



# THE FINANCIAL REPORTER

THE NEWSLETTER OF THE LIFE INSURANCE COMPANY FINANCIAL REPORTING SECTION

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## International Accounting Standards (IAS) on Top of Insurers' Minds

by S. Michael McLaughlin, Mark Freedman and Ludovic Antony

*Editor's Note: The section's GAAP List Serve would be an appropriate forum for discussing the concepts of this article.*

### BACKGROUND

The International Accounting Standards Board (IASB) is currently leading a significant effort to transform financial reporting requirements and promote the use of a "single set of high quality, understandable and enforceable global accounting standards that require high quality, transparent and comparable information." By 2005, all European Union (EU) companies listed on a regulated market and Australian companies will be required to prepare their consolidated accounts under International Financial Reporting Standards (IFRS). The IASB recently released Exposure Draft 5 (ED 5), which covers requirements specific to insurance companies. Ernst & Young and the Society of Actuaries recently co-sponsored a seminar to discuss the key accounting, actuarial and business management issues around IAS implementation. This article provides an overview of the status (as of November, 2003) of international accounting standards by summarizing selected contents of that seminar.

Attendees came from several countries, including the United States, Canada, the United Kingdom, the Netherlands, Italy, Sweden and Bermuda. Presenters included representatives from AEGON, Allianz, the IASB, Scotia Capital and Ernst & Young.

The strong interest manifested in the conference is most likely due to the fact that the implementation of IAS should be a major concern for many companies throughout the world, as it is likely to effect more countries and companies than those already mentioned. For example, the United Kingdom, the Netherlands and Germany have indicated that non-listed companies will be required or given the option to prepare their financial statements under IAS in 2005. Other countries,

continued on page 2

### What's Inside

<b>International Accounting Standards (IAS): On Top of Insurers' Minds</b> – If you want to get a good overview of the situation about international accounting standards for insurance companies, this article is for you. It provides a good framework for the actuary who has only read bits and pieces about the subject. Those with a better background may find it a useful update and a good summary to send to a friend. by S. Michael McLaughlin, Mark Freedman and Ludovic Antony	1
<b>Comments from the Chair</b> by Mark J. Freedman	3
<b>Letter from the Editor: Call for Articles</b> – A call for articles for the newsletter takes a surprising turn. by Jerry Enoch	5
<b>Asset Adequacy Analysis – Why's and How's</b> – This overview for the actuary who has not previously performed asset adequacy analysis is also a nice review for other practitioners. It starts with six reasons why a company may have to begin performing asset adequacy analysis soon. Then it examines methods of asset adequacy analysis besides cash flow testing and how to implement cash flow testing. by William M. Sayre	11
<b>Practical Considerations for Implementing the New Statement of Position for Long Duration Contracts and Separate Accounts – Part II</b> – The second article in a three part series about these important new rules that take effect January 1, 2004 for most companies. This part addresses reinsurance, a pattern of profits followed by losses, discount rates, additional liabilities, an update about the SOP for internal replacements, and some numerical examples. by Vincent Tsang, David Heavilin	15

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such as the United States, Canada and Hong Kong have committed to convergence to IAS. In particular, the IASB and the Financial Accounting Standards Board (FASB) have entered into the "Norwalk Agreement" to identify and remove any major differences between IAS and U.S. GAAP. Additional information about the Norwalk Agreement can be found at <http://www.iasb.org.uk/docs/press/2002pr15.pdf>.

**A "TWO-PHASED" APPROACH FOR INSURANCE CONTRACTS**

The IASB planned to develop standards based on the Draft Statement of Principles ("DSOP"), which required a fair value measurement for insurance contract liabilities. Due to a lack of time and fierce industry opposition, the IASB conceded that a fair value standard could not be ready for 2005. Consequently, the Board introduced a two-phased approach for the insurance project, with a delay in implementation of the final insurance standard, which will potentially require fair value. Peter Clark, the IASB insurance project's senior manager, mentioned that Phase II might not be implemented before 2008.

In 2005, the two major standards that will apply to insurance companies are IAS 39 and the final standard, which will be based on ED 5. IAS 39 is relevant for financial assets, derivatives and investment contract liabilities, and ED 5 is relevant for insurance contracts.

**INSURANCE CONTRACTS UNDER ED 5**

Under ED 5, insurance contracts are defined as those including significant insurance risk, namely a plausible event that adversely affects the policyholder or beneficiary. If a contract has both significant insurance risk and financial risk, it will be classified as insurance.

Mike McLaughlin of Ernst & Young pointed out that for some products, such as traditional whole life, term life and most property/casualty insurance contracts, classification will be straightforward. But, uncertainties remain for other contracts, such as Single Premium Deferred Annuities (SPDA) sold in the United States.

For insurance contracts, companies will be allowed to use their existing accounting with some key modifications, including the exclusion of catastrophe and equalization reserves and the obligation to perform loss recognition tests on existing liabilities. Other requirements include the unbundling of investment components that are part of insurance contracts and accounting for them under IAS 39. Some existing practices may continue until companies move to fair value accounting, but are not allowed to start. These include, for example, holding undiscounted P/C claim reserves.

Ruurd van den Berg, senior vice president, finance and information at Aegon N.V., explained that the disclosure requirements in ED 5 will lead to a significant increase in the length and complexity of current disclosure processes.

**COMPLYING WITH IAS 39**

The classification of invested assets under IAS 39 will resemble that of US GAAP with categories including Held-to-Maturity, Trading and Available-For-Sale (AFS). Dave Sandberg, corporate actuary at Allianz Life, said that the International Actuarial Association (IAA) was concerned with the potential disconnects that could arise, if for example, insurance liabilities are measured on a cost basis and assets on a fair value basis. Mr. Sandberg presented research done jointly by the IAA and the American Council of Life Insurers (ACLI), which showed disturbing patterns of profit

continued on page 6

# Comments from the Chair

by Mark J. Freedman

**W**hat are you doing reading this? You should be in the midst of compiling, analyzing, explaining and further analyzing financial results, working 24 hours a day, seven days a week! You're taking a few minutes off to read about what the Financial Reporting Section Council has been up to. Well, be patient, because I'm in the mood to tell a story first about what's happened to me since I took the job as section chair.

The Financial Reporting Section Council had a hot breakfast for members at the Society of Actuaries' Annual Meeting. After facilitating buzz groups and feeding cholesterol to his bloodstream, John Bevacqua, last year's chair, inaugurated me as the new chair. John handed

me a green jacket, which has been the traditional gift for the upcoming chair.

Andy Warhol once said that "everyone is famous for 10 minutes in his lifetime," and I felt this was my 10 minutes. I fantasized that I shot a 64 to win the Masters' tournament. I graciously received my green jacket, but then reality came back very quickly.

First, John didn't give me a check for winning the tournament. Then, I realized I had to put on this gigantic green polyester jacket with a lot of creases and some strange odors, probably from never being cleaned for 15 years. When I looked inside the jacket, I saw autographs of all of the past chairs.

So, I'm looking for some very important advice from the readers of this article.

Should I dry clean the jacket and risk that the signatures vanish, or just grin and bear it, as my predecessors have done? Please tell me what you think by e-mailing me at [mark.freedman@ey.com](mailto:mark.freedman@ey.com). Past chairs get more weight for their votes. Tom Nace, the current vice chair, will get more weight, too, as he'll have to deal with this next year.

OK, now it's time to describe upcoming section activities.

Last year, we surveyed the members of our section. As John Bevacqua has mentioned, we received a lot of responses, so now the section council is attempting to react to this feedback.

High on the wish list of members was a desire for information about some hot specific financial reporting topics. We assumed that this would always be the case, although it is difficult to forecast exactly what the topics will be. Therefore, we've decided to host three or four webcasts a year on any current hot items. John coordinated the first webcast in December on three GAAP topics (SOP 03-1, DIG B36, and the draft internal replacement SOP). Upcoming seminars we're tentatively discussing are about statutory accounting and international accounting standards.

You told us that you're interested in a seminar about financial projections, so we are pursuing that idea. Another topic high on the



response list was financial statement disclosures, so we're planning to issue an RFP for a research project in this area.

One of the section's priorities for the last few years has been to follow developments in new financial reporting systems. The Society of Actuaries approached the section council to have someone represent them on the International Actuarial Association's (IAA) Insurance Accounting Committee, and I volunteered. In addition, the Board of Governors asked the section council to form a task force to analyze the IAA reply to the International Accounting Standards Board on the new draft insurance standard. Doug Doll, who happens to be one of the signers of the green jacket, is chairing that task force and I'm playing a liaison role from the section council (and IAA).

"If it isn't broken, don't fix it," applies to a lot of our other undertakings from the past, such as:

- Mark Peavy is coordinating the section council's activities for the Society of Actuaries' Spring Meeting. An interesting story about Mark is that the ACLI recently approached the council (through a secret agent) that he be made secretary of the council, so that his hand gets so tired writing meeting notes that he won't have the time to rally the NAIC and states regarding statutory reserve issues. Needless to say, Mark is now our secretary.
- Darin Zimmerman, a new section council member, is taking on that program committee role for the 2004 annual meeting. One recommendation to Darin is that he should continue to get interesting outside speakers next year, besides the usual cast of characters.
- For example, at a session I moderated on International Accounting Standards for insurers, Trish O'Malley, an IASB board member, told us about recent developments. Then, Arnold Schwarzenager engaged Jacques Chirac in a debate about fair value. Sam Gutterman and Dave Sandberg were nice enough to sit in just in

case Arnold and Jacques did not show up, but luckily they appeared at the last second, so we didn't need to watch the Sam and Dave show. Oh, my! Please pardon my relapse into fantasy.

- We will continue to run the Basic and Advanced GAAP seminars. Special thanks to Dave Rogers, a past member of the section council, for continuing to assist with the Advanced GAAP seminar last year. Hopefully, we can twist his arm into doing that again in 2004.
- Kerry Krantz, a new section council member, will continue to be our web liaison. The Society of Actuaries' website is undergoing a major change, and Kerry will help ensure that our section's material is appropriately handled. Kerry is also maintaining our List Serves.
- Jerry Enoch, as editor of this newsletter, has an unenviable task of (1) keeping up the high quality that has made our newsletter the most popular of the Section newsletters, according to a recent Society of Actuaries' survey of members, and (2) making sure everyone gets their articles done on time.
- We also serve as liaison with some other related committees, e.g. the Life Insurance Financial Reporting Committee of the American Academy of Actuaries.

