From the Editor
by G. Thomas Mitchell

This issue features an overview by Glyn Holton on the widely used Value-at-Risk (VAR) risk assessment tool. This lays out in terms understandable to actuaries what this popular tool is about. The next issue will survey practical modeling considerations.

U.S. regulatory developments continue at a rapid pace, as shown by Dan Kunesh's "COLIFR Corner," and Daniel Winslow's overview of *NAIC Codification SSAP 54* concerning health insurance. We intend this to be the first of continuing coverage of various elements of codification over the next two years. Let me know if you would like to take on a piece of this task.

Two brave souls offered comments on last issue's critique of "U.S. Asset Adequacy Analysis Techniques" by John Radek and Herb Wolf. Thanks to Gretchen McRae and Paul Sulek for their commentary. I invite further comments.

Humphrey Nash outlines his innovative and comprehensive proposal for accounting reform under the title "Prospective Accounting." He proposes several very interesting ideas.

Section Activities Continue to be Exciting

The developing area of Fair Value Accounting, related to both U.S. and international issues, will be discussed at the upcoming Fair Value Seminar described by Shirley Shao. The Buenos Aires seminar in August had more than 200 in attendance. Ed Robbins reports briefly on the event and we await a more detailed account next issue.

Congratulations to the three newly elected members of the Council, Michael Eckman, S. Michael McLaughlin, and Stephen Preston. We will have more on returning and new Council members and our new chair, Shirley Shao, next issue.

Finally, check out the outstanding Financial Reporting sessions at the October Society of Actuaries Annual meeting in New York.

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Value-at-Risk—an Overview

by Glyn Holton (First of Two Parts)

Value-at-Risk (VAR) is a measure of market risk that was originally developed for trading portfolios. In recent years, it has been adopted by financial institutions for measuring market risk in a variety of contexts. However, because VAR is applicable to entire portfolios—encompassing multiple instruments and multiple sources of market risk—actually calculating VAR can be a challenge.

Much recent work in VAR has been motivated by publicized trading losses and regulatory initiatives on market risk. Accordingly, the focus of work has been to find solutions that work in practice. The purpose of this article is to take those solutions and place them on a firm theoretical foundation.

A practical definition of VAR captures the measure's statistical nature. The general problem of estimating VAR is presented, and the practical solution of delta-normal VAR is rigorously developed for portfolios of linear positions. This technique is illustrated with a detailed example.

Issues related to non-linear positions are discussed, motivating the use of simulation techniques for estimating VAR. Such techniques are discussed and some of their limitations are explored.

VAR is a measure of market risk that evolved on the trading floors of financial institutions during the 1980s and 1990s. In some respects, it is a direct outgrowth of Modern Portfolio Theory (MPT). Whereas MPT deals with portfolios of primary instruments, VAR also encompasses derivative instruments.

A practical definition of VAR is:

VAR is the amount of money such that there is a g probability that the current portfolio will lose less than that amount over a specified horizon.

Accordingly, VAR can be measured at different confidence levels g and over different horizons. For example:

A portfolio that has one-day 95% VAR of $50,000 has a 95% probability of losing less than $50,000 over the next 24 hours.

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A portfolio that has one-month 99% VAR of $350,000 has a 99% probability of losing less than $350,000 over the next month.

Exhibit 1 illustrates the definition of VAR. It shows the probability density function for a portfolio's one-day P&L. That portfolio's one-day 95% VAR is simply the (absolute value of) a lower bound on a 95% confidence interval for the probability density function.

VAR is a powerful measure of risk, but it also poses a challenge. The power of the concept is its generality. Because VAR is based on the P&L distribution for a portfolio, it is not limited to a single asset category or a single source of market risk. All assets have P&L distributions. All sources of market risk contribute to P&L.

As with its power, the challenge of VAR also stems from its generality. In order to measure risk in a portfolio using VAR, some means must be found for determining a P&L distribution for that portfolio. Obviously, the more complex a portfolio becomes—the more asset

Exhibit 1
Example: One-Day 95% VAR

categories and sources of market risk it is exposed to—the more challenging that task becomes.

The development of VAR has been motivated by publicized trading losses, such as those incurred by Barings and Orange County, as well as by regulatory initiatives to require banks and other institutions to better measure the market risks they take. Because it was developed by practitioners to meet a pressing need, the practical implementation of VAR has preceded the development of a robust theory. The purpose of this article is to take existing techniques for estimating VAR and place them on a firm theoretical foundation.

A Simple VAR Model

Suppose VAR is to be calculated over a one-day horizon. Define $P°$ and P as the portfolio's market value today and the random variable for the portfolio's market value tomorrow. Let $DP = P - P°$ be the random variable for the change in the portfolio's value—its P&L.

VAR requires the construction—either explicitly or implicitly—of a probability distribution for DP. One approach is to side-step this issue by assuming some standard distribution. Doing so reduces the problem from one of estimating an entire distribution to that of estimating the handful of parameters necessary to describe the standard distribution. Depending upon the standard distribution which is assumed, this simple approach may yield a closed formula for the portfolio's VAR.

For example, a normal distribution is fully described with two parameters: its

NAIC Codification—An Overview of Statement
of Statutory Accounting Principles No.

C odification is the NAIC's effort to create one set of written standards for statutory accounting. If all states uniformly adopt codification this will replace the 50 different sets of written and unwritten standards among all the states.

The Financial Reporter audience has a great interest in codification by the NAIC as it will affect every insurance company and managed-care company. At its March 1998 meeting in Salt Lake City, the NAIC Plenary session adopted codification on an almost unanimous basis.

The NAIC Ad Hoc Task Force on Codification Implementation named the *Accounting Practices and Procedures Manual, version effective January 1, 2001* with the modifying date added so as to clearly distinguish this version from its predecessor of the same name. This manual will contain the written rules for codification. It should simplify the adoption of codification by positioning codification as a rewrite of a manual that is already required statutory guidance.

The effective date of codification was recommended to be deferred to January 1, 2001.

A public hearing on Health Codification on Statutory Accounting Principles was held on May 19, 1998.

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NAIC Codification

and "policy reserve." The aggregate reserve "generally consists of a policy reserve and a claim reserve as well as certain other miscellaneous reserves discussed in paragraph 23."

The policy reserve "shall include an unearned premium reserve and, as applicable, an additional or contract reserve where constant or level premiums are assumed for certain noncancelable or guaranteed renewable contracts."

Appendix AB010 has the three categories of reserves: claim reserves, premium reserves, and contract reserves. Appendix AB010 does not include the concepts of aggregate reserve and policy reserve.

An interesting point in *SSAP No. 54* paragraph 17 is "the mean reserve on any policy shall never be taken as less than one-half the valuation net premium." This seems to apply to the policy reserve. Most group medical policies are monthly premiums on an attained age rating basis and due on the first of each month. There is no unearned premium for these group medical policies and generally no contract reserve. Is it meant that a mean reserve of one-half the valuation net premium is required for these group medical policies? Is the valuation net premium one month's premium or an annual premium? How does this interact with the text "Other appropriate methods, including an exact reserve valuation, may also be used" in paragraph 16?

Contract Reserves

SSAP No. 54 paragraph 13 states, "Contract or additional reserves on accident and health contracts shall be recorded when premiums and benefits are not earned or incurred at the same incidence over the policy period [for example, constant (level) or step-rated premium contracts where premiums and related morbidity, risk of loss, and the cost of coverage are not evenly matched]. The fact that the reporting entity may have the right to increase premiums or to decline renewal of the policies for certain reasons has no bearing on whether a contract or additional reserve should be held."

Appendix AB010 in paragraph 32

requires contract reserves for:

"i. All individual and group contracts with which level premiums are used; or

ii. All individual and group contracts with respect to which, due to the gross premium pricing structure at issue, the value of the future benefits at any time exceeds the value of any appropriate future valuation net premiums at that time."

It is not clear whether these definitions of contract reserves were intended to have different effects. This may emerge over time.

Claim Reserves

"Claim reserves" in *SSAP No. 54* has a more limited definition than in Appendix AB010. It is the present value of future benefits or amount not yet due as of the statement date (the unaccrued portion).

Claim expense reserves are not mentioned. The accrued portion for amounts payable at the reporting date are defined as claim liabilities and discussed in *SSAP No. 55*, "Unpaid Claims, Losses and Loss Adjustment Expenses."

This is in contrast to Appendix AB010 where claim reserves includes both the accrued and unaccrued portion for all incurred but unpaid claims. Thus, Appendix AB010 claim reserve equals the *SSAP No. 54* claim reserve plus *SSAP No. 55* claim liability plus claim

expense reserves. It can be confusing to have key words defined differently between documents.

Additional Reserves— Managed-Care Contracts

The new wording of "premium deficiency reserve" are in *SSAP No. 54* paragraph 18. "A liability shall be recognized for each grouping where a premium deficiency is indicated. Deficiencies shall not be offset by anticipated profits in other policy groupings." This is new to statutory accounting for health products and will require some thought for implementation.

Also of note for this premium deficiency reserve is the fact that the *SSAP No. 54* paragraph 18 header is for "Managed-Care Contracts." Does this mean the premium deficiency reserve requirements only apply to managed-care contracts that provide for defined health services to subscribers? Yet the words "managed-care contracts" are not actually in paragraph 18. Of course, we all hope to always earn profits so this issue does not matter for our company.

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More than 200 Attend Buenos Aires Seminar
by Edward L. Robbins

The Financial Reporting Section sponsored a Buenos Aires Seminar on North American Actuarial Developments, August 18 and 19, 1998. The actuarial communities of Argentina, Brazil, and Chile turned out in force for this seminar. There were more than 200 registrants, including a few stragglers from the United States and one from Venezuela.

The faculty members—Ed Robbins, Peter Duran, Carl Harris, John Nigh, Camilo Salazar, and Antonio Gonzales—delivered presentations on GAAP accounting, cash-flow testing, actuarial review of reserves, and mergers and acquisitions. More about the seminar, including pictures, will be in the next issue of *The Financial Reporter*.

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mean m and standard deviation s. If we assume DP is normally distributed, then all we need do in order to measure VAR is estimate m and s for that distribution. These provide all the information necessary to determine any statistic—measure of VAR—related to the portfolio's P&L distribution. For example, if VAR is reported as the maximum loss that can occur within a 95% confidence interval, the formula for VAR will be simply:[1]

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for the portfolio's P&L. The question is, how? After all, beyond purporting its existence, we know very little about the portfolio price function.It could be some complex function with discontinuities and other inconvenient properties.[5]

The Linear Assumption

Delta-normal VAR addresses this problem by assuming it away. Specifically, delta-normal VAR assumes that, for the portfolios to which it is applied, the portfolio price function is linear. This is the second fundamental assumption that underlies delta-normal VAR. Accordingly, we list both assumptions here:

Assumption 1: DP is normally distributed.
Assumption 2: DP is a linear function of the DV_k.

