i>DAC</i>		
Unearned revenue		11,546 <i>URL</i>		
Additional reserve		1,618 <i>SOP</i>		
Net asset		12,691		

From this information, we can calculate the net amortization rates and historical ratio:

- 82.3% k_{CA}
- 100.0% k_{CD}
- 73.1% k_{CC}
- 14% h_p

If everything goes as expected, we will see a \$692 decrease in net intangible asset, including: -\$1,000 from URL deferral; +\$500 from release of reserve; -\$412 (82.3%) from net amortization and accrual on \$500 of non-deferred assessments; and +\$219 (73.1%) from net amortization on \$300 of other costs.

If, however, we see a \$1,000 variation from expected benefits, the k-factors and benefit ratio will change. If there are no other variances, a complete revaluation after the current period will show a \$153 increase in net asset—an \$845 difference from expected to offset the claim variance. Bottom line, the \$1,000 variance costs \$155 in the current reporting period.

To explain this result, we need two ratios: 100 percent net amortization rate and 14 percent historical ratio.

As a reserved-for benefit, we can release \$1,000 of the SOP reserve to offset 100 percent of the extra claim. With a 14 percent historical ratio, we need approximately 14 percent true up (\$140) for an estimated net offset of \$860—within 2 percent of the actual \$845 offset. As a young book of business, GAAP charges most of the cost against future revenue.

In this example, claims were three times expected. That

fact may draw more attention than the DAC effect. Assuming we can deal with that concern, the question may become either (or both of):

Why doesn't the reserve absorb all of the \$1,000 variance?

Why does a \$1,000 variance affect the bottom line by just \$155?

To explain, with 14 percent of expected earnings already recognized, the matching principle requires 14 percent of the added cost to be recognized in current earnings. Because 86 percent of profits are expected to occur in the future, 86 percent of the added cost is spread over that future.

With multiple cohorts in any given line of business, we will inevitably see disproportionate differences between similar variances over successive time periods. The \$1,000 claim variance may follow within a few quarters a \$500 variance that had an offset of just \$190. We're then faced with a different question:

Why does a \$1,000 variance cost half as much as the \$500 variance?

(Net cost of \$155 vs. \$310 after offsets of \$845 and \$190, respectively.)

Understanding the dynamics, we see two possible explanations. Either (1) we made a mistake, or (2) the variances occurred in significantly different cohorts. Assuming no mistakes, we recognize that the earlier variance almost certainly occurred in an older cohort.

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It may also have been in a cohort with no SOP reserve. Working the numbers for both variances will show the relative significance of these effects.

The narrative may be that under the matching principle, GAAP will defer variances only in proportion to remaining revenue. A later variance has less room for deferral.

If the absence of a reserve is a factor, the narrative might explain that GAAP is more forgiving if we fund a reserve to support later claims. With the second variance, we had incurred the cost of accruing a reserve that was now available to release. In the first, we didn't, leaving only partial offset through DAC.

Example 2 – A Large Surrender Variance

Looking at the same cohort as example 1, suppose we experience a significant increase in surrenders. The present value of cash profits drops 5 percent below expected while \$300 of additional surrender charges are realized.

In this example, the net asset will decrease \$988—a \$295 difference from expected. With that offset, the \$300 variance adds \$5 to earnings.

To explain this result, we begin by reviewing the pieces. We now need all three net amortization rates, the historical ratio, and the effect of the additional surrenders on the components of current and projected

Table 3

	Variance	Amortization	True Up	DAC Effect
Current surrender charge	+300	-247	+35	-212
PV of deferrable revenue	-450		-63	-63
PV of non-deferred cash assessments	-1,575		-182	-182
PV of deferrable cash benefits	-975		+137	+137
PV of non-deferred cash costs	-235		+24	+24
Total current period	+300	-247	-49	-296

cash profits. The results of applying formulas (k) and (l) to the variances are shown in table 3 (above).

That's probably more detail than we need to explain. At an estimated \$296 DAC effect, it is little different from the actual \$295 effect.