The section council will meet next in January in order to discuss these and other potential issues that we may work on, so you'll hear more about this soon. Keep in mind that we will need volunteers from time to time to help us on initiatives, so keep your eyes open for blast emails.

Thank you for spending this break from your hectic work schedule with me. ☺

# Letter From the Editor Call For Articles

by Jerry Enoch

Six months after being inundated with articles, I am (we are) suffering through the second issue of an article drought. Some requests for articles have simply not worked out and few other articles are arriving. Perhaps, this is nothing more than the workings of the “law of small numbers,” but a lesson is clear: the section needs your articles. Many of you have an article within you that is trying to work its way through your fingertips to your keyboard or pen. It may be a concept from a presentation that you made or a memorandum that you wrote, from an observation that struck you or even from a communication that you received that resonates with you. As I have written before, articles need not be epic. There is beauty in a short article that makes a single point and makes it well, like a brilliant small diamond solitaire. Please listen for those articles within you, and let them out!

Having carved the Thanksgiving turkey just a week ago, I should easily recognize that our situation has had its positives. While there have been few articles, they have been good articles. Hopefully, the few articles that we have published have been very helpful to our readers.



Another positive is that we have a new associate editor. Rick Browne has joined Keith, Terry and me on the editorial team. I look forward to getting to know Rick better and to his future contributions to the newsletter.

By the time you read this, Thanksgiving—and even Christmas and New Year’s—will be distant memories. You may be thinking about financials for 2003 or about cash flows in 2008. In addition, you probably face some large problems that were totally unexpected. Hopefully, your challenges have not overwhelmed your ability to be thankful, and you can be thankful that it is you who has the skill, training and experience—and the opportunity—to confront the challenges that you face and improve the financial security of people you will never meet. I am also thankful that *The Financial Reporter* provides me an opportunity to help equip you for those challenges. ☒

- Jerry



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and / or surplus that could emerge.

Rick Lynch of Ernst & Young also pointed out that the banking industry is strongly opposed to the current IAS 39 proposal in that it only enables companies to account for hedges on exposures from individual assets or liabilities. Reacting to strong lobbying led by large European banks, the IASB has issued a proposal to revise the current standard to allow macro-hedging accounting in some circumstances. The recent proposal issued by the IASB to update IAS 39 and permit macro-hedging accounting can be found at <http://www.iasb.org.uk/docs/ed-ias39mh/ed-ias39mh.pdf>.

Mark Freedman of Ernst & Young discussed the application of IAS 39 to investment contract liabilities. Companies will have the choice between two valuation options, fair value or amortized cost, with the separation and fair valuation of embedded derivatives. Currently, under IAS 39, there is no requirement for companies to apply one option or the other to all investment contract liabilities, but it is unlikely that insurers will differentiate the option they choose by product. Moreover, the choice is purely elective and will likely be irrevocable. Given that the profit emergence patterns under the two options will be signifi-

cantly different, insurers will therefore need to consider the implications of the two alternatives very carefully before picking one option.

At a contract's inception, the measurement basis for liabilities under fair value and amortized cost is the initial value, which is the difference between the gross premium and the transaction costs. Transaction costs are incremental and directly attributable acquisition costs. IAS 39 does not currently allow the inclusion of any internal acquisition costs, such as bonuses paid to internal agents, in the definition of transaction costs. The IASB may, however, decide to remove this exclusion. Under the amortized cost method, the contract's carrying amount will be equal to the initial value accumulated at the effective interest rate, i.e. the rate that discounts all future contractual cash flows, back to the initial value of the contract.

Ludovic Antony of Ernst & Young presented a case study on a European investment product. Assets were considered AFS and the yield curve was assumed to be flat. This resulted in a stable profit emergence pattern across the projection, since the difference between the earned rate and the effective interest rate was level across the projection.

This was in contrast to another case study presented by Mark Freedman on a U.S. SPDA with a steep forward yield curve. Since the book yields increased and the effective interest rate was level, there was a disturbing profit emergence pattern displaying losses during the first years and gains afterwards. Such results should be quite difficult to explain to management!

Although IAS 39 is currently silent about how the amortized cost reserve calculation should reflect changes in the estimate of future cash flows, the IASB is currently exploring various methods and intends to issue further guidance. The first method, called the "retrospective" approach, involves calculating the reserves using future revised best estimate cash flows and an effective interest rate, recalculated at inception with actual cash flows at the date of change in assumptions and revised estimates for the remaining life of the contract. This approach shows a volatility of results comparable to that created by DAC (deferred acquisition cost) unlocking under U.S. GAAP. The second approach, toward which the IASB seems to be leaning, called a "cumulative catch-up" approach, involves calculating reserves at the



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time of change using the effective interest rate determined at inception and future revised estimates. Although this approach would not require companies to keep track of historical cash flows and re-estimate the effective interest rate yield, results will likely be more volatile under this approach than under the “retrospective” one. This was illustrated in a case study presented by Ludovic Antony.

The other option under IAS 39 is fair value. IAS 39 does not provide any guidance on the calculation of fair value although it states that it would allow a “...valuation technique commonly used by market participants” when market prices are not available. Although this seems to qualify methods, such as embedded value, as a basis for measuring the fair value of liabilities, the IASB might not allow such a technique, as it has made public its dislike of embedded value. The board also stated its intention to revise IAS 39 to introduce a minimum floor to the fair value of liabilities equal to the amount payable on demand by policyholders, a view that the IAA strongly opposes due to its lack of consistency with general fair value principles.

## EMBEDDED DERIVATIVES

Under ED 5 and the IAS 39 amortized cost option, companies will be required to separate embedded derivatives and value them at fair value, if they are not insurance contracts and are not closely related to the host contract. As a result of making exceptions for insurance contracts, as well as options and guarantees that do not meet the definition of embedded derivatives, many product features will not be measured at fair value under IAS, a situation over which the IAA has expressed its concern. Gary Finkelstein of Ernst & Young also noted that, although the IAS requirements are close to U.S. GAAP requirements, there are still some differences. Under U.S. GAAP, guarantees must be net settled, whereas under IAS they could be settled in the future. In addition, grandfathering will not be allowed under IAS, as opposed to U.S. GAAP.

## PRACTICAL CONCERNS AND SUCCESS FACTORS FOR PHASE I IMPLEMENTATION

Ruurd van den Berg provided the audience

with a taste of AEGON’s Phase I conversion plans. According to him, key threats to the plan include a tight deadline for first time implementation, coupled with current uncertainties around IAS 39 and ED 5, limited skilled resources and other time consuming parallel projects, such as compliance with Sarbanes-Oxley, embedded value reporting and Dutch Accounting Principles reporting. The key success factors for implementation include (1) full support at the executive level and (2) efficient communication through the organization, coordinated by a project management team at the corporate group level and assisted by dedicated teams at the local level.

## FAIR VALUE ACCOUNTING

Fair value would potentially apply to insurance contracts under Phase II, and it will apply beginning in 2005 to investment contracts, for companies that choose the fair value option. Peter Clark presented the key features of the IASB’s current thinking about the fair value model for Phase II. The fair value of insurance liabilities should be equal to the expected present value of all future liability cash flows, discounted at a risk free discount rate with a spread corresponding to the organization’s own credit standing and market value margins that enable the valuation to fully reflect the market price of risks in the cash flows. Cash flows should be projected using economic assumptions. Some economic assumptions, however, may not be observable in the market. In this case, companies may use their own estimates as proxies for economic assumptions, unless there is specific evidence that this is inappropriate. Finally, in the fair value model, options and guarantees should be valued using option pricing techniques.

Furthermore, the IASB has stated that it may not allow any profit at issue, unless this is supported by strong market evidence. This would probably significantly change the profit emergence patterns of many products, as was illustrated by a case study presented by Maria Torres-Jorda of Ernst & Young. Ms. Torres-Jorda also illustrated that profit emergence for an SPDA would be volatile in changing interest rate environments, even if assets and liabilities



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continued on page 8

were approximately matched.

The board has also stated that renewal premiums would be included in future cash flows only if policyholders had rights that significantly restrain a company's ability to re-price contracts, and are forfeited upon lapse. In particular, the exclusion of renewal premiums in the measurement of liabilities, for many types of flexible premium policies, such as universal life and variable universal life, as well as "unit-linked" products in Europe, is inconsistent with how contracts are currently being priced, and would probably cause companies to incur losses at issue, as was illustrated by Mark Freedman in a case study about a regular premium variable contract in the Netherlands.

The board also made it clear that it would not allow the capitalization of future investment spreads in reported results, thus rejecting traditional embedded value approaches as the basis for measuring fair value. However, Ruurd van den Berg emphasized the fact that embedded value has all the qualities that make it a suitable framework for measuring the fair value of liabilities. It was later shown by Mike McLaughlin, based on the work of Luke Girard, that embed-

ded value reconciles to fair value, if a consistent set of assumptions was used. In addition, "stochastic embedded value" would allow for the valuation of the embedded options and guarantees that are often neglected in traditional embedded value calculations, and it would provide useful risk management insights.

Tom MacKinnon, senior stock analyst at Scotia Capital, said that although there are still some major concerns and uncertainties about fair value implementation, the move to fair value represents an important step toward the harmonization of financial reporting among countries that is increasingly needed, as the insurance sector is becoming increasingly global. He stated that fair value implementation would be even more meaningful, if regulators used the fair value framework to perform the calculation of minimum capital requirements. Moreover, Mr. MacKinnon indicated that a key concern for analysts following the implementation of fair value would be the disclosure of sensitivity analyses and the disclosures and detailed explanation of sources of earnings.