These two assumptions will not be reasonable for all portfolios. However, as we shall see, there are many portfolios for which they are reasonable. For such portfolios, delta-normal VAR is an effective tool for estimating VAR.

If DP is a linear function of the DV_k, the portfolio price function takes a particularly simple form:[6]

$$DP = a_0 + a_1 DV_1 + a_2 DV_2 + ... + a_m DV_m \quad [8]$$

where the a_k are constants that depend upon the composition of the portfolio. Because of the linear assumption [8], we can apply [4] to obtain the standard deviation of DP in terms of the standard deviations s$_k$ and correlations r$_{k,l}$ of the DV_k:

$$s = \sqrt{\sum_{k>0} (a_k s_k)^2 + 2 \sum_{l>k>0} (a_k s_k)(a_l s_l) r_{k,l}} \quad [9]$$

Differentiating [8] with respect to each of the key factors, we conclude for all $k > 0$:

$$a_k = \frac{\eth P}{\eth V_k} \quad [10]$$

These are just the portfolio's deltas wi[11] respect to each of the key factors. Equation [9] becomes:

$$s = \sqrt{\sum_{k>0} \left(\frac{\eth P}{\eth V_k} s_k\right)^2 + 2 \sum_{l>k>0} \left(\frac{\eth P}{\eth V_k} s_k\right)\left(\frac{\eth P}{\eth V_l} s_l\right) r_{k,l}}$$

Together, [2] and [11] are a closed form solution of delta-normal VAR.

Error in Delta-Normal VAR

When we use delta-normal VAR to estimate VAR for a portfolio, we face two broad sources of error:
1. The assumptions underlying the technique
2. Errors associated with statistical inference

As we have discussed, the technique assumes both that DP is normally distributed and depends linearly upon the DV_k. For some portfolios, these assumptions are more reasonable than for others. To the degree that the assumptions do not apply to any given portfolio, they introduce an error. Such errors can be minimized by only applying delta-normal VAR to portfolios that are composed of linear instruments such as primary instruments, futures or forwards. We will discuss this issue further in Section 7.

Errors associated with statistical inference arise because delta-normal VAR requires standard deviations and correlations as inputs. Inferring these inputs from historical data introduces two sources of error:

1. **Sampling error:** Because we estimate standard deviations and correlations from a limited set of historical data, those "sample" standard deviations and correlations will only approximately reflect the "true" standard deviations and correlations of the DV_k.
2. **Non-stationary:** Because market conditions are non-stationary (they vary over time), the historical data upon which we base standard deviation and correlation estimates may imperfectly reflect today's market conditions.

These sources of error conflict. We can reduce sampling error by using a lot of historical data. We can reduce error from market non-stationary by using only the most recent data. Unfortunately, we cannot do both. In practice, we must balance the two. Delta-normal VAR is typically based upon between 3 and 12 months of historical data. For illiquid portfolios, or if VAR is being estimated for a horizon of a month or more, more data may be used.

Non-Linearity

In estimating VAR for a portfolio of forwards, we need to first confirm the suitability of delta-normal VAR for that portfolio. This illustrates a risk with delta-normal VAR. Formula [11] can be valued for any portfolio with a differentiable portfolio price function. Results will only be precise, however, for portfolios that satisfy both the assumption that DP is normally distributed and the assumption that DP is linearly dependent upon the DV_k. These two assumptions are related. If the DV_k are jointly normally distributed, linearity will imply that DP must be normally distributed. This is illustrated for the one-dimensional case in Exhibit 2:

Exhibit 2 illustrates, with two graphs, the price behavior of a linear portfolio. The graph on the left is the portfolio's price function. It shows how the price of the portfolio responds linearly to changes in a single key factor V. In that graph, evenly spaced values for DV have been mapped into corresponding values for DP.

Exhibit 2
Price Behavior of a Linear Portfolio

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The resulting values of DP are also evenly

Exhibit 3
Price Behavior of a Call Option

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spaced, indicating that the mapping causes no distortions. If DV is normally distributed, so will be DP. That normal distribution for DP is depicted in the graph on the right.

If the portfolio price function is non-linear, DP may not be normally distributed. This is illustrated in Exhibit 3 with a portfolio consisting of a single call option in an underlier V.

The left graph of Exhibit 3 depicts the familiar "hockey stick" price function for a call option. Evenly spaced values for DV do not map into evenly spaced values for DP. If DV is normally distributed, the resulting distribution of DP will not be normal. As shown on the right, it will be skewed.

Portfolios can have more complex price distributions. Non-linear portfolios often exhibit unusual price distributions. These can differ markedly from the normal distribution assumed with delta-normal VAR. For this reason, delta-normal VAR may produce erroneous results if applied to non-linear portfolios.

In practice, it is rare that a portfolio is perfectly linear with respect to all its key

factors. Some judgment must be made as to whether a portfolio is reasonably linear or if some technique other than delta-normal VAR will have to be used to estimate VAR.

Instruments that may cause a portfolio to be non-linear include: mortgage-backed securities, high-convexity bonds, caps, floors, swaptions and many other instruments that either are options or contain imbedded options.

For portfolios containing such instruments, it is usually necessary to implement some form of Monte Carlo simulation to accurately estimate VAR.

Editor's Note: Part Two in the next issue of *The Financial Reporter* will deal with simulation of VAR.

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Footnotes
1 Usually, 1.65s will be greater than m. We can preclude negative results, however, by writing [1] as max(1.65s - m, 0).

2 Note: the constant a_0 plays no role in [4].

3 Set $a_0 = 0$ and set $a_i = 1$ for $i > 0$.

4 This is possible because we know today's value for the portfolio as well as today's value for the key factors.

5 If the portfolio contains digital options, for example, Formula [7] may be discontinuous.

A Variation on Standard Deferred Acquisition Cost calculations
by Akiva Zohar

When unlocking or true-up takes place under GAAP, it is necessary to recalculate the Deferred Acquisition Cost Asset (DAC) from issue. In order for a company to do this, the company must retain volumes of period-by-period information on the experienced behavior of a block. By approaching the DAC calculation differently, it may be possible to greatly limit the information that the company would need to retain and simplify the needed calculations.

When computing DAC, assumptions as to the future behavior of the block of policies need to be made. The nature of these assumptions depends on the specific SFAS (60, 97 or 120) that is in use. When these assumptions change, there are some shortcuts to determining the resulting impact on the DAC balance. The computation methodologies here presented will work equally as well under any of the three insurance SFAS's.

In a previous discussion on DAC (*The Financial Reporter* - December 1997), I made use of a DAC formula in terms of accumulated

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continued from page 7

value:

$$\text{DAC}_t = AV_t \text{ (Deferrable Acquisition Costs)} - (k ¥ AV_t \text{ (Amortization Base)}) \tag{1}$$

Where the **Amortization Base** is that quantity over which the DAC is amortized, i.e. premiums for SFAS 60, estimated gross profits for SFAS 97 or estimated gross margins for SFAS 120; and $AV_t( )$ is the accumulated value through time **t**.

The formula for the k-Factor can also be adapted to work with the accumulated value. Starting with a standard k-Factor formula (using an amortization period of **n**) of:

$$k_n = NPV_{t=1}^{t} \text{ (Proj Def Acq Cost}_t) \bullet NPV_t^{n=1} \text{ (Proj Amortization Base}_t) \tag{2}$$

where $NPV_t^{n=1}( )$ is the net present value over the period of 1 to **n**.

The net present value formula can be rewritten as:

$$NPV_t^{n=1}(X_t) = (NPV_t^{n=r+1}(X_t) + AV_r(X_t)) \bullet (1+i)^r \tag{3}$$

When true-up or unlocking takes place, a new k-Factor is calculated from issue date. Normally, this would mean that you would need each period's Deferrable Acquisition Costs and Amortization Base. This can become a large volume of data to maintain. But, from these two formulae (#2 and #3), we can derive a formula for the k-Factor, in terms of accumulated value, calculated at time **r** with an amortization period of **n** as:

$$_r k_n = \frac{AV_r \text{ (Incurred Deferrable Acquisition Costs)} + NPV_t^{t=r+1} \text{ (Proj Future Def Acq Cost}_t)}{AV_r \text{ (Amortization Base)} + NPV_t^{n=r+1} \text{ (Proj Amortization Base}_t)} \tag{4}$$

The first convenience that is gained from this approach to DAC calculations is that there is no need to preserve strings of each period's Deferrable Acquisition Costs and Amortization Base for calculating a new k-Factor. If **r** is the valuation date, then we would only need to project forward the in-force as of that date and combine it with the accumulated values of Deferrable Acquisition Costs and the Amortization Base (two numbers) that have been experienced.

A Variation on Standard DAC Calculations

The next convenience that arises is the ability to quickly recalculate the DAC balance for a change in k-Factor.

The change in the DAC asset, without regard to restatement or unlocking, can be written as:

$$\text{DAC}_t - \text{DAC}_{t-1} = AV_t \text{(Deferrable Acquisition Costs)} - (_r k_n ¥ AV_t \text{ (Amortization Base)})$$
$$- AV_{t-1} \text{(Deferrable Acquisition Costs)} - (_r k_n ¥ AV_{t-1} \text{(Amortization Base)}) \tag{5.1}$$

<center>or</center>

$$\text{DAC}_t - \text{DAC}_{t-1} = [AV_{t-1} \text{(Deferrable Acquisition Costs)} - (_r k_n ¥ AV_{t-1} \text{(Amortization Base)})] ¥ i$$
$$+ (\text{Deferrable Acquisition Cost}_t ¥ (1+i)^b) - (_r k_n ¥ \text{Amortization Base}_t ¥ (1+i)^e) \tag{5.2}$$

Where **b** and **e** are set to account for the timing of Acquisition Costs and Amortization Base, i.e. are they incurred at the beginning, middle, end or throughout the year.

By using formula #1 for two different k-Factors, the change in DAC at time **t** due to that change in k-Factors is:

$$D\text{DAC}_t = (_{t-1}k_n - _t k_n) ¥ AV_t \text{ (Amortization Base)} \tag{6}$$

Where $_t k_n$ is the k-Factor calculated at time **t** with an amortization period of **n**.

By rewriting the accumulated value formula for the Amortization base as:

$$AV_t \text{ (Amortization Base)} = [AV_{t-1} \text{(Amortization Base)} ¥ (1+i)] + [\text{Amort. Base}_t ¥ (1+i)^j] \tag{7}$$

where **j** is a number between 0 and 1 that would accumulate the current period amortization base to time **t**.