To explain the result, we first note that this is a large

variance—losing 5 percent more than expected in just one quarter. That's 5 percent of the business, not 5 percent of the expected terminations. Among the present value losses, the two most significant are lower revenue (more than \$2,000 lost value) and lower claims (nearly \$1,000 lower cost). Thus, there are three principal effects of this variance:

- In the current period are \$300 of additional surrender charges, but 70 percent is offset by amortization and reserve accrual—the 82 percent net amortization rate reduced 14 percent for the historical share. That's a DAC offset of roughly \$210.
- Most of the lost revenue is not deferrable, and the 82 percent net amortization rate can approximate the 100 percent rate on the small deferrable share. That leaves about 82 percent of \$2,000 to charge against remaining profits. However, since only 14 percent of profits have been previously reported, only 14 percent is charged to current income—about \$230 of immediate adverse true up. The remainder increases the net amortization rate applied to future assessments.
- On the positive side, the loss of future claims reduces the need to accrue the reserve. Though the reserve need is reduced dollar for dollar with the claim projection, we can allocate only 14 percent to prior profits. The remainder reduces the need for future reserve accruals. Applying 14 percent to the \$1,000 change produces a \$140 favorable true up.

To summarize:

- \$300 additional surrender charge has an immediate \$210 DAC offset.
- Loss of future profits has an additional DAC effect of about \$90.
- Other DAC effects are +\$5 (lower projection of other costs, and residual effects not captured in the approximations).

As in example 1, the biggest “why” question may concern the experience itself:

Why did we have such a deviation from expected surrenders?

Is our assumption bad?

Answers to such questions won't be found in the DAC effects and are outside the scope of this article.

Once the event is explained, we address questions about the net effect on DAC and related liabilities. Perhaps:

Why is the persistency offset as big as the extra surrender charge?

Shouldn't we see some of the extra charge in earnings?

As our analysis demonstrates, some of the additional surrender charge would be allowed into current earnings. However, the additional surrenders hurt future profitability, which also has an immediate DAC effect. A portion of what was expected to amortize in the future must now be charged to the past. In this particular instance, that was sufficient to offset the immediate gain from the surrender charges.

Example 3 – A Mortality Assumption Change

Returning to the original topic, unlocking, we now look at an assumption change. We start with the same business as the first two examples, except the large persistency variance was only a bad dream; it didn't really happen. Several years later, we find that despite some quarters with bad claim experience, mortality has generally been lower than expected. We decide it is time to unlock our mortality assumption.

As a result of unlocking, DAC and URL increase and the SOP reserve decreases, for net favorable unlocking of \$461. To explain the result, we begin with the numbers, first updating the key variables:

80.1% k_{CA}

100.0% k_{CD}

70.2% k_{CC}

97% h_p

In comparing these to previous values, we see evidence of the favorable claim history in the lower net amortization rates. We also notice that, in terms of total estimated gross profit, there isn't much remaining.

As a result of the assumption change, the present value of cash profit increases \$480. Of that, \$475 is in reduced PV of claim costs. The remainder comes from a small positive effect on persistency—\$10 more revenue less \$5 more expense.

Next, we apply formula (1) to the change in present value of each component to determine that net unlocking should be approximately \$465—within 1 percent of the actual result. Of that, the effect of the change in PV of claim costs is estimated to be \$461 ($\$475 \times 100\% \times 97\%$), equal (after rounding) to the actual result.

In this instance, the secondary persistency effect is insignificant. DAC and URL unlocking are insignificant and largely offsetting. These can be ignored in our summary of the numbers.

We now note that the unlocking amount is very close to the total change in present value. To explain, we observe that, given the age of the business, nearly all of the reserve accrual occurred in the past. There is little left except to release the reserve as we pay future claims. Since we now estimate a significantly lower amount of future claims, we can release a portion of accrued reserve.

As the numerical evaluation of this example highlights, GAAP is very unforgiving of significant assumption changes made late in the life of a book of business. The implication of a large unlocking is:

We were wrong, and it took us a long time to realize it.

Though that might never be stated explicitly, it can be seen in some of the "why" questions.

If the old assumption was so bad, why didn't we change it sooner?

Why did we have such a poor assumption before?

If the questioner is familiar with the dynamics described in this article, particularly with respect to age of the business, the questions may be more direct.

Why didn't we improve the assumption sooner, when we had indications that it was bad and when the effect would have been smaller?

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Even if the change had been imperfect, couldn't we at least have avoided such a huge unlocking now?

Such questions are clearly loaded. There may be no safe way to answer them after the fact. Theoretical arguments about credibility and the need for solid evidence as a foundation for a new assumption may seem scientifically valid and emotionally neutral, but they still leave the impression of, "We were wrong—big time!" That, in turn, conveys the message that our judgment can't be trusted.

Sometimes, the honest answer might be, "I wanted to change sooner, but ... wouldn't let me." That answer, however, will not win acceptance or trust.