#### WIDER LINKS AND APPLICATIONS

The IAS seminar was also an opportunity to provide participants with a perspective on wider risk and capital management issues. As insurers become more convinced that fair value concepts are the most suitable to assess performance on an economic basis and evaluate complex risks, such as those arising from guarantees and options, some insurers have already started implementing such frameworks. These frameworks will also support wider risk management initiatives needed to manage insurance operations in today's environment.

#### ECONOMIC VALUE MEASUREMENT

Mike McLaughlin gave an overview of the Economic Value Measurement (EVM) framework, under which companies measure assets and liabilities using market value or economic value. The concepts used to value the liabilities in these frameworks are very similar to those currently outlined in the IAS Phase II fair value model. In an EVM framework, the main components of the balance sheet are the market value of assets, the economic value of liabilities and the economic net worth. The economic net worth is composed of economic





capital and any additional amount over economic capital needed to comply with regulatory or rating agency capital requirements. The value of economic liabilities is equal to the value of a portfolio of marketable instruments that replicates liability cash flows and frictional costs. Frictional capital costs are inefficiency costs that reflect the price of risks in insurance cash flows, such as market value margins would under IAS.

Mr. McLaughlin showed that the analysis of movement of an economic balance sheet between two reporting dates enables companies to derive economic return measures and attribute performance to different functions across the organization, namely the insurance function, the risk and capital management function and the proprietary asset management function. This has helped companies gain new insights about the value creation process in their different businesses and illustrates why the move to fair value accounting is strategically important for the industry.

#### VALUING EMBEDDED OPTIONS AND GUARANTEES

Implicit in the valuation of economic liabilities in a fair value framework is the valuation of options and guarantees embedded in insurance and investment contracts, a key concern for many life insurers recently suffering from the costs of such guarantees and for those implementing IAS Phase I requirements under IAS 39. Gary Finkelstein provided a thorough description of leading-edge valuation techniques, from simulation and lattice to replicating methods. Mr. Finkelstein illustrated, with two case studies, how powerful replicating techniques could be in practice. In the first case study, he showed that put options provided a very efficient replicating strategy for the costs of fixed maturity guarantees. In the second case study, although the replicating strategy did not prove to be as efficient, costs of guaranteed annuity options were reasonably well replicated using receiver swaptions. According to Mr. Finkelstein, insurers that are able to identify, measure and implement strategies that hedge the costs of these guarantees and manage their balance-sheet volatility, will be ahead of their competitors in the current volatile financial environment.

#### IMPLEMENTING AN OVERALL RISK FRAMEWORK: VALUE TO THE COMPANY AND SYNERGIES WITH IAS AND UPCOMING REGULATORY REQUIREMENTS

Finally, Doug French of Ernst & Young reviewed how the events in the last two years, with more economic, business and cultural shocks than any time in recent memory, have affected the insurance industry and highlighted the need for the development of enhanced overall risk frameworks. These frameworks would also help meet the need for enhanced disclosure required by IAS. According to Mr. French, an overall risk framework's objectives are to (1) enhance business performance by providing decision makers with a holistic and complete view of their operations, (2) improve the level of confidence by providing management with better assurance that the business is being directed and controlled effectively, ensuring "no bad surprises" and (3) improve the ability to respond to sudden and unpredictable changes. The frameworks that need to be implemented in order to fulfill these goals are (1) a risk measurement framework, (2) a risk management framework and (3) a risk governance framework.

A risk measurement framework will provide executives with the vital information needed to make fact-based decisions, with the increasing use of value-based concepts such as embedded value, risk-adjusted performance measurement and fair value, to provide companies with a realistic view of the risks and performance of their businesses. Companies already implementing leading-edge risk measurement frameworks will likely jumpstart their IAS conversion efforts, as well as those implied by other upcoming regulatory requirements, such as Solvency II, which will set forth the basis for measuring regulatory capital requirements in Europe in the near future.

A realistic risk measurement framework alone is not sufficient to conduct business operations successfully. A risk management framework is also needed to drive the establishment of committees, including product pricing and design, ALM and enterprise risk committees, in order to ensure that risks are realistically

continued on page 10

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... enhanced overall risk frameworks. ...would also help meet the need for enhanced disclosure required by IAS.

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the IASB finalizes the Phase II standard for insurance contracts, in which insurance liabilities will likely be measured at fair value. The IASB re-emphasized its commitment to Phase II in a recent meeting held in November 2003, and is planning to resume discussing Phase II in May 2004. The aim is to complete an exposure draft by 2005, in order to provide companies with time to get ready for the implementation of Phase II requirements for insurance contracts, at the earliest by 2008. As the move to fair value for insurance contracts appears to be inevitable, companies that are already putting significant efforts into the implementation of Phase I requirements will also need to continue exploring the many business implications related to Phase II. These include (1) an expected increased volatility of earnings, (2) the need to develop a proactive approach to asset and liability management, with closer matching of assets and liabilities to reduce volatility, (3) changes in product design, especially in the areas of guarantees, options, and embedded derivatives, which are likely to be scaled-back, (4) system challenges, such as any need to develop sophisticated option pricing models to measure liabilities at fair value and (5) the challenges arising from the need to communicate and explain results to analysts, shareholders and policyholders. Some insurers already managing their operations based on frameworks similar to fair value will certainly be best prepared to face these challenges. ☒

measured, monitored and efficiently managed. Finally, for an institution's risk management and measurement frameworks to be driven in the right direction, appropriate roles, responsibilities and hand-offs must be agreed upon to ensure that a working governance process is in place.

Although there seems to be an urgency for companies to implement an enhanced overall risk framework, according to the results of a recent survey conducted by Ernst & Young, companies admitted that they were less than halfway toward their ideal risk framework and are still facing many implementation challenges, ranging from a lack of skilled resources and management support to technical issues. Fortunately, many companies in the survey recognized the importance of the matter in the current environment.



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## CONCLUSION

Beginning in 2005, all European Union listed and Australian insurance companies will need to implement IAS Phase I requirements, based on ED 5 for insurance contracts and IAS 39 for investment contracts. This will change when

# Asset Adequacy Analysis— Whys and Hows

by William M. Sayre

*Editor's Note: The section's Statutory Issues Serve would be an appropriate forum for discussing the concepts of this article.*

**W**ith the turning of the leaves in the fall, many valuation actuaries turn their attention to the analysis needed to complete an Actuarial Opinion and Memorandum Regulation (AOMR) opinion and memorandum, including asset adequacy analysis. For the actuaries at some companies, this may be the first year such analysis is being considered. This article will examine the potential need for asset adequacy analysis, as well as some possible approaches to fulfilling the requirements.

## THE NEED

In general, regulation has been moving inexorably in the direction of requiring actuarial opinions to be prepared that consider the adequacy of the assets to support reserves. It is becoming more and more difficult to render an opinion simply based on the formula reserves. Below are some of the forces that are moving companies toward asset adequacy analysis.

**AOMR Amendment.** Effective in 2001, the National Association of Insurance Commissioners (NAIC) amended the AOMR. Key to this revision is the elimination of an opinion that is based on the formula reserves without consideration of the assets backing the reserves (formerly referred to as a Section 7 opinion under the prior AOMR). Under the revised AOMR provisions, the appointed actuary must consider asset adequacy analysis in forming an opinion. States have been slow to enact the new regulation but have made some regulatory progress in 2003. Already, Florida, Indiana, New Mexico and Virginia have adopted the amended AOMR, effective in 2003. In other states, such as Iowa, the revised AOMR may be effective by the time this article is printed, with many others following in 2004. Companies domiciled in a state that has passed the amended AOMR must submit an opinion based on asset adequacy analysis as of 12/31/03. Companies domiciled in other states, but licensed in states that have passed the amended AOMR, are advised to contact those

states to see if an opinion based on asset adequacy analysis is required.

**Codification.** The Statutory Accounting Practices Group has incorporated certain provisions of the AOMR into codification. Codification requires the disclosure of any material differences between the annual statement reserves and the reserves that would have been developed had asset adequacy analysis been performed. Since codification applies to business written on or after January 1, 2001, asset adequacy analysis may be required to the extent that this business is material. Within the industry, there is still much discussion and confusion as to the impact of the codification requirements.

**“Guideline XXX.”** The Valuation of Life Insurance Policies regulation (Guideline XXX) is in effect in the majority of states. As part of this regulation, companies may utilize X-factors less than 100 percent applied to the valuation mortality table to lower the deficiency reserve burden of their life insurance policies. However, to take advantage of this regulatory feature, companies must prepare an asset adequacy actuarial opinion and memorandum annually in conformance with the requirements of the AOMR.

**2001 CSO.** One current hot topic is the approval of the 2001 CSO mortality table. Regulatory action is moving at a far more urgent pace on this item than on the AOMR revision. The NAIC model regulation, recognizing the use of the 2001 CSO table, necessitates the preparation of an asset adequacy analysis opinion, if the table is used as the minimum reserve standard for any plan for a company. The model regulation requires the use of the 2001 CSO table beginning January 1, 2009.

**Risk Based Capital.** Companies may be subject to cash flow testing requirements based on risk-based capital (RBC) C-3 Phase I

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**It is becoming more and more difficult to render an opinion simply based on the formula reserves.**

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continued on page 12

requirements, depending on the outcome of certain exemption tests. If so, cash flows must be modeled using a prescribed set of stochastic scenarios to determine RBC C-3 levels. The American Academy of Actuaries (AAA) recently presented a final report to the NAIC on RBC C-3 Phase II. Possibly effective by the end of 2004, RBC C-3 Phase II will require cash flow analysis of variable products with guarantees in determining the capital requirements. The NAIC is also developing a variant of the capital approach for the determination of variable annuity reserves.

**State Insurance Department Requests.**

Even if an asset adequacy opinion is not required for any of the reasons listed above, under Section 3 of the original AOMR, a state insurance department may request that one be prepared based on the circumstances of any company. Beginning with year-end 2002, the New York State insurance department made this request for category C companies (those with admitted assets between \$100 million and \$500 million, which, by regulation, only had to prepare asset adequacy opinions every third year, if they met certain exemption eligibility tests). In their request letter, the New York department specifically cited concerns about the continued low interest rate environment,

the recent period of high default experience, and the depressed stock market as reasons for the request. Given the universality of these problems for all companies doing business in the United States, other states may follow New York's lead in requesting asset adequacy analysis, possibly on an individual basis.