Then, using formula #7, we can rewrite the formula for the change in DAC (#6) as:

$$D\text{DAC}_t = [(_{t-1}k_n - _t k_n) ¥ AV_{t-1} \text{ (Amortization Base)} ¥ (1+i)]$$
$$+ [(_{t-1}k_n - _t k_n) ¥ \text{Amortization Base}_t ¥ (1+i)^j] \tag{8}$$

Borrowing the terminology that Bruce Darling used in his article, "Unlocking FAS 97's Management Potential" [*The Financial Reporter*, March 1992], these two parts of the above formula can be considered "Cumulative Effect (Catch-up Adjustment)" and "Current-Year Unlocking Effect." But, since:

$$AV_{t-1} \text{(Amortization Base)} = [AV_t \text{(Amortization Base)} - (\text{Amort. Base}_t ¥ (1+i)^j)] \bullet (1+i) \tag{9}$$

We can rewrite the above change in DAC formula (#8) so that the formula is in terms of the accumulated values and the current year values alone, as:

$$D\text{ DAC}_t = [(_{t-1}k_n - _t k_n) ¥ [AV_t \text{ (Amortization Base)} - (\text{Amortization Base}_t ¥ (1+i)^j)]]$$
$$+ [(_{t-1}k_n - _t k_n) ¥ \text{Amortization Base}_t ¥ (1+i)^j] \tag{10}$$

The final convenience that arises out of these formulae is that the impact on DAC caused by an expected change in future behavior of Amortization Base may be calculated directly.

From the accumulated values of the Deferrable Acquisition Costs, Amortization Base and the k-Factor, you can determine the net present value of the future amortization base directly from the above equation for $_r k_n$ (#4) by means of the following:

$$NPV_{t=r+1}^{n} \text{ (Projected Amortization Base}_t) = (AV_r \text{ (Deferrable Acquisition Costs)} \bullet _r k_n)$$
$$- AV_r \text{ (Amortization Base)} \tag{11}$$

If you have determined that due to some changes in the environment, the future projected amortization base will change by **s**%, then you can determine the impact on DAC directly, without reprojecting the DAC model. These formulae

presume that the all of the Deferrable Acquisition Costs have already been incurred and that the Amortization Base is as of the end of the

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year, i.e., $j = 0$. Then, if you determine that the future projected amortization base will change by s%, then the new net present value of the future amortization base may be determined from data at hand by:

$$^{new}NPV_t{}^{n}{}_{=r+1} = {}^{original}NPV_t{}^{n}{}_{=r+1} \, ¥ \, (1 + s) \qquad \text{or:} \qquad \textbf{12.1}$$

$$= ((1 + s) \, ¥ \, AV_r \text{ (Deferrable Acquisition Costs)} \bullet {}_rk_n{}^{Original})$$
$$- ((1 + s) \, ¥ \, AV_r \text{ (Amortization Base)}) \qquad \textbf{12.2}$$

From this formula, you can solve for a new k-Factor in terms of the accumulated values, the change in the expected net present value of future amortization base and the prior k-Factor:

$$_rk_n{}^{revised} = \frac{AV_r \text{ (Def Acq Costs)}}{((1 + s) \, ¥ \, AV_r \text{ (Def Acq Costs)} \bullet {}_rk_n{}^{Original}) - (s \, ¥ \, AV_r \text{ (Amortization Base)})} \qquad \textbf{13}$$

Then the change in current period (r) DAC asset balance due to a change of s in the net present value of expected future amortization base would be:

$$D DAC_r = ({}_rk_n{}^{Original} - {}_rk_n{}^{revised}) \, ¥ \, AV_r \text{ (Amortization Base)} \qquad \textbf{14}$$

and $({}_rk_n{}^{Original} - {}_rk_n{}^{revised})$ may be expressed as:

$$({}_rk_n{}^{Original} - {}_rk_n{}^{revised}) = {}_rk_n{}^{Original} \, ¥ \, \frac{s \, ¥ \, \text{Original DAC}}{AV_r \text{ (Def Acq Costs)} - (s \, ¥ \, \text{Original DAC})} \qquad \textbf{15}$$

From these equations (14 and 15) it is possible to solve for the percentage change in DAC balance due to a change of s in expected future amortization base:

$$D DAC_r\% = [100 \, ¥ \, ({}_rk_n{}^{Original} - {}_rk_n{}^{revised}) \, ¥ \, AV_r \text{ (Amortization Base)}] \bullet \text{ Original DAC} \qquad \textbf{16.1}$$

$$\text{or:}$$

$$D DAC_r\% = \frac{100 \, ¥ \, {}_rk_n{}^{Original} \, ¥ \, s \, ¥ \, AV_r \text{ (Amortization Base)}}{((1 + s) \, ¥ \, AV_r \text{ (Def Acq Costs)}) - ({}_rk_n{}^{Original} \, ¥ \, s \, ¥ \, AV_r \text{ (Amortization Base)})} \qquad \textbf{16.2}$$

The numerical example below will illustrate these formulae. The data used for these illustrations has been posted in spreadsheet format in **Actuaries Online** (see **AMORT3.XLS** in Library 7 - Life and Annuities).

If we are given:

AV_r **(Amortization Base)** $= 65,026.6580$		${}_rk_n{}^{Original} = 57.150589\%$
AV_r **(Deferrable Acquisition Costs)** $= 49,396.6434$		$s = -5.00\%$
Amortization Base$_r$ $= 2,796.8420$		

Simple assumptions of Acquisition Costs at beginning of the year, Amortization Base at the end of the year, i.e. the j superscript is 0, and level interest rate of 8%(**i**). All acquisition expenses have already been incurred. The problem is to compute a new DAC balance, if the expectation of the future amortization base is that it will be reduced by 5% (**s**). Then:

$$DAC_t{}^{Original} = AV_t \text{ (Deferrable Acquisition Costs)} - ({}_rk_n{}^{Original} \, ¥ \, AV_t \text{ (Amortization Base)}) \qquad \textbf{1}$$
$$= 49,396.6434 - 57.150589\% \, ¥ \, 65,026.6580 = 12,233.5251$$

$$_rk_n{}^{revised} = \frac{AV_r \text{ (Def Acq Costs)}}{((1 + s) \, ¥ \, AV_r \text{ (Def Acq Costs)} \bullet {}_rk_n{}^{Original}) - (s \, ¥ \, AV_r \text{ (Amortization Base)})} \qquad \textbf{13}$$

$$= 49,396.6434 \bullet ((49,396.6434 \, ¥ \, 0.95 \, / \, 57.150589\%) - (-0.05 \, ¥ \, 65,026.6580))$$
$$= 57.867156\%$$

$$D DAC_r = ({}_rk_n{}^{Original} - {}_rk_n{}^{revised}) \, ¥ \, AV_r \text{ (Amortization Base)} \qquad \textbf{14}$$
$$D DAC_r = (57.150589\% - 57.867156\%) \, ¥ \, 65,026.6580 = -465.9591$$

Catch-up Adj $= ({}_rk_n{}^{Original} - {}_rk_n{}^{revised}) \, ¥ \, [AV_t \text{ (Amortization Base)} - (\text{Amort. Base}_t \, ¥ \, (1 + i)^j)] \qquad \textbf{10a}$
$= (57.150589\% - 57.867156\%) \, ¥ \, (65,026.6580 - 2,796.8420) = -445.9178$

Curr Year Adj $= ({}_rk_n{}^{Original} - {}_rk_n{}^{revised}) \, ¥ \, \text{Amortization Base}_t \, ¥ \, (1 + i)^j)] \qquad \textbf{10b}$
$= (57.150589\% - 57.867156\%) \, ¥ \, 2,796.8420 = -20.0412 \qquad \textbf{j = 0}$

% of $D DAC = -465.9591 \bullet 12,233.5251 = -3.808870\%$

$$\text{or:}$$

$$D \, DAC_r\% = \frac{100 \, ¥ \, {}_rk_n{}^{Original} \, ¥ \, s \, ¥ \, AV_r \text{ (Amortization Base)}}{((1 + s) \, ¥ \, AV_r \text{ (Def Acq Costs)}) - ({}_rk_n{}^{Original} \, ¥ \, s \, ¥ \, AV_r \text{ (Amortization Base)})} \qquad \textbf{16.2}$$

$$= \frac{100 \, ¥ \, 57.150589\% \, ¥ \, -0.0500 \, ¥ \, 65,026.6580}{(0.9500 \, ¥ \, 49,396.6434) - (57.150589\% \, ¥ \, -0.0500 \, ¥ \, 65,026.6580)}$$

$$= -3.808870\%$$

Therefore a decrease of 5% in the present value of future gross margins would cause the DAC asset to decrease by 3.81%.

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Prospective Accounting

by Humphrey Nash

Actuaries are familiar with present values of expected cash flows and, hence, are familiar with one fundamental aspect of prospective accounting. The purpose of this article is to briefly describe one example of prospective accounting, disciplined value-added accounting (DVA).

DVA is designed to correct the deficiencies of traditional retrospective accounting and to provide greater accounting relevance. It is designed to do so in a feasible and reliable manner. DVA accounting is similar to economic value-added management accounting, as popularized by G. Bennett Stewart of Stern

> *"DVA is designed to correct the deficiencies of traditional retrospective accounting..."*

Stewart & Co. (See *The Quest for Value,* Harper Business 1991). There are significant differences. The chief difference is that DVA is designed as an explicit and disciplined financial reporting tool as opposed to EVA™ which is an adjustment to traditional accounting to take into account the cost of equity capital. DVA also has greater utility as a management tool than EVA™ .

What follows is a much simplified and abbreviated description of DVA. For a more detailed exposition, see the draft proposal *AFTF: Accounting For The Future* on the Internet at http://members.aol.com/heinichen1/AFTF web.html. The draft proposal is preceded by an abstract, a preface, and a linked table of contents for easy navigation throughout the document (470K). A link to an AFTF Feedback Summary is also provided for comments or questions. A printed copy (238 pages) may be obtained without charge from the author, but supplies are limited.

Problems with Traditional Accounting

Traditional accounting is a hodgepodge of differing methods, measures, and results. Bookkeeping, tactical management accounting, strategic management accounting, financial accounting, responsibility accounting, regulatory accounting, capital budgeting, pricing, and mergers and acquisition accounting are all different. This multiplicity is arbitrary, inconsistent, complex, inefficient, and generally ineffective. There should be a single set of books.

Traditional financial accounting and reporting is incomplete. Assets and liabilities are based primarily on the tangible (the building, the bond, or the contract), yet most assets and liabilities today are intangible. The cost of equity capital is completely ignored. Little is done in traditional accounting to recognize inflation or other contingencies. Traditional financial accounting, for the most part, ignores the future. This is not useful and may be dangerous.