Perhaps the best way to address such questions is preemptive. Don't wait for the evidence to become overwhelming. In fact, the actual wording of the standard suggests that we shouldn't wait. ASC 944-30-35-7 (FAS 97 ¶25) includes the statement, "Estimates of expected gross profits ... shall be evaluated regularly, and the total amortization recorded to date shall be adjusted ... if actual experience or other evidence suggests that earlier estimates should be revised." If we take this statement literally, we should be unlocking whenever evidence **suggests** a need for revision rather than waiting for evidence to prove a need.

The standard, however, does not guide us in setting new assumptions when evidence is limited. Perhaps that simply recognizes that such changes require actuarial expertise, not accounting.

Combining actuarial expertise with accounting guidance—once you see evidence suggesting a need for revision, become an advocate for change. Partly because evidence is not yet overwhelming or credible enough to warrant a large change, start small.

Using this understanding of FAS 97 dynamics, emphasize that GAAP is much friendlier to small changes than large, especially when they are made early. Emphasize that failure to act would be inconsistent with the accounting standard and may eventually

LOOKING AHEAD – GAAP TARGETED IMPROVEMENT

As I write this, FASB intends to require regular unlocking of traditional (FAS 60) reserve assumptions and move DAC amortization for all long-duration insurance contracts to amount in force. How these will be implemented is still subject to discussion and analysis.

One approach would eliminate DAC retrospective unlocking, but otherwise align traditional reserve unlocking with SOP 03-1 reserve unlocking.

Under such an approach, non-traditional unlocking would change:

- Assessments will have no effect on DAC or URL, removing k-factors from their net amortization rate, leaving only the benefit ratio.
- Other costs will have no effect on the reserve or on DAC, effectively making their net amortization rate equal zero.
- Assessments will replace gross profits in the historical ratio.

For traditional products, the dynamics will be essentially the same as non-traditional except:

- Gross premium replaces gross profit in the historical ratio and assessments in the other calculations.
- A net premium ratio is used in place of the benefit ratio.
- Maintenance expenses are added to benefits in the calculations.

lead to a large, unpleasant result.

Then carefully monitor experience. Make further adjustments when warranted. Eventually, the evidence will provide a sufficient basis for a solid new assumption. With prior adjustments, the effect of a major unlocking effort should be much smaller than it would be by waiting for overwhelming evidence.

SUMMARY

This article introduced a new toolkit for explaining the dynamics of non-traditional (FAS 97) DAC and (SOP 03-1) reserve valuation when experience or new assumptions differ from prior assumptions.

To help put a narrative around these effects, we first visited some fundamental concepts underlying the accounting standards—the matching principle and independence from prior assumptions. We saw how these principles lead to certain effects that have long puzzled many people.

We learned a few simple concepts to help explain DAC effects.

- Cash profits
- Net amortization rates
- Historical ratio

We found that net effects, including the reserve change, can be reliably estimated even without a completed current valuation.

$$\text{Amortization} \approx \text{Cash profit variance} \\ \times \text{Net amortization rate}$$

$$\text{Unlocking} \approx \text{Cash profit variance} \\ \times \text{Net amortization rate} \\ \times \text{Historical ratio}$$

We then saw, through example, how to apply the new toolkit to real events, to identify the principal effects of those events, and to explain the effects. ■



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ENDNOTES

- ¹ See page 4 of Academy letter to FASB on Targeted Improvements (June 30, 2014): http://www.actuary.org/files/AAA_letter_on_targeted_improvements_063014.pdf.
- ² Originally adopted as FAS 97, subsequently interpreted by SOP 03-1, and eventually codified in various provisions of ASC 944 of the accounting standards codification project. Under these requirements, "DAC and related liabilities" include intangible assets for deferred acquisition costs and deferred sales inducements, and liabilities for deferred front-end loads and additional SOP reserves.
- ³ Anyone familiar with SOP 03-1 will notice that the reserve accrual in column (ii) does not include the interest component of the reserve change. There are different interpretations about how SOP reserve interest should enter into gross profit. One interpretation simply excludes it from gross profit. Two others include the interest, but have an offsetting interest income adjustment—at either the crediting rate or the asset earned rate. In either, interest accrual is part of column (i)'s cash assessments and excluded from column (ii).
- ⁴ Cash assessments include front-end loads (deferrable revenue) but exclude URL amortization. Cash profits exclude both front-end load and URL amortization.