**POSSIBLE APPROACHES**

The initial response of many actuaries to the prospect of asset adequacy analysis is that it will require complicated and time-consuming cash flow testing projections. However, this is not necessarily the case. Actuarial Standard of Practice No. 22 – Statements of Opinion Based on Asset Adequacy Analysis by Actuaries for Life or Health Insurers (ASOP #22) – clearly states that asset adequacy analysis encompasses many approaches, in addition to cash flow testing. Section 3.2.2 lists several alternative approaches that would be acceptable methods, in lieu of cash flow testing, depending on the circumstance. Sections 3.2.1 and 3.2.2 of Actuarial Standard of Practice No. 7 – Analysis of Life, Health, or Property/Casualty Insurer Cash Flows (ASOP #7) – also address reasons for and against cash flow testing.

**Gross Premium Valuation.** One potential technique is the preparation of a gross premium valuation. This involves a projection of the liability premiums, benefits and expenses, and a determination of value based on the present value of the premiums net of benefits and expenses. A liability model is necessary, along with a projection based on that model and reasonable assumptions, but an asset projection is not needed. The appointed actuary may have already developed liability models, or may have access to models that others in the company have developed, that are used for pricing or internal analysis. However, a gross premium valuation would only be appropriate for a non-interest sensitive block of business, such as term insurance, that was backed by assets without embedded options such as calls or prepayments.

**Risk Theory Techniques.** If the liability considered is short term in nature, risk theory techniques may be sufficient to demonstrate asset adequacy. Risk theory might be appropri-



ate for a short term disability coverage, for instance, that is supported by short term assets. A distribution can be developed using historical claim statistics. Using this distribution, one can calculate probabilities of continuance of the disability claim. Obviously, the parameters of the function associated with this distribution can be varied to develop the sensitivities under moderately adverse deviations. Given the short term nature of the assets, it may be appropriate to ignore the effect of interest.

**Loss Ratio Methods.** For short term health insurance business (also, like short term disability coverage, supported by short term assets), loss ratio methods might make sense. Aggregate incurred health claims could be estimated by applying estimated loss ratios to earned premiums. Again, various moderately adverse deviation sensitivity tests can be developed to ascertain asset adequacy.

**Demonstrate Extreme Conservatism.** If the appointed actuary considers the reserves for a particular line of business to be extremely conservative, it would be reasonable to demonstrate this degree of conservatism rather than perform cash flow testing analysis. This might be appropriate with an older block of life insurance business that assumes an extremely conservative interest rate and mortality assumption. For instance, an actuary might consider the valuation interest rate to be extremely conservative, if it were moderately lower than the ultimate reinvestment rate in any falling scenarios that might be considered. One should be very careful to establish that the reserves are calculated using assumptions that are conservative, under any moderately adverse scenario. If the actuary has any doubt about the level of conservatism, it is preferable to use an alternative approach to asset adequacy analysis.

**Cash Flow Testing.** Although asset adequacy analysis does not necessarily connote cash flow testing, cash flow testing may be the only appropriate methodology for certain lines of business. For instance, for universal life and deferred annuity lines of business, the very nature of the product design renders the lines extremely sensitive to fluctuations in interest rates. Cash flow testing is the only way to analyze the full impact of the interest sensitiv-

ity of the asset and liability cash flows. Also, it may be useful for aggregation purposes to cash flow test certain non-interest sensitive lines of business, such as term life insurance. If the appointed actuary desires to aggregate results across lines of business by using surplus in a non-interest sensitive line of business to offset a deficit in an interest sensitive line of business, cash flow testing analysis may be the only method to consistently determine the aggregate value across the lines of business.

**Summary.** In summary, easier approaches other than cash flow testing may be used, because the nature of the product design and the investment strategy may limit the risks inherent in the product. As such, an appropriate asset adequacy approach would be to demonstrate that the product is not subject to material variation with the respect to the various classes of risk and that the reserves make provision for those variations. The actuary should have a thorough understanding of the risks in the product and the assets, and the interaction between them. He or she should be comfortable with the appropriateness of the approach used for asset adequacy analysis and should be prepared to explain and defend it.

#### OVERVIEW OF CASH FLOW TESTING PROCEDURE

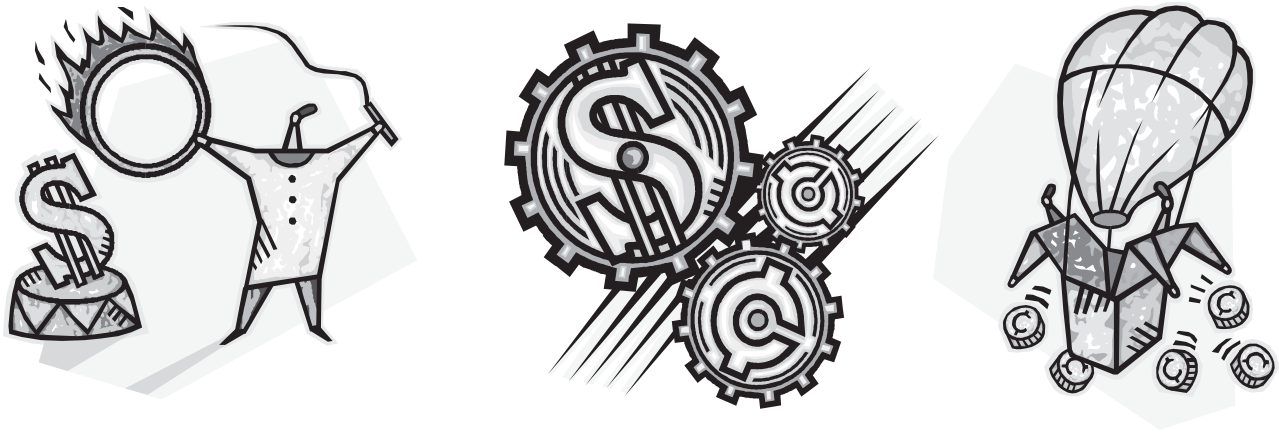
To the extent that cash flow testing is necessitated by a company's situation, the best place to start is with any existing resources. As indicated above, liability models may already exist within your company to use as a starting point for asset adequacy analysis. The actuary will need to consider whether existing models are robust enough to provide meaningful information in forming an opinion. Be sure to consider both ASOP #7 and ASOP #22 with regard to the appropriate standards of practice governing cash flow testing. In addition, the AAA has many Practice Notes pertaining to cash flow testing on its Web site. These Practice Notes provide practical guidance about various issues related to cash flow testing (note: as many of these practice notes date back to 1995, a Life Practice Note subcommittee is in the process of updating them, with a target date for draft

continued on page 14

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**The actuary should have a thorough understanding of the risks in the product and the assets**

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completion in the spring of 2004).

With regard to asset modeling, the first place to start is with any “in-house” models developed by your investment department. If an outside firm provides your investment management, you might have an established relationship upon which to build. Either way, your investment advisor may be able to provide you with a projection of your asset cash flows under the different scenarios. They also may be able to assist with other asset assumptions, such as reinvestment rates, asset default rates and call and prepayment modeling. To the extent your investment advisor is already involved as part of your company committee that sets crediting rates, they may also be able to assist in the liability modeling of the crediting rate strategy.

Lack of time and staffing resources may necessitate the services of a consulting firm. You may need the assistance of a consultant only for the first year or so in developing the models and systems that will be needed on an ongoing basis. Even if you perform cash flow testing yourself, you may want to seek the advice of a consultant to apply insight and guidance based on his or her prior experience to your asset adequacy issues.

While all the work necessary to meet the regulatory requirements may initially seem burdensome, it is possible to draw substantial

value out of the process. The models that are developed can be augmented for use by company management. With the addition of new business production, an existing cash flow testing model can be modified into a tool that company management can use to analyze sources of profit and perform sensitivity testing to gauge the effect of various risks. The model could also be further expanded to include GAAP valuation.

#### WHAT IT ALL MEANS

Following recent trends, it will only become more likely that some form of asset adequacy analysis will be required. Asset adequacy analysis may create much additional labor for the appointed actuary in preparing the opinion. However, depending on the lines of business involved, cash flow testing is not necessarily the end result. Utilizing available resources, such as existing models or current relationships with investment advisors, can go a long way toward “jump-starting” the process. Even if the appointed actuary does not find that asset adequacy analysis is required for 2003, it is advisable to apply serious thought and time to the issue in anticipation of potential 2004 requirements. ☐



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# Practical Considerations for Implementing the New Statement of Position for Long Duration Contracts and for Separate Accounts – Part II

by Vincent Tsang, David Heavilin

*Editor's Note: The section's GAAP List Serve would be an appropriate forum for discussing the concepts of this article.*

In Part I, which appeared in the November 2002 issue, we wrote about issues such as the initial classification of non-traditional long duration contracts (LDC), sales inducements and accrual of liabilities for persistency bonuses. In Part II, the topics are reinsurance, profits in early years and losses in subsequent years, discount rates for present value calculations and additional liabilities for various types of LDC. We also include an update on the SOP for internal replacements, suggested contract classification criteria, and numerical examples for the treatment of sales inducements.

## (I) REINSURANCE

Besides affecting direct issuers of non-traditional LDC, SOP 03-1 also affects reinsurance enterprises that assume certain benefit features of non-traditional LDC. Paragraph 30 provides specific financial reporting guidance for reinsurance. The guidance is applicable to both reinsurance and retrocession reinsurance contracts. Key provisions for reinsurance include:

- The assuming enterprise should determine the classification of the reinsurance contract (insurance contract vs. investment contract) at the inception of the reinsurance contract.
- The significance of mortality and morbidity risks of an assumed insurance benefit feature:
  - (a) Should be assessed within the reinsurance contract according to the guidance in paragraphs 24 and 25 of the SOP, regardless of whether there is an account balance and

(b) Could be deemed other than nominal even if the ceding company did not determine the mortality or morbidity risks to be other than nominal and vice versa.