Traditional financial accounting lacks relevance. The essential purpose of financial reporting is to provide shareholders with useful decision-making information. Traditional accounting income and balance sheet statements are not in shareholder terms. The income statement is often of a different magnitude or direction from the increase in shareholder value. The traditional shareholder equity is unrelated to the market capitalization. The cost concept of traditional accounting lacks relevance. Investments must be valued to be useful in decision making.

The traditional accounting matching concept is poorly executed, seldom taking into account all cash flows and seldom taking into account the time value of money.

Traditional accounting is not rational. Matching of assets and liabilities is often arbitrary and inconsistent. There is a pervasive bias towards conservatism. The balance sheet and income statement are curiously unrelated. Traditional accounting pays lip service to objectivity, yet judgments abound. Profitable decisions often have negative accounting measures. For example, discounting unprofitable operations generally produces an accounting loss.

The above deficiencies make analysis, comparisons, and decisions difficult. There is a general failure of purpose and vision within accounting. Traditional accounting is fundamentally and fatally flawed.

Basic Description

Under DVA, assets are the present values of expected operational cash *inflows.* Liabilities are the present values of expected operational cash *outflows.* All present values are discounted at a uniform market cost of capital.

Traditional tangible assets or liabilities are not valued under DVA. They only have value to the extent that they contribute to expected cash flows. Intangibles are treated the same.

DVA attaches values to decisions. The decision perspective is scalable. It may be a decision to add a new product, in which case the value of that decision is the present value of all net profits originating from that product. It may be a decision to discontinue a losing line of business, in which case the value of that decision is the difference between the present values of the expected cash flows with and without such a decision. It may be a decision by an investor to buy shares in the company, in which case the value of that decision is the share value of the company (less the share price).

All values are shareholder values. This is achieved by discounting at a rate equal to the market cost of capital. A positive value suggests a positive decision; a negative value suggests a negative decision. A zero value indicates that the cost of capital is just being met.

For example, the value of a bond purchase (decision) may be negative if the bond yield is less than the cost of capital. The value added by the sale of an insurance policy will be the present value of the expected net cash flows (profits) from that sale. It will not be the statutory or GAAP loss that traditional accounting

Prospective Accounting
continued from page 10

produces. Positive results will have positive measures.

Basic Disciplines
DVA has several disciplines, but we address only the basic disciplines; these are what make DVA both relevant and reliable. The basic disciplines apply to the basic components of value, namely, the expected cash flows and the discount rate. I call the basic disciplines the dual validation. First, the model for expected cash flows must be validated for a 5-year historic validation period. This means that the modeled cash flows over the previous 5 years must exactly match the actual cash flows over the same period. Second, the present value of all cash flows from the model (valuations) must exactly match the market values over the 5-year validation period. This is achieved by selecting the appropriate discount rate. This discount rate is called the historic cost of capital.

The dual validation procedure combines the best information on expected cash flows (management's expectations) with the best information on the cost of capital (that revealed by the market prices). The market is given complete credibility in determining its cost of capital over the validation period. If the company's cash flows are unchanging, then the historical cost of capital will force the company value to approximate the market value. If the company takes actions or makes decisions that change expected cash flows, then the company value will respond.

This simple dual validation makes accounting relevant since reported values are shareholder values. For example, an increase in the valuations is value added; this value added will be the amount by which the market value of the company's shares are expected to increase.

The dual validation makes accounting reliable in that modeled cash flows are not critical to the company value. Hence, if the model exaggerates cash flows (after the validation period) the cost of capital will generally increase to offset. There is one important exception. New (additional or changing) cash-flow expectations, arising from experience, actions, or decisions of the current year, will not be offset. In

this way, new information (value-added) is communicated to the capital markets. This new information is also disciplined.

Basic Implementation
For a variety of reasons, it is not possible for a single profession to implement DVA. Even if it were possible, it would not be desirable. DVA (called AFTF in the draft proposal) depends on a natural division of labor and responsibilities. This is a key feature in making DVA feasible and in providing a system of checks and balances. Management is responsible for all decisions and assumptions. The modeler is responsible for projected cash flows based on management assumptions. The accountant is responsible for financial reporting based on the projected cash flows. Each of the three professions will express a formal opinion. This is one of the important disciplines within DVA.

The insurance industry is suggested as a natural starting point for implementing DVA. The insurance industry is suggested for a number of reasons, among them the long-term nature of insurance and the existence of cash flow models and modelers (actuaries).

Solutions
DVA provides management, accounting, and reporting solutions.

DVA provides management with improved decision-making tools and an improved environment in which to make decisions. DVA will actively encourage and support value creation. The use of the cost of capital as a discount rate guarantees that shareholder needs are at least considered and may help in meeting those needs. DVA is flexible enough to be used for tactical or strategic management. It forms an ideal base for incentive compensation.

DVA will solve many of the problems that plague traditional financial accounting. DVA will make accounting more user-friendly to the accountant and to others. It will replace the multiplicity of accounting systems with a single system and will, in the process, simplify accounting. Many of the inconsistencies, com-

plexities, and judgments of traditional accounting are eliminated.

DVA solves many reporting problems. Reporting problems include relevance, rationality, completeness, comparability, and problems with analysis. DVA is relevant in that it reports shareholder values to the shareholder. DVA is more rational because it is a consistent system based on real rather than artificial elements; it is based on real management decisions rather than on the arbitrary accounting decisions. It is more complete since it includes all value components. DVA enhances comparability because all companies' values are expressed in capital market value units; a single yardstick is used. DVA was designed with financial reporting in mind.

Feasibility
DVA, as illustrated in *Accounting for the Future*, has features that make it feasible. DVA rationalizes and unifies accounting making it easier to understand and cope with. Modern computer databases, hardware, and software make cash-flow projections feasible. For example, in the insurance industry, powerful and flexible projection software is available and routinely used. The cooperative division of labor proposed for DVA overcomes the natural boundaries and barriers of traditional accounting and assigns responsibilities appropriately. The technologies of DVA provide specific theory and practical procedures needed for an accounting system.

DVA is an extension of forces and directions already present within account-

> *"DVA is an extension of forces and directions already present within accounting."*

ing. DVA satisfies the essential purposes of all accounting by focusing on accounting essentials (cash flows, management, and market information).

The need for effective management and efficient capital utilization has increased, providing a fertile ground for a more relevant accounting model. The benefits of the new prospective model far exceed the costs. The costs of

Prospective Accounting

retaining and maintaining the old retrospective accounting model far exceed any savings.

Significance to Actuaries

DVA uses actuarial methodology. In particular, the role of the modeler is a natural actuarial role. DVA is not restricted only

> *"There is a need and an opportunity for all actuaries to be involved in the research, development, promotion and support of DVA."*

to the insurance industry. It is needed for all industries and modelers will be required in all industries. This provides an unparalleled opportunity for the actuarial profession, if it is prepared. Although actuaries are the natural modelers they are not the inevitable modelers. The actuarial profession must be involved at the earliest stage. The actuarial profession must support and cooperate with the accounting profession. The actuarial profession must prepare in such a way that is not only the natural choice, but the only choice. It can achieve this by developing superior educational materials, exams, experience, and continuing education requirements.

There is a need and an opportunity for all actuaries to be involved in the research, development, promotion and support of DVA. The actuarial profession can not only develop its own role as modeler, but it can provide valuable technical and spiritual support to the accounting profession.

Broader Significance

DVA is needed to correct deficiencies in retrospective accounting. More important, DVA will add value in several areas. Major benefits include: greater accounting relevance, accounting unification, more efficient capital markets, and more effective management. It is not possible, in this brief introduction, to do more than hint at the benefits of the new approach. The benefits are more fully covered in the draft proposal.

The Future

If we value the future, we must account for future values. If we value the decision-making process, we must attach values to decisions. If we want to be ourselves valued, we must ourselves contribute value. If we want to be part of the future, we must make the future part of us. DVA will accomplish this.

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Prospective Financial Reports

Statement of Values and Value Added: Assets
- The **assets** are the present values of expected cash flows into the company.
- The **asset value added** is the time-adjusted change from the prior period assets.
- In contrast to the traditional balance sheets and income statements, values and value added involve the same classifications.

Statement of Values and Value Added: Equities
- The **liabilities** are the present values of expected cash flows from the company.
- The **liability value added** is the time-adjusted change from the prior period liabilities.
- **Shareholder equity** equals AFTF assets less AFTF liabilities.
- Shareholder equity is *not* a balancing item; it approximates the market capitalization.

Cash Flow Record
- The Cash Flow Record shows the principal actual cash-flow components and the expected cash-flow components with differences and ratios, for the period.
- The differences (A - E) represent the value added by the experience of the period.
- Once this is established, value added by management is obtained by subtracting this difference from total value added.

Value Added Analysis Exhibit
- This exhibit shows the value added by the past period's experience, by management assumptions and decisions, and in total.

Effect of Assumption Changes Exhibit
- This exhibit reveals the contribution of each assumption change to each major cash-flow components.
- These assumption changes include new decisions and business plans as well as changes to prior assumptions.

Miscellaneous Comparative Figures
- This display shows the company's historic cost of capital (discount rate), the company-estimated yield (that discount rate producing a *current* company valuation equal to the current market capitalization), and company valuations at standard 5%, 10%, and 15% discount rates, facilitating intercompany comparisons.

Interpreting Reserve Changes for Life Insurance Companies' Accountants

by Eben Limsui

The item called "Increase in Aggregate Reserves for Life Policies" in the monthly profit and loss statement may be hard for some accountants of life insurance companies to understand. This article suggests that life company actuaries should go beyond their traditional role of valuing the total aggregate policy reserve with emphasis only on its sufficiency. The article will explore the accountants' point of view and their needs in analyzing life insurance company operations. A common ground of understanding between accountants and actuaries on the policy reserves and how they change will be presented in the language of the life insurance accountant.

One of the theses of this article is that the "design" of premium payments by actuaries for the products of life insurance companies causes the complexity of accounting system of life insurance companies through the setting up of required aggregate policy reserves. Therefore, actuaries should be responsible to help accountants find more sophisticated ways of analyzing the change in policy reserves, or the profitability of the life business, under the more dynamic, short-term (current period) financial control system that accountants use.

The article will introduce an existing procedure of presenting aggregate premium paying and paid up policy reserves changes from a monthly transactions point of view (Policy Exhibit type) in accounting language. It will also introduce a feasible procedure of providing the expected claims incurred and expenses incurred of the financial reporting period, based on the assumptions used to calculate reserves. Comparing the actual to expected will be the meaningful measurement of profitability that accountants need.