- There is a rebuttable presumption that a (reinsurance) contract has significant mortality risk if the additional insurance benefit would vary significantly in response to capital market's volatility.
- The assuming company should calculate a liability for the portion of collected reinsurance premiums that are expected to result in current profits and future losses from the assumed insurance benefits. The additional liability should be calculated using methodology described in paragraphs 26 through 28 of SOP 03-1.

## Assuming Company

Due to the adverse equity returns in recent years, activities for reinsuring GMDBs, GMIBs and other variable annuity guarantees have slowed down significantly.

Under a coinsurance contract, contractual obligations are shared between the ceding and assuming enterprises. Accordingly, risks and rewards are also shared on a pro-rata basis. An indemnity reinsurance contract, on the other hand, identifies specific contractual obligations that the assuming enterprise must reimburse the ceding enterprise. Risks and rewards are not shared proportionally. Reinsurance for variable contracts and interest sensitive contracts is usually on an indemnity basis. As these indemnity-type reinsurance contracts usually cover only mortality or morbidity risks, the

continued on page 16

assuming enterprise should implement SOP 03-1 from its assumed risk profile, rather than from the risk profile of the underlying contracts.

As SOP 03-1 focuses on the incidence of profits and losses, this emphasis may have strong implications for assuming companies regarding the classification of contracts. For example, if reinsurance premiums vary with the account value, rather than the net amount at risk (NAR), it is possible that the assuming enterprise experiences current profits and future losses under adverse equity scenarios. As a result, the assuming enterprise may hold an additional reserve in accordance with guidance provided in paragraphs 26 through 28.

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**The reserve held by the assuming enterprise for the assumed risks needs not be the same as the reserve claimed by the ceding enterprise.**

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### **Ceding Company**

There are many viewpoints on how reinsurance may affect the contract classification of the base non-traditional LDC. In many instances, the ceding enterprise cedes only the mortality or morbidity risks of the base non-traditional LDC to the assuming enterprise. Even though the ceding enterprise may consider the reinsurance contract as a shield, we believe this type of indemnity reinsurance contract, should not affect the classification of the base non-traditional LDC for the following reasons:

- The ceding enterprise is the primary party responsible for providing mortality and morbidity payments to the contract holder, even though the assuming enterprise reimburses the ceding enterprise for the benefit payments.
- The reinsurance contract may be terminated before its scheduled maturity date due to reasons such as financial hardship or downgrade of one of the assuming companies in the reinsurance pool. If the reinsurance contract is terminated, the ceding enterprise becomes the sole party responsible for future mortality and morbidity benefit payments.
- The ceding company may, if allowed

under certain conditions, recapture the ceded risk before the reinsurance contract's maturity date. If the ceding enterprise has already classified the base non-traditional LDC as investment contracts because of the indemnity reinsurance contract, the ceding company has forever lost the opportunity to classify the contracts as UL-type contracts when the mortality or morbidity risks, after the recapture, are other than nominal.

- SFAS 113, *Accounting and Reporting for Reinsurance of Short-Duration and Long-uration Contracts*, requires the ceding enterprise to calculate reserves for the base non-traditional LDC on both before- and after-reinsurance bases unless the base LDC is ceded with an assumption reinsurance contract.

The reserve held by the assuming enterprise for the assumed risks needs not be the same as the reserve credit claimed by the ceding enterprise. Differences between these two quantities may be due to factors such as different assumed investment yield rates, expense assumptions, other actuarial assumptions and definitions of total assessments. For the ceding company, to use the reserve held by the assuming enterprise as the reserve credit may not be an appropriate approach.

### **(II) PROFITS IN EARLY YEARS AND LOSSES IN SUBSEQUENT YEARS**

Paragraph 26 of the SOP discusses the requirements and the calculation procedure to establish an additional reserve for UL-type LDC. In particular, paragraph 26 specifies that,

*If the amounts assessed the contract holder each period for the insurance benefit feature are assessed in a manner that is expected to result in profits in earlier years and losses in subsequent years from the insurance benefit*



*function a liability should be established in addition to the accrual account balance, to recognize the portion of such assessments that compensates the insurance enterprise for benefits to be provided in future periods.*

This “early profits and subsequent losses” issue deals with a particular insurance benefit function rather than the entire contract. Paragraphs A31 and A32 provide additional clarifications on this point. Per paragraph A32,

*AcSEC also considered, but rejected, the view that an additional liability for expected losses on insurance benefit payments would only be established if all the margins of the product combined to create a premium deficiency... AcSEC rejected that view because such disproportionate assessments are made in part to compensate the insurance enterprise for the risk it assumed in future periods.*

In other words, an insurance enterprise may need to establish an additional mortality reserve for a UL-type contract even when the contract’s aggregate margin is positive in all policy years. Although this “early profits and future losses” criterion may be originally specified for variable annuities with guaranteed benefits, this requirement may also affect many universal life products and variable life products.

**Universal Life with No-Lapse Guarantee**

There are many types of UL contracts with no-lapse secondary guarantee. Examples are UL contracts with catch-up provisions or UL contracts with shadow accounts. Contractual death benefits for these UL contracts remain effective as long as the policyholders fulfill certain contractual conditions, even when the contracts’ account balances are zero. At the time SFAS 97 was written, these types of UL contracts were not popular in the market place. SFAS 97 is silent about providing additional reserve guidance for UL

contracts with secondary guarantees except, to confirm that loss recognition is applicable to UL-type contracts.

The conditions for maintaining the secondary guarantee are sometimes specified in terms of a “stipulated premium” which may either remain as a level amount or increase with a very gradual schedule. A UL contract with secondary guarantees seldom has any significant account balance, and its annual investment margin is usually negligible. When the account balance is either equal to or marginally above zero, the stipulated premium effectively becomes the upper bound of collectible COI charges. As expected mortality costs increase with assumed mortality rates, while stipulated premiums remain level, it is possible that a UL contract with secondary guarantees exhibits profits in early years and losses in subsequent years. Accordingly, the insurance enterprise may be required to hold an additional mortality reserve for UL contracts with secondary guarantees in accordance with provisions in paragraphs 26 through 28 of the SOP.

This “early profits and subsequent losses” criterion also affects other UL contracts without secondary guarantees, if their profitability relies on the investment margin or expense margin, rather than the mortality margin. For example, single premium UL before TAMRA is a UL contract that was priced with zero or minimal COI charges but with heavy investment margins.

**Other Universal Life Contracts**

Most UL contracts are underwritten contracts, and the pricing mortality rates are usually based on select and ultimate rates such as the 1985-90 S&U mortality rates. The contract’s current COI charge rates, on the other hand, are usually expressed in an ultimate scale. It is possible that the mortality spreads between current COI rates and pricing mortality rates are positive in early policy years and negative in later policy years, say the 15th policy year and thereafter. The negative mortality margin is usually compensated by the positive investment margin in the

continued on page 18

later policy years, so that the contract exhibits positive margins in aggregate.

As mentioned earlier, the “early profits and subsequent losses” criterion focuses on an insurance benefit function rather than the entire contract. The positive mortality spreads in early policy years and negative spreads in future years may result in an additional mortality reserve. The net effect on income is that a portion of mortality margins in earlier policy years would be deferred into future policy years.

### Variable Contracts

Deposits of a variable contract (variable universal life or variable annuity) are usually invested in equity funds. Its account balance and NAR vary in response to equity market volatility. If the COI charges of a VUL contract are based on NAR and are self-supporting, the collected COI charges should be proportional to the expected death benefits on NAR and the mortality margin should be positive in all policy years. The “current profits and future losses” criterion probably would not apply to this type of VUL contract.

Most variable annuity contracts do not have specific COI charges. The fee for providing death benefit in excess of the account value is usually expressed as a specified percentage, for example, 25 basis points, of the account value. The same situation may occur for some variable universal life contracts where the COI charge is expressed in terms of a contractual fixed mortality and expense (M&E) charge that is applicable to account balance rather than NAR. The collectible COI charges for this type of VUL contract are not proportional to the NAR. The combination of decreased COI charges and increased death benefit costs during a bear market may result in profits in early years and losses in subsequent years. Accordingly, the “early profits and subsequent losses” criterion may require the insurance enterprise to establish an additional mortality reserve for these VA and VUL contracts.

An associated practical difficulty of developing additional reserves for this

type of variable contract is the need to identify the fee for the GMDB, because the guidance in paragraphs 26 and A32 focuses only on an insurance benefit function rather than the entire contract. The identification exercise may be challenging for variable contracts that are using implicit, rather than explicit, fees for GMDBs.

This “early profits and subsequent losses” issue is likely to be an important issue when insurance enterprises implement SOP 03-1 for the first time in 2004. We recommend the valuation actuary obtain a clear understanding of various contracts’ profit and loss patterns for each insurance function before implementing the SOP.

### (III) DISCOUNT RATES FOR PRESENT VALUE CALCULATIONS

The test of significance of mortality and morbidity risk and the benefit ratios are based on the present value of excess payments and the present value of total assessments during the accumulation phase of the contract. For annuitization benefits, the excess payment is the present value of annuity payments in excess of the accrual account balance at the actual date of annuitization. So, what are the appropriate discount rates for these present value calculations? Should the discount rates be the investment yield rates, the crediting rates or something else?

#### Excess Payments for Annuitization Benefit

Per paragraph 33 of the SOP on annuitization benefits,

*Cumulative excess payments determined at annuitization should be calculated as the present value of expected annuity payments, and related claim adjustment expenses discounted at expected investment yields, minus the accrued account balance at the actual annuitization date.*

Accordingly, the expected investment yields should be used as the discount rate

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This “early profits and subsequent losses” issue is likely to be an important issue

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to calculate the present value of the annuitization payments in excess of the accrual account balance. The application of this guidance, however, is limited to the calculation of excess annuitization payments.

**Additional Liability for General Account Business**

The calculation of benefit ratios and additional liabilities involves a completely different set of present values (the present value of excess payments and the present value of total assessments). SOP 03-1 is not very clear on the choice of the discount rate for the present value calculations. Paragraphs 26 and 31 of the SOP provide some hints on this issue and state that,

*Assumptions used, such as the interest rate, discount rate, lapse rate, and mortality should be consistent with assumptions used in estimating gross profits for purposes of amortizing capitalized acquisition costs.*

Paragraph A33 provides additional clarification of this issue by stating that the assumptions used to compute additional liability should be consistent with those used in estimating gross profits and “consequently the amortization of DAC.” Paragraphs 22 and 25 of SFAS 97 specify that the crediting rate should be used to discount Estimated Gross Profits (EGP) and deferrable acquisition expenses for UL-type contracts and that the discount rate should be used to compute accrued interest for unamortized DAC, respectively. Our interpretation of the guidance in paragraphs 26, 31, and A31 is that the crediting rate is a reasonable interest rate for (a) discounting expected excess payments and total assessments and (b) calculating the accreted interest on additional liability for the general account business.

Please note that SOP 03-1 only requires the assumptions used for the additional liability be consistent with, but not necessarily the same as, those used for amortization of deferrable expenses. Thus, the crediting rate is simply only one of

many possible choices, rather than being the only choice. It appears that an insurance enterprise may choose any reasonable discount rate as long as it is consistent with the crediting rate.

Paragraph 25 of SFAS 97 offers two choices of crediting rate for discounting: 1) the crediting rate in effect at the inception of the book of contracts, or 2) the latest revised crediting rate applied to the remaining benefit period. As crediting rates for general account contracts are non-negative and relatively stable, either approach would not produce materially different additional liabilities for the general account business.

**Additional Liability for Separate Account Business**

The situation becomes slightly more complicated for variable contracts, because crediting rates for variable contracts can be negative in a bear equity market. If an insurance enterprise has been using a locked-in and non-negative crediting rate that was in effect at the inception of a book of variable business for DAC amortization, the enterprise may continue to use this locked-in rate as the discount rate to calculate the present values of expected excess payments and total assessments. This would be appropriate because a non-negative rate would not produce negative accreted interest for the additional liability, a general account liability.

If an insurance enterprise has been using historic crediting rates and the latest revised crediting rate to perform amortization of DAC for in force business, the final discount rates (a possible composite of positive and negative interest rates) may produce results that require additional explanations. The discount rates used by the enterprise to calculate additional liabilities should nonetheless be consistent with those used for DAC amortization. For new business, the enterprise may consider

continued on page 20

using a locked-in crediting rate for DAC and additional reserve.

#### (IV) ASSUMPTIONS FOR ADDITIONAL LIABILITIES

Paragraphs 26 and 31 provide the following guidance about additional liabilities:

*The insurance enterprise should calculate the present value of total expected excess payments and total assessments and investment margin, as applicable, based on expected experience.*

*Expected experience should be based on a range of scenarios rather than a single set of best estimate assumptions.*

*In calculating the additional liabilities for the insurance benefit feature, assumptions used, such as interest rate, discount rate, lapse rate, and mortality, should be consistent with assumptions used in estimating gross profits for purposes of amortizing capitalized acquisition costs.*

There are many possible interpretations of the guidance in these three sentences. One may argue that the expected experience should be the median or a selected percentile, for example, the 83rd percentile, of the tested scenarios. Disadvantages of this approach include:

- The projected elements, for example, equity return, of these scenarios may be higher or lower than the projected elements of another scenario in different projection years. Due to this potential criss-crossing of projected elements among scenarios, there may not be a convenient way to rank them.
- If these scenarios are ranked using their associated benefit ratios or additional reserves, the chosen scenario may have widely fluctuating equity returns that are inconsistent with

those used for DAC amortization.

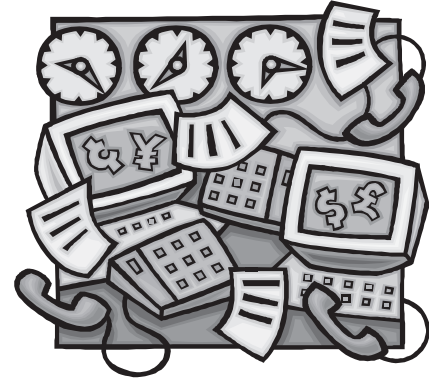
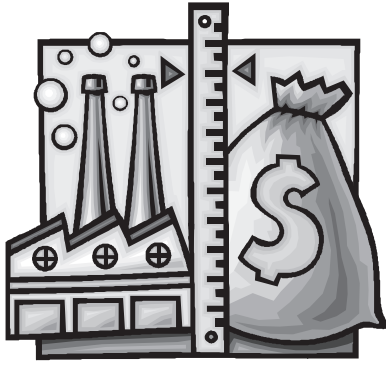
One may also argue for using the mean of the tested scenarios as the expected experience. Disadvantages of this approach include:

- If the tested scenarios are stochastically generated and the generated equity returns are based on an assumed annual return, taking the mean of the simulated equity returns neutralizes the random fluctuations in these scenarios and reproduce the assumed annual equity return. If the mean is used, one may not recognize the frequency and the severity of future benefits.
- If the mean is obtained by using the mean of the scenarios' associated benefit ratios or additional reserves, there is no guarantee that any one of the tested scenarios could provide the average benefit ratio or additional reserve. Even if there is a tested scenario that approximately produces the average benefit ratio or additional reserve, the underlying assumptions may be inconsistent with those for DAC amortization. If there isn't any one of the test scenarios that produces the benefit ratio or additional reserve, the actuary may need to derive a scenario producing such benefit ratio or additional reserve with underlying assumptions remaining consistent with those for DAC amortization. This scenario derivation process can be a very time-consuming exercise because it involves many trial-and-error runs.
- If there is more than one cohort under consideration, the actuary may need to explain the differences, if any, among these "mean expected experience" scenarios for various blocks of business.

Our interpretation of the guidance about additional liabilities is listed below:

1. Contrary to some prior practices, the actuary should not use a single set of subjective best estimates to quantify

**If there isn't any one of the test scenarios that produces the benefit ratio or additional reserve, the actuary may need to derive a scenario producing such benefit ratio...**



the inherent risks of the underlying LDC. For instance, an 8 percent per annum equity return should not be considered an appropriate assumption, because the projected contractual guarantees may never be “in-the-money.”

2. The actuary should carefully study the risk profile of the underlying non-traditional LDCs under a wide spectrum of equity and interest rate scenarios. The study may enhance the actuary’s objectivity in developing the expected experience.
3. After studying the results, the actuary may choose an expected experience to calculate the additional liabilities. The expected experience needs not be one of the tested scenarios. For instance, the actuary may select the expected equity experience as either (a) a long-term bull market with modest annual return or (b) a long-term bull market interrupted by several short-term bear markets.
4. The assumed equity returns should nevertheless be consistent with those used for DAC amortization. If the assumed equity returns for DAC amortization are 8 percent per annum, the assumed equity returns for additional liabilities should also show positive long-term investment returns. In our opinion, a modest positive per annum equity return or a long-term bull

market interrupted by short-term bear markets are reasonable equity return assumptions, as long as they are consistent with the assumed equity returns for DAC amortization.

5. In reality, there is only one set of actual equity returns. Unless there are strong and logical reasons to assume otherwise, we believe the assumed equity returns should be applied uniformly to all cohorts and guaranteed benefits to determine their additional liabilities.

Some insurance enterprises offer equity funds that are not broad market equity funds, such as the S&P 500 or Dow Jones Industrials. Generating equity returns for these special equity funds may present challenges such as a lack of credible historical statistics, for example, mean and standard deviation. We believe it is most convenient to generate broad market equity returns first and then derive the equity returns for these special equity funds, using their presumed correlation with the equity returns of a broad market.

It is possible that the additional reserve calculated under our suggested interpretation is not material when compared with the accrued account balance. As GAAP focuses on the best estimate and reasonableness, rather than conservatism, we believe reasonableness is far more important than the absolute magnitude of the

continued on page 22

reserves for insurance benefit functions such as GMDBs and GMIBs.

#### **(V) AN UPDATE ABOUT THE SOP FOR INTERNAL REPLACEMENT**

As discussed in Part I of this article, there is a proposed SOP regarding the accounting of unamortized DAC of insurance contracts involved in internal replacements. During September 2003, the proposed SOP on internal replacement was modified and the scope was expanded to include DAC-type assets for sales inducements. We believe the expanded scope and additional guidance on accounting for sales inducement assets are reasonable and logical. As the guidance of the revised SOP is not finalized, we will not discuss them here. We encourage interested readers to review the revised proposal for more details.

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**To enhance objectivity, actuaries should first obtain input from investment professionals to establish the initial equity assumptions.**

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#### **(VI) SUGGESTED CONTRACT CLASSIFICATION CRITERION**

A well-defined decision criterion enhances a person's objectivity in making a decision. The initial setting of a decision criterion, however, is still a subjective exercise. This blending of objectivity and subjectivity is equally applicable to the criteria for determining the significance of mortality and morbidity risks of LDCs, in order to classify them properly as investment contracts or UL-type contracts. According to paragraph 25, there is a rebuttable presumption that a contract has significant mortality risk, if the additional insurance benefit would vary significantly in response to capital market volatility. This guidance appears to advocate a null hypothesis that all variable contracts embedded with GMDBs are contracts with significant mortality risk. Based on the results of the analysis, actuaries may reject or do not reject the null hypothesis. This approach is slightly different from the prior approach for investment-oriented LDCs, where variable annuities and general account deferred annuities are generally considered investment contracts with insignificant or nominal mortality

risk, unless proven otherwise.

As noted in paragraph 25 of SOP 03-1, an insurance enterprise should consider both frequency and severity under a full range of scenarios. In our opinion, an insurance enterprise may, in theory, reject the null hypothesis, that the LDC has significant mortality risk, and consider the underlying LDC an investment contract, only when the results of the simulation analysis indicate that the excess mortality payments are both infrequent and not severe.