ANALYSIS OF CHANGES IN GAAP BENEFIT RESERVE

	Premium Paying	Paid Up
Beginning Balance	13,176	21,243
Issues	27	x
Revivals From No Value	149	x
Revivals From Nonforfeiture	1,178	x
Lapses To Nonforfeiture	x	636
Revivals To Paid Up	x	5
Total Additions	1,354	641
Deaths	233	42
Surrenders and Maturities	111	53
Lapses To No Value	158	x
Expiries	x	2
Lapses To Nonforfeiture	1,000	x
Revivals From Nonforfeiture	x	630
Reinsurance Ceded	0	0
Decreases (Items Not Accounted For Elsewhere)	<5>	<2>
Total Deductions	1,497	725
Increase/Decrease For Persisting Policies	1,259	<53>
= prior period in force current valuation date policy reserve		
- prior period in force prior valuation date policy reserve		
Ending Balance	114,292	21,106

Accountants' and Actuaries' Views of Reserves

The policy reserve of life insurance companies is quite different from other types of reserve that most accountants are familiar with. Let's compare the policy reserve to a bad loan reserve in the banking industry. A bad loan reserve could be set up by the accountant with few restrictions from the bank's regulatory agency. An accountant might use this type of reserve to smooth out the bottom line to maintain uniformity between accounting periods and to save for rainy days. But the policy reserve set up by actuaries should not be so used because actuaries have an obligation to policyholders for guaranteeing the solvency of the life insurance company. This is why insurance regulatory authorities try to make the policy reserve objective and conservative.

We know that the policy reserve is not as accurate and objective as a bank account balance. Yet the actuary wants accountants to view them as such instead of as the soft reserves they are familiar with.

Traditionally, actuaries have provided reserve factors appropriate for various plan, issue year, duration combinations. However, such factors do not facilitate explanations of the change in reserve each accounting period. The actuary owes it to the accountant to provide an understandable explanation. High speed P/C calculations of individual policy reserves retrospectively provide a vehicle to explain such reserve changes. However, before looking at that approach, aggregate policy reserve changes presented in policy exhibit format will be presented to enhance the accountant's acceptance of the

Interpreting Reserve Changes
continued from page 13

actuarial view of policy reserves. Then calculations of interest credited and mortality charge underlying the aggregate policy reserve should provide both accountant and actuary a better analysis of net profit.

Policy Exhibit and Source of Earnings Type Accounting For Aggregate Policy Reserve Changes

A life insurance company is not obligated to show the policyholder the reserve that is set up for the policy. Although the policyholder is entitled to surrender value of the policy, we do not provide it monthly, only upon request.

Accountants would like to see the ins and outs of the policy reserve, parallel to a monthly bank account statement, showing transactions and balances of the bank account. Although policy reserves are meant to be considered as aggregate values, an individual policy reserve could be viewed as a bank account balance.

The introduction of an account value for each policy in universal life products has prepared accountants and actuaries to view the policy reserve in traditional products as a bank account balance. Without changing the existing calculation of policy reserve methodology, we have created a procedure to show the ins and outs for aggregate policy reserves to provide a common ground for accountants and actuaries.

The concept is based on the following equation:

Current period in force policies reserve = Prior period in force policies reserve + Additions policies reserve - Deductions policies reserve

in which all changes in policy reserves are valued at the current period.

Everyone could design his own format based on this concept, but our current set-ups for premium paying and paid up business are illustrated in the exhibit of GAAP benefit reserves on page 13. Other items tracked are premiums, record count, face amount, and statutory reserve.

We modified a policy exhibit program to capture all transactions within a financial reporting period. This is essential for good control of the policy administration system. Records are created for all transactions just as in force policy records are created for the valuation system. A seriatim valuation system with a powerful server and Windows NT operating system should be available to value and create all necessary reports.

Based on our policy exhibit program, we produced a transaction valuation master file. We used some fields of the valuation records used with our valuation software to identify all types of additions and deductions. Our experience in running the transaction file with our valuation software is very quick and simple. We currently run the whole in force valuation file every financial period. In order to do the suggested method, we also need to rerun the entire in force valuation file with the next financial valuation date. We will ask our software vendor to do small modifications to their current valuation system, which would allow two different valuation dates to run simultaneously (e.g., current & next month-end; current month-end & year-end).

Measuring Profitability

Policy exhibit types of policy reserves changes from a monthly transaction point-of-view help accountants understand the change of reserve each month. They feel more comfortable because of the glimpse of how the reserves change from one month to the next month. But note that the ultimate goal of measuring profitability of a life insurance company each month has not been accomplished yet. We do not advocate any changes of accounting procedure for a life insurance company. Instead, we mainly attempt to provide extra information to help accountants categorize life company profit into investment (interest) profit, mortality experience profit, and service profit components of the overall profit calculated from the regular life company accounting procedure.

Let's look at an analogy of a bank setting up an accounting system similar to a life insurance company. An account deposit will be considered income; a withdrawal will be considered an expense similar to surrender expense; an account balance with interest credited will be considered a policy reserve. Bank profit centers will be split into service profit and loan profit, parallel to underwriting profit and investment profit of a life insurance company. To accomplish this, the bank will set up required interest that pays the depositor similar to a life insurance accounting system in order to obtain a true service profit. The bank's service profit will be derived from its service charges collected from the bank account holder less the expenses incurred by the bank. This accounting system looks convoluted, but mathematically it is equivalent to the regular way of calculating the service profit of the bank.

For example, assume the bank has depositors' account balances of $1,000,000 at the beginning of the period. The transactions during the period on depositors' accounts are as follows: total deposit is $200,000; total withdrawal is $150,000; total interest credited is $10,000 and total service charge is $7,000. Thus, the ending balance of depositors' accounts is $1,053,000. Furthermore, the bank incurs a total expense of $5,000 during the period.

The regular way of calculating the net service profit of the bank is:

Total service charge	$7,000
Total expense incurred	$5,000
Net service profit	$2,000

Note that interest credited to deposits is charged against the loan operations.

The alternate way of calculating the net service profit of the bank is:

Deposit income		$200,000
Withdrawal paid out	$150,000	
Change of account balance	$53,000	
Other expense incurred	$5,000	
Total paid out		$208,000
Required interest on account		$10,000
Adjusted paid out		$198,000
Net service profit		$2,000

Interpreting Reserve Changes

The life insurance company has more than service profit in its underwriting profit category. In fact, the most important underwriting profit is mortality experience profit. Strictly speaking, the mortality experience profit is realized only in long-term periods such as lifetime of the contract, not monthly. However, actuaries could use the principles of asset share computations and their mathematical expertise to come up with expected monthly mortality claims (mortality charge in policy reserve) and expected monthly expense (service charge in policy reserve) underlying policy reserves. The mortality experience profit will be the underlying mortality charges minus the actual claims paid. The service profit will be the underlying service charges minus the actual general expense incurred. This way of calculating the underwriting profit is mathematically equivalent to the traditional way of calculating the underwriting profit of the life insurance company.

This concept of profit calculation is based on GAAP benefit reserve calculations. We note that the GAAP benefit and expense reserves are based on mortality, withdrawal, and expense assumptions. In the process of generating policy reserves, the expected cost of mortality and expenses are known for each valu-ation period desired (e.g., annually, monthly, or even daily). With monthly interest credited and monthly mortality charge being provided, we illustrate in the accompanying exhibit of profit and loss statements a sample format for analyzing the profit of life insurance company.

Conclusion

With the new high speed personal computers and "on the fly" valuation software, calculation of monthly interest credited, mortality charges and expense charges underlying the reserve for all policies in force is not difficult. To make it possible, a company may need to request a modification to such valuation software to provide extra fields and calculation routines for monthly interest credited, mortality charges and expense charges. We believe that the cost of such modification will be modest and the impact to the analysis of life insurance companies will be tremendous!

Eben Limsui, ASA, is at United Insurance Company of America, in Chicago, Illinois.

EXHIBIT OF PROFIT AND LOSS STATEMENTS

TRADITIONAL STATEMENT

Premium Income	189,786
Investment Income	95,260
Total	285,046
Claims Paid	87,123
Surrender	8,500
Increase in Policy Reserve	113,450
General Expense	12,050
Investment Expense	6,200
Commissions	17,341
Total	244,664
Net Gain Before Tax	**40,382**

SOURCE OF EARNINGS STATEMENT

Premium Income	189,786
Surrender	8,500
Increase in Policy Reserve	113,450
General Expense	12,050
Commissions	17,341
(-) Required Interest in Reserve	<75,443>
(+) Mortality Charge in Reserve	100,234
Total	176,132
Net Service and Lapses Gain	13,654
Investment Income	95,260
Investment Expense	6,200
Required Interest in Reserve	75,443
Total	81,643
Net Investment Gain	13,617
Mortality Charge in Reserve	100,234
Claims Paid	87,123
Net Mortality Experience Gain	13,111
Net Gain Before Tax	**40,382**

Fair Value Seminar

by Shirley Hwei-Chung Shao

The Society of Actuaries and New York University join forces again!

A conference on "Fair Value of Insurance Business" will be held on March 18 and 19, 1999, in New York City. The Financial Reporting Section is a co-sponsor.

Please mark your calendar and inform your colleagues in the financial management community of this event of the year! We are also looking for papers to enrich this conference.

The goal of the conference is to extend and update the body of knowledge from the first conference two years ago; to highlight similarities in various theoretical developments; and to work towards resolution of differences and implementation issues. The scope of the conference has been broadened to address fair valuation efforts which consider insurance business as an integrated whole.

This conference will provide an overview and comparison of various theoretical developments, provide an update on various efforts in accounting and management reporting, suggest how the various theories may be applied to financial reporting and management uses in practice, and discuss implementation issues and potential solutions.

Call for Papers

A call for papers is being held in conjunction with the conference. The goal of this call for papers is to promote fresh perspectives on this challenging topic; to provide a solid foundation for the conference; and to advance the state of the art on insurance valuation. Papers should discuss fair value accounting for insurance with respect to recent developments in accounting initiatives as well as management practices.

We would particularly would like to receive papers on summary of the various uses and the common and unique needs for each user (e.g., earning emergence pattern). These uses/needs can come from statutory regulators (e.g., the Valuation Task Force work, dynamic solvency analysis), GAAP, IASC (International Accounting Standards Committee), investment community (e.g., rating agencies, analysts), and company management (asset liability management, risk management, performance measurements, hedging strategies). Can the various uses/needs be met using a single "fair value" framework?

Discount rates: It seems like most theoretical developments are variations of discounted cash flow approaches. In these cases, what should be used as the discount rate/curve (i.e., what should be the risk

spread over then current Treasuries)? It is particularly confusing on the liability side when the risk spread normally applied to the assets will result in a decrease in liabilities (which is intuitively uncomfortable).

Cash-Flow Components: Can we find common ground on the following issues?

Free cash flows versus all cash flows: What's "free" and for whose purpose is it "free"?