Both the frequency and severity of excess mortality payments depend on the assumed equity return and its standard deviation. To enhance objectivity, actuaries should first obtain input from investment professionals to establish the initial equity assumptions. Unless the assumed equity return is overwhelmingly greater than its standard deviation, it is very likely that most variable contracts with GMDBs would have positive present value of excess mortality payments for a significant number of equity scenarios. For instance, if the assumed equity return is 8 percent and the standard deviation is 15 percent, the probability of having a return of premium (ROP) GMDB in-the-money, in the first policy year, is approximately 30 percent. The situation becomes more acute when the GMDB provides roll-up or ratchet minimum death benefits. Our simulation analysis indicates that excess mortality payments for GMDBs are also significant under extreme adverse equity scenarios. We believe it is reasonable to classify all new issues of variable contracts as UL-type contracts if they are embedded with GMDB features.

The situation becomes a bit more complicated for in force LDCs because we should also consider their prior experience. For in force variable annuities with accrued account balance at least 30 percent higher than the ROP GMDB at the initial adoption date, the frequency of these contracts experiencing excess death benefit payments is relatively low. Even if excess death benefit payments are positive under a minority of generated equity scenarios, the present values of excess payments are likely to be moderate. We believe it is reasonable to

classify variable annuities with significant out-of-money ROP GMDB as investment contracts. For existing variable annuities with slightly out-of-money ROP GMDBs, in-depth simulation analysis is required to determine proper contract classification.

Our simulation analysis also suggests that roll-up and ratcheted GMDBs would eventually erode the margin that may exist between the accrued account balance and the GMDB at the initial adoption date under adverse equity scenarios. Unless most of the generated equity returns are positive, the number of scenarios with positive present value of excess mortality payments, for variable annuities with accrued account balance greater than roll-up or ratcheted GMDB, is at least 10 percent of all tested scenarios. The present values of excess mortality payments are also significant under adverse equity scenarios. Our simulation analysis suggests that it is reasonable to classify all variable annuities with roll-up, ratcheted or other types of competitive GMDBs that exist at the initial adoption date as UL-type contracts.

The SOP's guidance for determining the significance of mortality and morbidity risk appears to focus primarily on contracts that are tied to the capital markets. We believe the guidance is equally applicable to general account contracts that provide a death benefit or morbidity benefit in excess of the accrued account balance. An example is the two-tier general account deferred annuity that provides the upper-tier as a death benefit. As the upper-tier is usually greater than the accrued account balance, the death benefit is always in-the-money until the two tiers merge. The present value of excess death benefit payments, on the other hand, is likely to be mild, unless the upper-tier is significantly greater than the lower-tier for an extended period. From a frequency perspective, we believe these types of contracts should be classified as UL-type contracts even though the present value of excess mortality payments is relatively small when compared with the present value of total assessments.

## (VII) NUMERICAL EXAMPLES FOR THE TREATMENT OF SALES INDUCEMENTS

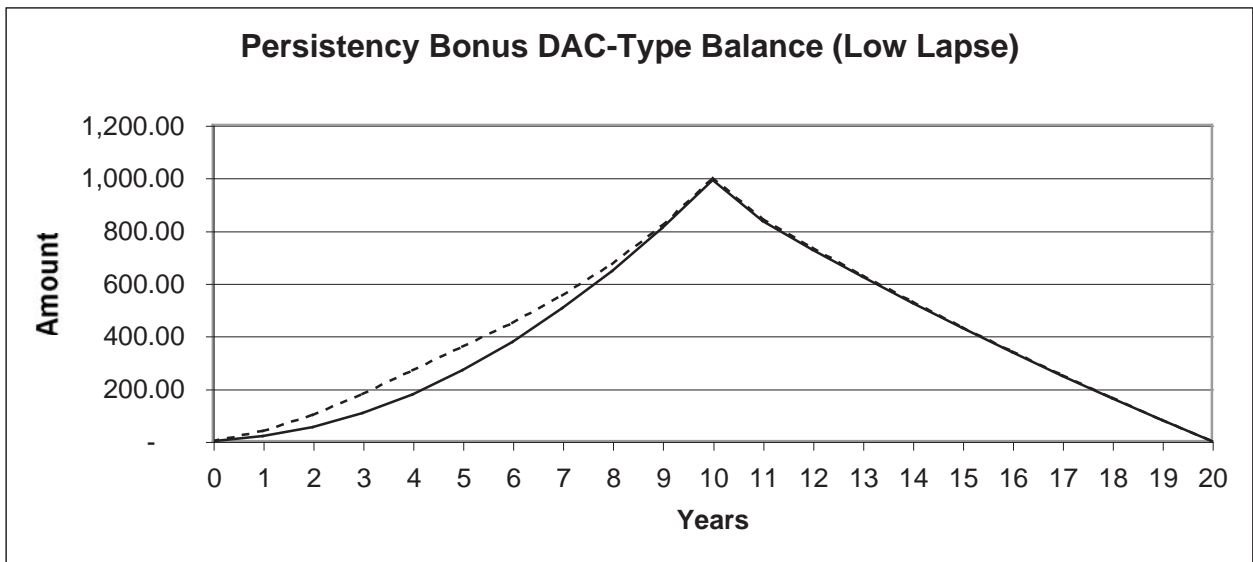
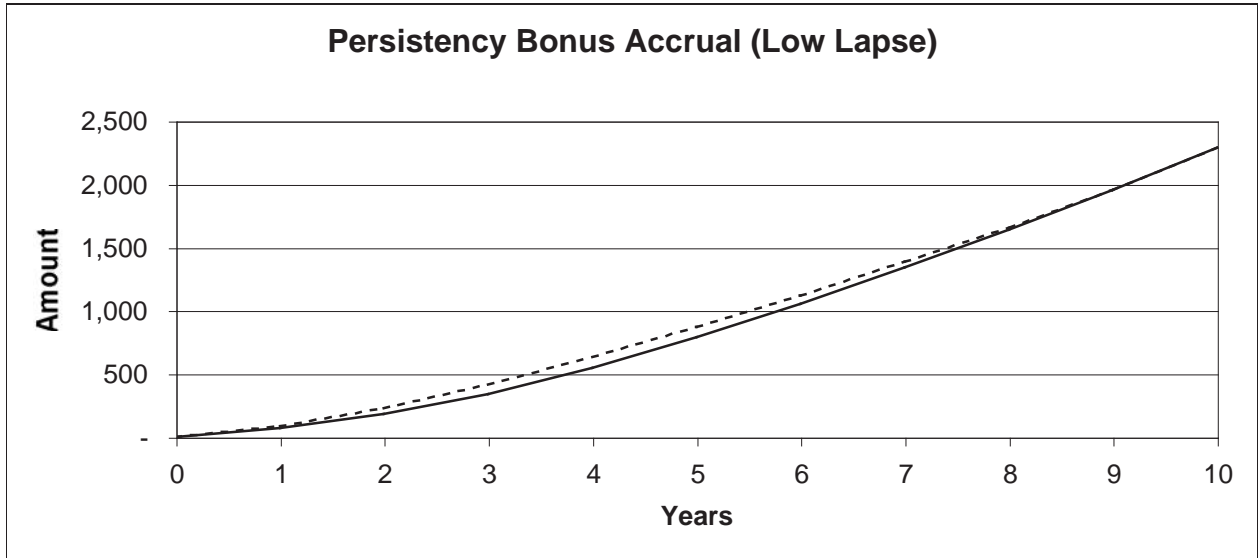
Before presenting and discussing numerical examples for the treatment of sales inducements, let's have a brief recap from Part I of this article, which appeared in the November 2003 issue. Insurance enterprises provide sale inducements to promote sales and persistency. SOP 03-1 provides financial reporting guidance for the three most commonly used sales inducements (immediate bonuses, persistency bonuses and enhanced yield). The new SOP's guidance about these sales inducements is also applicable to other possible types of sales inducements, for example, return of COI charges.

Paragraph 36 of the new SOP states that liabilities for sales inducements provided to the contract holder should be recognized over the period in which the contract must remain in force for the contract holder to qualify for the inducement, or until the credited date, if earlier. With respect to the pattern of accrual, paragraph D19 indicates that the liability for a persistency bonus should be accrued "ratably" over the vesting period. The word "ratably" is not defined by the SOP. According to *Random House Webster's College Dictionary*, the word "ratably" is the adverb of the word "ratable" which means (1) capable of being rated or appraised or (2) proportional.

According to paragraph 37, sales inducements should be deferred and amortized using the same methodology and assumptions used to amortize capitalized acquisition costs, if the sales inducements satisfy the following conditions:

- (a) They are recognized as a part of the liability under paragraph 36 of the SOP.
- (b) They are explicitly identified in the contract at inception.
- (c) The amounts of sales inducements are incremental to the amount that the enterprise credits on similar contracts, without sales inducements, and higher than the contract's expected on-going

continued on page 24



credited rates after the inducement.