How to treat policyholder dividends for mutual companies: Are they "free" cash flows or not?

What to do when liabilities depend on asset performance (e.g., crediting interest rate strategy, dividends)?

Stochastic Process: Although most people think of using this process only for interest rate sensitivity, it can be applied to other risk drivers, e.g., mortality.

How to develop a credible process (since it probably can't be validated in the market)? For example, how to derive the option value?

How to improve the speed of calculation (e.g., low frequency distribution, technology)?

Confidence Level: Should there be any margins (or just expected value) built into the fair values? The NAIC project refers to this as various points on the S-curve (enterprise survivorship function). It attempts to fulfill multiple needs/uses under a single framework by selecting different points on the S-curve.

Liability Floor: Is it necessary to have cash values as the floor? We have that in the statutory valuations. For GAAP, some would say there is no such floor with the establishment of deferred acquisition costs. The cash value floor does not exist for most company management uses.

Liability Selection: At the last conference, FASB seemed to be interested in knowing whether all liabilities should be "fair valued" since it selected only certain assets (e.g., available for sale public securities) to be fair valued.

The call for papers also encourages discussions beyond insurance liabilities , including interaction with assets and/or insurance enterprise value. More information on the call for papers can be found via the SOA Web site: http:\\www.soa.org\research\cfp2.html.

We hope for your participation in this seminar, either as paper presenters or as attendees, because we believe that this is a very important issue for our profession to address. So, look up more information on papers on the Web site and watch for registration information in January. We promise this seminar will be thought provoking.

Shirley Hwei-Chung Shao, FSA, is Vice President and Assistant Actuary at the Prudential Insurance Company in Newark, New Jersey, and new Chairperson of the Financial Reporting Section Council.

Comments on Asset Adequacy Analysis Techniques

by Paul J. Sulek and Gretchen McRae

Editor's Note: *John Radek and Herb Wolf raised 11 issues in their article, "Asset Adequacy Analysis Techniques Should Be Constantly Reviewed" in the June 1998 issue of* The Financial Reporter *on asset adequacy testing techniques from their experience in reviewing U.S. Actuarial Opinions and Memoranda under the Standard Valuation law for state regulators. Below are comments from Paul J. Sulek and Gretchen McRae on that article.*

Paul Sulek Writes

My comments are purely in relation to my own work in a small company. Unfortunately, I don't get to see that of anyone else. In large part because I am the only actuary in my company, I have had an outside peer review of my work.

- Too long an analysis period—I would be suspect of the motives for using an extremely long period. Some interim review would be highly appropriate. I already do interim analysis.

Gretchen McRae Offers Specifics on the Same Topic

Tradition seems to have it that analysis should be over a 20-year period. One argument is that later results tend to lose their importance in the discounting. I think the answer is to use the interim results to determine the significance of those later years.

Consider two blocks of policies with high persistency. One is traditional life—a mixture of term and whole life. The second is a lapse-supported policy which is a good deal for the policyholder (and they have figured that out). If both only reduce to half of the initial amounts in 20 years, the former is providing solid profits in year 20 (and previously) and has accumulated a healthy surplus amount. The latter has just begun to show the true costs of all the bells and whistles, and each successive loss is growing in size or is leveling at a large amount. No new insight will be gained by extending the analysis of the traditional block in accordance with strict adherence to the ASOP. However, even if a healthy surplus has been achieved by

year 20 in the lapse-supported block, the development of a negative profit stream indicates future erosion of that surplus.

For Company A, which has only the traditional block, 20 years is probably a sufficient amount of time to determine adequacy. For Company B, which has only the lapse-supported block, 40 years may still be inadequate to determine sufficiency. Company C, with both blocks, will need to pay close attention to the profit incidence to determine the value of a longer projection period in determining adequacy.

A Possible Solution

Based on performance when projected to maturity under the level interest rate scenario:

- When profits remain positive: Projection period = 20 years
- When profits turn negative and then turn and remain positive: Projection period could be to positive upturn
- When profits turn negative and remain negative:
  - Projection period could be determined by the ratio of the annual profits to the accumulated surplus at each point in time
  - Projection period could be based on when the absolute value of the profits become monotonically decreasing
  - Projection period could be based on the present value of the profit stream for the various periods (20, 25, Y,) and at what point the differences in these present values is less than a certain percentage.

There should be a range of possible ways to determine the appropriate projection period, with the actuary using his or her judgment and disclosing the rationale used.

Mr. Sulek Writes Concerning Other Issues Raised

- *On competitor or crediting rates set to avoid disintermediation.* The problem described strikes me as ineffective modeling.
- *On extended or inappropriately priced borrowing.* The use of borrowing for an extended period is a problem at a company level. I do not see it as such for a

line of business that would be covered for the company in total. Inappropriate pricing is bad modeling.

- *On disregard for separate account risks.* I have a growing separate account. My products do not have CARVM or CRVM allowances so the risks to be modeled are slim. Appropriate analysis is a challenge looming in the near future.
- *On nondynamic, mortgage-related securities cash-flow modeling.* Good modeling of CMOs is either unduly expensive or time consuming which makes this a major incentive not to use this type of investment. Testing requirements should not drive investment policy.
- *On ignored extra contractual obligations, including sales material.* How extra contractual can one get? Is one supposed to put a probability on being forced to support the illustrations of a rogue agent? It seems unduly burdensome, speculative, and an invitation to lawsuits for actuaries to review all sales material for possible attack for extra contractual promises. If there is a real liability, the company should address it and it should be reflected in the analysis.

The authors did not invite comments on the issue closest to my heart—overuse of cash-flow testing. It is often said that if cash-flow testing is not needed, another method should be used. I have found very little guidance on appropriate alternatives to cash-flow testing. As a result, I use it even when I know it is not useful. Without guidance, I believe that the use of another method would be like crossing a mine field without a map. I might be okay, but I might get blown up. Why take the chance? Because resources are very critical to the small company, the Smaller Insurance Company Section considered a project to identify other methods but did not follow through.

Paul J. Sulek, FSA, is Vice President and Chief Actuary, AGL, Life Assurance Company, in Blue Bell, Pennsylvania, and a member of the Smaller Insurance Company Section Council.

Gretchen S. McRae, ASA, is Appointed Actuary, Southwestern Financial Services Corp., in Dallas, Texas.

Presenting Mutual Life Insurers' U.S. GAAP Results

by Daniel F. Case

The documents prescribing generally accepted accounting principles (GAAP) in the U.S. for mutual life insurers fail to indicate how certain key statement items should be captioned. In the first round of reports by mutual life insurers under the current U.S. GAAP requirements, some companies labeled the bottom line of the balance sheet as "policyholders' surplus" and some as "equity." In fact, "policyholders' surplus" is an inaccurate caption for that item. Also, if the item represents "equity," it represents the equity of future, not current, policyholders.

In this article I shall explain the above assertions and suggest more appropriate captions.

The True Nature of a Mutual Life Insurer's U.S. GAAP Report

The following sentence from a policy issued in 1981 by a mutual company is representative: "While this Policy is in force, the share, if any, of the divisible surplus accruing on this Policy shall be determined by the Company and allotted as a dividend at the end of each policy

> *"At any time it is possible to derive the dividends that can be paid to a policy throughout its remaining lifetime, while maintaining the dividend fund at each duration."*

year." Note that this sentence indirectly defines "surplus" as the place where dividends come from.

Each new policyholder in an established mutual life company benefits from an existing accumulation of surplus contributed by others. Additional surplus typically arises from at least some of the new policies.

By paying dividends as time passes, the company can return to the remaining policyholders in a particular block of policies a substantial portion of the surplus arising from that block. The company typically must, however, maintain or

increase its total amount of surplus on an ongoing basis. Since some blocks of policies may cause the company to lose money, others must make "permanent" contributions to surplus. Accordingly, the company seeks to return to the typical block of policyholders something less than the amount of surplus, if any, that the block generates.

I shall first show that with respect to traditional participating whole-life policies, the amount in the bottom line of a mutual life company's U.S. GAAP balance sheet is, instead of surplus, approximately surplus minus the portion of surplus that the company expects to return to its current policyholders. That is, that portion of surplus is included among the "liabilities" in the balance sheet. That approach to "liabilities" is consistent with the following statement by a committee on mutual companies whose report was published by the Financial Reporting Section Council in 1987: "Future dividends on participating policies are properly treated as obligations for management accounting purposes."

Traditional participating whole-life policies are the only contracts covered by the American Institute of Certified Public Accountants (AICPA) Statement of Position 95-1 (the SOP). "Traditional participating whole-life policies" is my shorthand for a rather long definition given in the SOP.

In stipulating how to determine the "liability for future policy benefits" under these policies, the SOP treats annual dividends and terminal dividends separately. Terminal dividends are, under conditions that the SOP says will ordinarily be met, to be accrued explicitly as part of the liability. The next question is whether annual dividends, too, are to be accrued in the liability.

The answer with regard to annual dividends is not obvious on the surface. The SOP does not explicitly state that annual dividends are to be accrued in the liability.

Instead, it prescribes a "net level premium reserve for death and endowment policy benefits." It states, "The net level premium reserve should be calculated based on the dividend fund interest rate, if determinable, and mortality rates guaranteed in calculating the cash surrender values described in the contract." The SOP directs that if the dividend fund interest rate is not determinable, the rate used to calculate the guaranteed cash or other nonforfeiture values is to be used.

As described by Donald Cody in a 1981 paper in the Society of Actuaries (SOA) *Transactions*, a dividend fund is akin to an asset-share objective. For each policy, an asset-share account can be maintained that ascribes to the policy its share of actual premium and investment income, benefit costs, expenses, contributions to surplus, and dividends. The amount that management desires that account to attain at each policy duration (the dividend fund) is determined prior to issue. Actual dividends are determined as the amounts that can be paid, in the light of actual experience and in accordance with the contribution principle, while making the asset share equal the dividend-fund amount from year to year.

In order to be reasonably sure that a block of policies will be self-supporting, the company sets the dividend-fund amounts at conservative levels. According to Thomas Kabele, in remarks at a May 1995 SOA meeting, possible levels include those obtained when statutory-type mortality and interest rates are used to calculate a statutory-type net level reserve, from which some or all the unamortized acquisition costs are then deducted. Kabele pointed out that the AICPA's specifications for the "net level premium reserve for death and endowment policy benefits" produce, in combination with the deferral and amortization of acquisition costs also called for, something that could serve as a dividend fund.

At any time it is possible to derive the dividends that can be paid to a policy throughout its remaining lifetime, while

maintaining the dividend fund at each duration, if future experience duplicates best-estimate. Since those dividends will be deducted from the asset-share account just as benefits and expenses are deducted, the asset share and the dividend fund each make provision for, or accrue, dividends as well as benefits and expenses. They do that on the basis of best-estimate assumptions. Since the SOP's prescribed net level premium reserve and unamortized acquisition expenses together resemble a dividend fund, they also accrue, more or less approximately, annual dividends on a best-estimate basis. That is the basis required by U.S. GAAP for mutual companies' traditional participating whole-life policies, as is evidenced by the following statement: "Because the liability for future policy benefits defined in this SOP generally follows the FASB Statement No. 97 model, AcSEC concluded that provision for adverse deviation should not be made."

For traditional participating whole-life policies, then, the SOP treats future dividends, both terminal and annual, as part of the liabilities. Consistently with that, dividends when paid are treated as expenses. Also consistently with that, stock life insurers that issue similar policies are permitted to use the mutual-company GAAP rules for those policies. Stock life companies' liabilities must, of course, accrue policyholder dividends in order to be able to determine stockholders' equity.

The foregoing pertains only to traditional participating whole-life policies. The U.S. GAAP requirements for other policies and contracts issued by mutual life insurers are less clear as to whether dividends paid on them are accrued as part of the liability. What is clear is that if the company has traditional participating whole-life insurance in force, provision for future dividends will be included in at least some portion of the liabilities. To the extent that such provision is included, the residual item in the balance sheet falls short of the amount of the company's GAAP surplus.

Survey of 1996 Mutual-Life-Insurer U.S. GAAP Reports

In 1997 I undertook a survey of mutual

life insurers' and fraternals' U.S. GAAP reports. Eleven organizations sent me copies of their 1996 GAAP reports (a condensed report in one case). I shall here mention only the bottom line (residual item) of the balance sheets in those reports. I shall use the term "policyholders," regardless of whether the report used that term or a similar term such as "policyowners."

The residual item in each of the 11 balance sheets consisted of two or more components—e.g., "Net unrealized investment gains" and "Retained earnings." The residual item as a whole was labeled "Total equity" in 6 reports, "Total policyholders' equity" in 1 report, and "Total policyholders' surplus" in 4 reports.

Inappropriateness of Certain Bottom-line Captions

Let us assume that U.S. GAAP rules permit mutual life insurers to make provision for future dividends in the liabilities for all their participating business, as they require for traditional participating whole-life policies. Let us further assume that companies do make such provision for all their participating business. Without these assumptions— that is, if a report's treatment of future dividends is inconsistent across product lines—we are faced with slight additional complexities that I shall ignore in this article.

Seven of the 11 reports I received used the term "equity" in captioning the bottom line of the balance sheet. Readers are likely to interpret the item as being where dividends come from, as stockholders' dividends come from stockholders' equity. Current participating policyholders may assume that the "equity" is where dividends paid to them come from. As explained above, however, the balance-sheet bottom line in U.S. GAAP is where dividends to current policyholders do not come from; under U.S. GAAP, they come from the same sources as do benefits and other "expenses."

One may argue that, nevertheless, "equity" would fit the Financial Accounting Standards Board's (FASB's) definition of that term. To be sure, the FASB has defined "equity" as "the ownership interest" and "the same as net assets, the difference between the enterprise's assets and its liabilities." The FASB has, however, defined "liabilities" in terms of "obligations of a particular entity to transfer assets or provide services to other entities." Therefore, if future dividends to current policyholders are a liability as defined by the FASB, they are a liability from the perspective of some entity other than the current policyholders.

Who might that other entity—the "owners" of the "equity"—be? There are no stockholders. Past policyholders are out of the picture. Accordingly, the "owners" of the "equity" must be the future participating policyholders. Hence, if the residual item is "equity," it is "future policyholders' equity."

Since it would seem strange to consider future policyholders to be owners of the insurer, the term "equity" seems ill suited for use in a mutual insurer's report.

"Seven of the 11 reports I received used the

One may object to some of the above by pointing out that if a mutual insurer is liquidated, the remaining assets will be distributed to the then existing policyholders. That is true, but the reports in question are on a going-concern, not a liquidating, basis. One may further object by pointing out that if the mutual company is converted to a stock company, some or all of the bottom-line amount may revert to the then existing participating policyholders. That is also true, but in 1988 the SOA Task Force on Mutual Life Insurance Company Conversion reported its conclusion that the existing participating policyholders' equity value in the new company will depend on the market value of the

Presenting Mutual Life

new company, and that "there is no entitlement of policyholders to any specific value."

Since "equity" seems ill suited for mutual companies, one might consider using the term "surplus" in some way. As explained above, "surplus" alone is incorrect under U.S. GAAP. "Policyholders' surplus" seems no better, although "future policyholders' share of surplus" would be correct.

A term that was mentioned in early discussions of mutual-company GAAP is "entity surplus." I believe that that term would too easily be confused with surplus itself. Some other terms, such as "net surplus" and "surplus not allocated to current policyholders," might be similarly con-

fused. "Surplus less liability for future dividends" might be appropriate.

There may be some appropriate captions that do not mention either "equity" or "surplus." "Net assets" is not one of them, since items on the right side of the balance sheets are not assets; they are claims on assets.

"Investment in future business" would also be inappropriate. It would encourage the incorrect inference that the return on the "investment" is expected to revert to the current policyholders.

An appropriate caption may be "Margin after future dividends." It is not incorrect and seems not to be misleading. Its meaning could be explained in a note to the statements. By contrast, notes

should not be depended upon to explain a caption that is in itself likely to mislead.

An Opportunity to Assure Better Reporting

At the time this article was written, an AICPA exposure draft proposed Audit and Accounting Guide for life and health insurance entities was expected to appear shortly. I hope that the final version of the Guide will contain appropriate instructions to mutual life insurers for captioning the balance-sheet bottom line and other items to which the foregoing considerations apply.

Daniel F. Case, FSA, is retired in Rockville, Maryland.

New York Speakers—Thanks!

Thanks to the following speakers for their Financial Reporting Section-sponsored sessions at the New York Annual Meeting. Your efforts were essential in making this a successful event.

(Joint sponsorships with other sections are indicated in parenthesis.)

Session 4PD: "International Valuation Systems"
- Daniel J. Kunesh, Tillinghast-Towers Perrin
- Shirley Hwei-Chung Shao, Prudential Insurance

Session 5PD: "Update on Fair-Value Reporting"
- S. Michael McLaughlin, Ernst & Young LLP
- W. Paul McCrossan, Eckler Partners Ltd.
- Robert R. Reitano, John Hancock Mutual Life
- Wayne S. Upton, Jr., FASB (Guest)

Session 25PD: "Investment Bankers and Actuaries in Mutual Company Restructuring"
- Harris N. Bak, Milliman & Robertson
- Celeste Guth, Goldman Sachs
- Robert M. Smithen, Canada Life Assurance

Session 26PD: "Lessons from Asia"
- Angelica B. Michail, National Actuarial Network, Inc.
- Bruce D. Moore, Ernst & Young LLP

- Steven I. Schreiber, Milliman & Robertson

Session 46SM/L: "Financial Reporting Hot Breakfast including Update on AICPA and FASB Activities"
- R. Thomas Herget, PolySystems, Inc.
- William Carroll, American Council of Life Insurance
- Daniel J. Kunesh, Tillinghast-Towers Perrin
- Patrick J. Shouvlin, Price Waterhouse LLP (guest)

Session 70PD: "Treatment of Closed Blocks in Demutualizations"
- J. Peter Duran, Ernst & Young LLP

Session 71PD: "Value-at-Risk (VAR): Theory and Practice"
- Shirley Hwei-Chung Shao, Prudential Insurance
- Glyn A. Holton, Contingency Analysis

Session 72PD: "Risk-Based Capital (RBC) An Update"
- Burton D. Jay, Mutual/United of Omaha Insurance Co.
- Robert B. Cumming, Milliman & Robertson
- Donna C. Novak, Deloitte & Touche LLP
- Peter Lynn Perkins, Trigon Blue Cross/Blue Shield

Prospective Accounting

Session 94PD: "Management Uses for Cash-Flow Testing"
- Glen D. Keller, Conning Asset Management Co.
- Karen Olsen MacDonald, Transamerica Occidental Life
- Francis P. Sabatini, Ernst & Young LLP
- John S. Tillotson, Transamerica Occidental Life

Session 96PD: "Breakthrough in Lifespan; Fact, Fantasy, or Opportunity?"
(Jointly sponsored with Product Development)
- Mark A. Milton, Kansas City Life Insurance Co.
- Lucian J. Lombardi, LIMRA International
- Gene Held, American General Life Cos.

Session 100OF: "Cash-Flow Testing in a Low Interest Rate Environment"
- Anson J. Glacy, Jr., Ernst & Young LLP

Session 111PD: "Capital Allocation Among Lines of Business"
- Edward L. Robbins, Zurich-Kemper Life
- David L. Creswell, CUNA Mutual Insurance Group
- Timothy Freestone, Seabury Insurance Capital (guest)

Session 112PD: "Exciting and Hot Investments in Cash Flow Testing Context"
- H. Michael Shumrak, SS&C Analytics
- Graig Fowler, SS&C Analytics
- Larry White, Applied Quantitative Solutions (guest)

Session 113PD: "Updating on Mutual Holding Companies"
- Jeffrey A. Beckley, Beckley & Associates Ins.
- Carl M. Harris, Deloitte & Touche LLP
- E. Tom Hughes, General American Life Ins. Co.
- Thomas P. Tierney, Tierney Associates Inc.

Session 119IF: "A Game of Jeopardy: Smaller Insurance Company Survival for $200"
(Jointly sponsored with Smaller Insurance Company and Product Development Sections)
- John E. Wade, American Memorial Life Ins. Co.
- Keith A. Jensen, American Annuity Group (guest)
- Stephan A. Kiratsous, Donaldson, Lufkin, Jenrette (guest)
- Craig F. Likkel, Milliman & Robertson

Session 130PD: "Financial Reporting for Derivatives"
- Anthony Dardis, Tillinghast-Towers Perrin

Session 131PD: "Using Value-Added Information in Practice"
- Armand M. de Palo, Guardian Life Insurance Co.
- R. Karl Erhardt, A.M. Best (guest)

Session 132PD: "Actuarial *Guidelines ZZZ* and Option Pricing"
- Joseph H. Tan, National Actuarial Network Inc.
- Larry M. Gorski, Illinois Dept. of Insurance

Session 138PD: "The Unified Valuation System: An Update"
- John F. Gies, Connecticut Insurance Department
- James F. Reiskytl, Northwestern Mutual Life Ins.
- Robert E. Wilcox, Deloitte & Touche LLP

Session 157OF: "Proposed Changes to the Statutory Risk-Based Capital (RBC) Requirements"
- Cande Olsen, New York Life
- Robert A. Brown, CIGNA Retirement and Investment
- Joseph L. Dunn, Metropolitan Life Insurance Co.