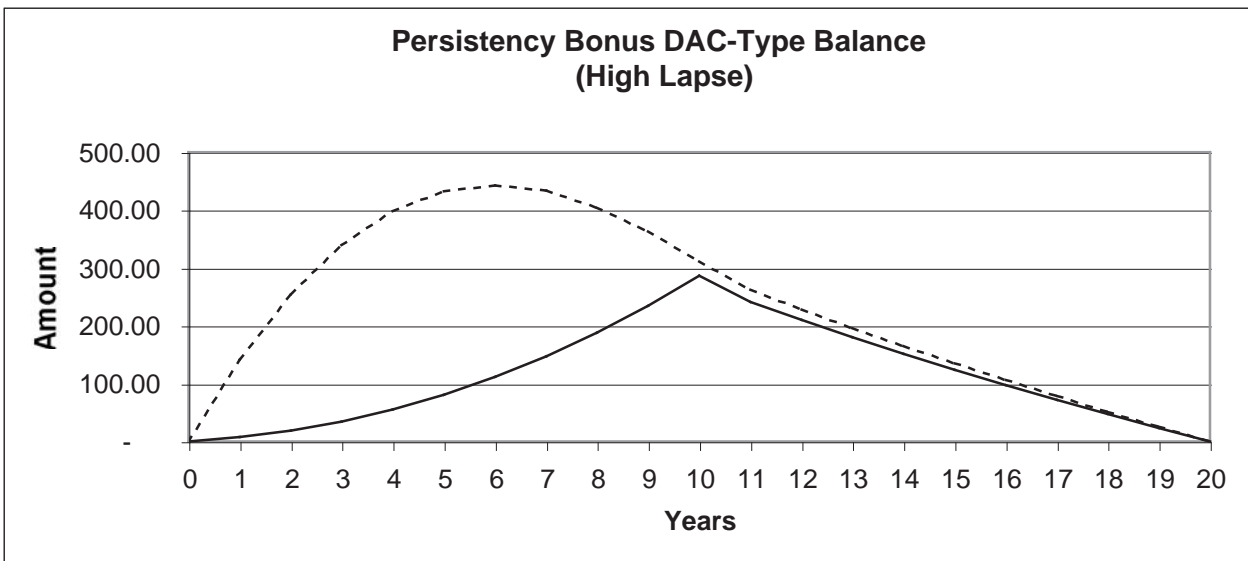
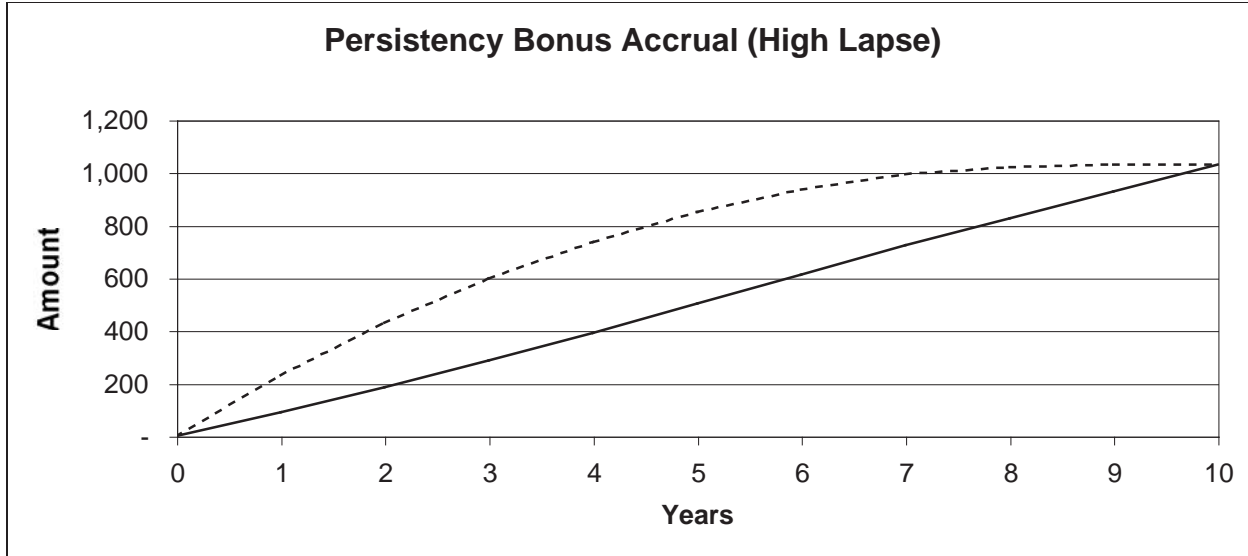
Our numerical examples will focus on a persistency bonus (PB) rather than an immediate bonus or enhanced yield, because an immediate bonus is normally vested immediately and enhanced yields may be viewed as a series of persistency bonuses.

There are numerous possible patterns for accruing the PB over the vesting period. In our example, the pattern of accrual

and the recognition of the associated liability are determined in accordance with the contract's SFAS 97 EGP over the vesting period. In our opinion, using the SFAS 97 EGP as the revenue stream for the accrual process usually produces a better matching of revenues and expenses. Other simpler patterns of accrual are also viable choices.

Our numerical example is based on a single premium deferred annuity (SPDA) contract with a PB equal to 2 percent of the





account value at the end of the tenth policy year. The amortization periods for DAC and sales inducement DAC-type assets are 20 years. The assumed single premium is \$100,000, with acquisition expenses and commissions equal to 4 percent of premium. The assumed maintenance expense is \$36 per policy per year, and the surrender charges as a percent of account balance for the first seven policy years are 10, 9, 8, 7, 6, 4, 2 and 0, thereafter. The assumed credited rate is 4 percent per year and the

assumed interest spread between earned and credited rates is 2 percent.

As mentioned earlier, one purpose for offering sales inducements is to improve persistency. Thus, we initially assumed low lapse rates during the bonus accrual period. The lapse rates, which include mortality, as a percent of account balance for the first eleven policy years are 1, 2, 3,

continued on page 26

GAAP Pre-tax Income						
Year	Assumptions			Assumptions		
	Method 1	Low Lapse Method 2	Difference	Method 1	High Lapse Method 2	Difference
1	251	251	(0)	881	874	(7)
2	682	682	0	1,107	1,105	(2)
3	967	968	1	1,183	1,185	2
4	1,254	1,256	2	1,262	1,267	5
5	1,539	1,542	2	1,349	1,355	6
6	1,707	1,709	2	1,391	1,398	7
7	1,941	1,942	2	1,446	1,452	6
8	2,043	2,044	1	1,387	1,393	6
9	2,215	2,215	(0)	1,425	1,428	3
10	2,416	2,415	(1)	1,468	1,468	(0)
11	2,544	2,542	(1)	1,469	1,465	(4)
12	2,242	2,241	(1)	1,364	1,362	(3)
13	2,304	2,303	(1)	1,416	1,413	(3)
14	2,375	2,374	(1)	1,473	1,470	(3)
15	2,454	2,453	(1)	1,534	1,532	(2)
16	2,542	2,541	(1)	1,602	1,599	(2)
17	2,639	2,638	(1)	1,675	1,673	(2)
18	2,746	2,745	(1)	1,754	1,752	(2)
19	2,863	2,862	(1)	1,839	1,837	(2)
20	2,990	2,989	(1)	1,931	1,929	(2)



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4, 5, 4, 3, 2, 1, 0, 30 (shock lapse after bonus) and 10 thereafter.

There are numerous approaches available to project the amount of PB at the end of the tenth policy year. We will demonstrate two approaches. Our first approach (Method 1) is to project the account balance using the SFAS 97 GAAP assumptions for DAC. The projected persistency bonus is 2 percent of the projected account balance at the end of tenth policy year. We define the accrual factor as the ratio of a) over b); where a) is the present value of

the projected persistency bonus and b) is the present value of the SFAS 97 EGPs for the first ten policy years (which is the persistency bonus accrual period). We used the accrual factor to form the PB accrual pattern. The PB at time t equal the previous PB at time (t-1) accumulated at the crediting interest rate plus the accrual factor times the SFAS 97 EGP at time t.

Paragraph 36 of the SOP indicates that no adjustment should be made to reduce the liability related to the sales inducements for anticipated surrender

charges, persistency or early withdrawal contractual features. This guidance appears to indicate that the projected persistency bonus accrual should not be affected by future policy persistency. In our second approach (Method 2), we accrued the PB by multiplying the accrual scale at time *t*, developed under Method 1, by the in force account value at time *t*.

The patterns of accrual of the PB are shown in the Persistency Bonus Accrual (Low Lapse) graph. The solid line represents Method 1 and the dotted line represents Method 2.

When we assume low lapse rates, the two patterns of accrual are very similar. As the PB is based on the actual account value at the end of the tenth policy year, both methods produce the same PB. The unamortized DAC-type balances for these two methods are shown in the Persistency Bonus DAC-Type Balance (Low Lapse) graph. As the accrued PB under Method 1 and Method 2 are very similar, as a consequence, the unamortized DAC-type balances are also very similar between these two methods.

To illustrate the sensitivity of the patterns of accrual to the lapse assumption, we increase the lapse rates in years 1 through 10 to 10 percent per year. All other assumptions remain unchanged. The two high lapse graphs show the PB accrual and the associated DAC-type balance assuming a ten percent lapse rate.

The differences in accrued PB under Method 1 and Method 2 are much greater due to higher assumed lapse rates. Notice

that the accrual of PB is faster under Method 2 than Method 1. The accelerated accrual of PB has a negative impact on GAAP income. However, the effect on income is mitigated by a faster capitalization of sales inducement DAC-type asset. In summary, a higher persistency bonus liability and a higher DAC-type asset offset the impact of high lapses on GAAP income.

The GAAP Pre-tax Income chart compares the effects of sales inducements on GAAP pre-tax income between Method 1 and Method 2, under low and high lapse assumptions. Based on our example, it appears that the effects of PB on GAAP pre-tax income are similar under Method 1 and Method 2. Although both methods produce similar effects on GAAP pre-tax income in our example, we prefer Method 2 because it follows the guidance of paragraph 36. That is, sales inducements are not adjusted for anticipated surrender charges, persistency or early withdrawal contractual features.

### (VIII) PART III

In Part III, we will discuss topics such as (a) differences between estimated gross profits and total assessments, (b) unlocking of benefit ratios, (c) interaction of benefit ratios when several guaranteed benefits exist for the same contract and (d) the choice of equity return models (Linear Lognormal Model versus Regime Switching Lognormal Model with 2 Regimes). ☒



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# Articles Needed for *The Financial Reporter*

Your ideas and contributions are a welcome addition to the content of this newsletter. All articles will include a byline to give you full credit for your effort. *The Financial Reporter* is pleased to publish articles in a second language if a translation is provided by the author. For those of you interested in working in further depth on *The Financial Reporter*, several associate editors are needed. For more information, please call Jerry Enoch, editor, at (765) 477-3220.

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Thank you for your help.

## Scenes from Orlando



The Financial Reporting section Council has a lot to smile about as it plans the section's 2004 activities. Left to Right - Tom Nace, Mark Freedman (2003-2004 Chairperson), Darin Zimmerman, Deborra Poorman, Mark Peavy, John Bevacqua (2002-2003 Chairperson), Kerry Krantz



With Calypso music playing in the background, Steve Stone, a member of the Investment Section Council and John Bevacqua, retiring chairperson of the Financial Reporting Section find time to chat. The reception was sponsored by the two sections.



Everyone enjoying catching up with one another at the reception.



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