Session 161WS: "Current Issues for Mutual Company Generally Accepted Accounting Principles (GAAP)"
- John W. Harding, Ernst & Young LLP
- Allan W. Ryan, Deloitte & Touche LLP

Special thanks also:

to overall meeting coordinator for the Financial Reporting Section, Anna Manning.

Thanks also to session coordinators not mentioned above: Douglas Menkes, 25PD and 112PD; Shirley Hwei-Chung Shao, 26PD; John K. Heins, 72PD; Edward Robbins, 70PD; Karen McDonald, 94PD; Mike McLaughlin, 100OF; Howard Rosen, 113PD and 161WS; Mike Lombardi, 130PD; David Brown, 131PD; Larry M. Gorski, 138OF and 157OF.

Council Election Results

Congratulations to the new Financial Reporting Section Council members, elected this summer, to begin their terms at the 1998 Society Annual Meeting:

Mike Eckman, FSA, second Vice President and Tax Actuary, Reliastar Financial Corp., Minneapolis, Minnesota.

Steve Preston, FSA, Senior Vice President and Chief Actuary, Golden American Life Insurance Company, Wilmington, Delaware.

Mike McLaughlin, Partner, Ernst & Young LLP, Chicago, Illinois.

Finance Research Funds Available

The Finance Research Committee of the Finance Practice Area has funds available for researchers and welcomes proposals dealing with any area of finance or investments and the impact on the actuarial profession. Grants of up to $10,000 are available now. Proposals with larger budgets can be considered with joint sponsorship (i.e. this area and a section [Investment, Financial Reporting], an additional practice area, or CKER). However, the applicant should be aware that other practice areas or sections may not have any funds available at this time.

Grants have been given for the following types of research in the past: modeling conference (in conjunction with the Ed Lew Award), papers on the 100-year-term structure, VAR, and currency risk. A study on the use of derivatives in the insurance industry was commissioned. Currently there is a grant outstanding to write a textbook on stochastic calculus that will be readable by actuaries whose statistical background is limited to that in the current educational syllabus.

The following areas should be covered in the proposal:

- Description of project:
  Goal of research
  Scope of proposed work
  Researchers who will be used, individuals or a team
  Approach planned
  Proposed time frame
  Where results will be published
  Actuarial impact
  i)   Potential customers for results
  ii) Potential uses of results
  How it relates to the Finance Practice Area.

- Proposed peer reviewers to form Project Oversight Group (POG) and suggestions for chair

- Proposed budget
  Cost of data
  Cost of researchers time
  Other expenses—if for example, related to a conference
  Will staff resources be needed, if so attempt to estimate time required.

Completed applications should be submitted to:

Zain Mohey-Deen
Research Actuary
Finance Practice Area
The Society of Actuaries
475 N. Martingale Rd., Suite 800,
Schaumburg, IL 60173-2226

COLIFR Corner

by Daniel J. Kunesh

The American Academy of Actuaries' Committee on Life Insurance Financial Reporting (COLIFR) is actively monitoring various financial reporting topics of interest to actuaries and involved in several. Its last meeting was June 25 in Washington, D.C. The next was scheduled in New York on September 28. Ed Robbins has now taken over the reins as Chairperson.

Actuarial *Guideline XXX*

The Committee is closely following the never-ending saga of *XXX* on term insurance reserving. The NAIC Life and Health Actuarial Task Force (LHATF) has agreed to consider the recent suggested changes to revise *XXX* if industry consensus can be obtained quickly so that a model regulation can be put into place by the start of next year. Changes include basing the segment length for reserve purposes on illustrated vs. guaranteed premiums, resulting in a "humpback" pattern of reserves and revised mortality tables for both basic and deficiency reserves. In response to LHATF's request, a subgroup of COLIFR has now reviewed the proposals and has drafted an opinion about their appropriateness. The intent is to avoid a state-by-state approval process.

Variable Annuities (VAs) and Synthetic GICs

LHATF remains extremely active in a number of areas. Its Variable Annuities with Guaranteed Living Death Benefits (VAGLDB) Working Group issued a draft report in June on VA product design, valuation, and financial reporting. The recommendation is to follow a CARVM framework and an Actuarial Guideline 34 approach with modification. It also recommends that *Guideline ZZZ* exclude VAGLDBs from the scope, in response to serious industry concerns. LHATF expects to complete *ZZZ* by the December NAIC meeting.

It was reported that the LHATF is also reviewing a draft model regulation on separate account funding for guaranteed minimum benefits under group contracts (synthetic GICs). The draft follows a New York Regulation 128 approach.

Valuation Task Force (VTF) Tax Subgroup

This subgroup issued a white paper in May that favors the continued use of a system which would continue the linkage between statutory and tax reserves and would continue to use prescribed assumptions. This goes against the VTF's current proposal for an open valuation system that calls for reserve determined as the amount of assets needed to support policyholder obligations at an XX% level of adequacy. The industry is particularly concerned about any proposal that could significantly reduce tax reserves and accordingly tax-related concerns could delay progress of the VTF's current direction.

Risk-Based Capital (RBC)

A C3 subgroup of the NAIC's Life RBC Committee is preparing recommendations by the September NAIC meetings on a risk database available for testing stochastic assumptions. The idea is to standardize the approaches and methodologies as to the generation and the final distribution of cash-flow testing results. Testing is planned to be done in 1999 and final recommendations made by the end of the year 2000.

The C1 subgroup is proposing to split C1 factors into two parts one for covariance and a second for affiliates. On both issues, members of COLIFR are involved.

GAAP Developments

The Committee is studying any impact that the following recent accounting pronouncements may have on GAAP valuations Statement on *Financial Accounting Standards No. 133* "Accounting for Derivatives and Hedging Activities";

the new Life Insurance Industry Audit Guide; and the final draft of an AICPA Statement of Position entitled "Deposit Accounting: Accounting for Insurance and Reinsurance Contracts That Do Not Transfer Insurance Risks."

A subgroup of the Committee is in place to track and assist, where feasible, the efforts of another Academy committee on the progress of new or revised international accounting standards for use in financial statements to be used in cross-border capital-market entry situations. Of particular interest is a proposed new insurance standard that is in the process of being developed by the International Accounting Standards Committee (IASC). The International Organization of Securities Commissions has asked the IASC to develop a set of global standards for cross-border filings.

Other Matters

The Committee is following a number of other developments involving financial reporting, including:

- Continuing progress of the Academy's Valuation Task Force. COLIFR members are active participants to the VTF as well and will report back for Committee involvement, as needed
- Progress on the development of Actuarial *Guidelines ZZZ* and *ZZZZ* (regarding equity-indexed annuities and life insurance)
- Issues relating to the implementation of codification
- The three draft practice notes on demutualization topics
- GAAP Practice Notes survey

These and other developments will continue to be reported on in *The Financial Reporter*.

Daniel J. Kunesh, FSA, is with Tillinghast-Towers Perrin in Buffalo Grove, Illinois.
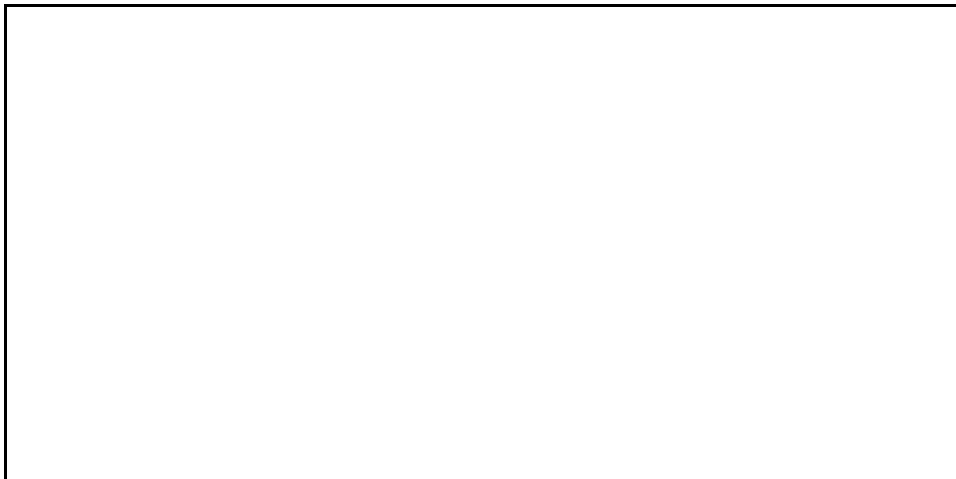
Members of the Financial Reporting Section Council meeting in New York to plan the 1999 Section activities. Standing L to R: Michael Eckman, Michael McLaughlin, and Larry Gorski. Sitting L to R: Howard Rosen, Shirley Shao (1998-99 Chairperson), Tom Herget (1997-98 Chairperson), Ed Robbins, and Mike Lombardi. Missing 1998-99 Council members: Karen MacDonald and Stephen Preston
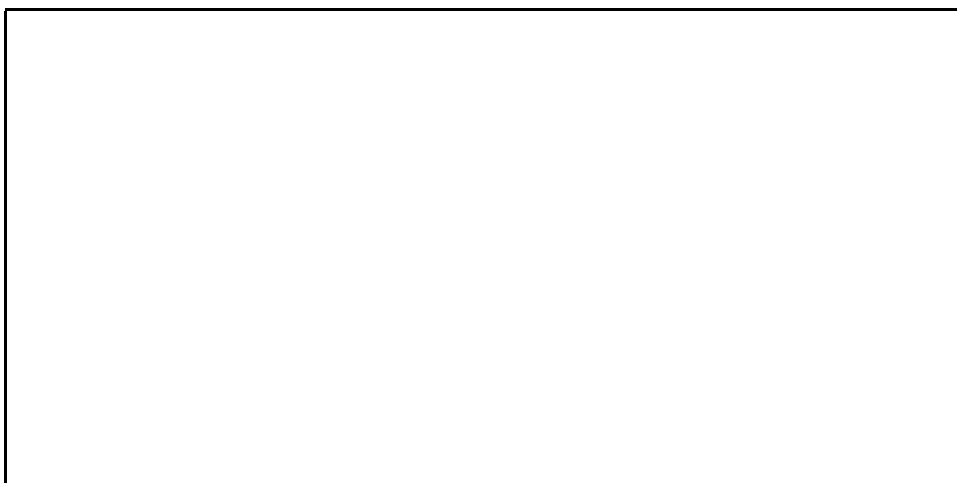
The new chairperson triumphs! Shirley Shao receives her green ribbon AND green jacket from retiring chair Tom Herget.

Retiring Chairperson Tom Herget receives gavel from incoming chairperson Shirley Shao at the Section breakfast in New York.