



# Product Matters!

The newsletter of the Individual Life Insurance and Annuity Product Development Section

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## Comments from the Chair

### Excitement and Fear!

by Kevin J. Howard

**T**hese are my feelings whenever a new product development project is launched or a new marketing opportunity is presented.

Excitement comes from opportunities—a chance to solve the puzzle that brings the product or the deal to completion; the opportunity to create something new; the opportunity to rise to the challenge; and the opportunity to contribute.

Where does the fear come from? From those exact same opportunities. What if the project flops? Am I able to rise to the challenge? Will my contribution be good enough?

Why am I telling you this? As I was pondering what to write in my first article as chair (my first article ever actually—I took the minimum possible number of English classes), I was thinking about when I first became a section council member. I had no idea what it meant to be a council member, what contributions I'd be asked to make or whether I'd be able to live up to them, but I was excited to be a part of it.

Now as my first official act as incoming chair, I've been asked to write an article for the newsletter. I wish I could say that my first response was excitement, but I can't. My first response was a healthy dose of trepidation, a sprinkle of procrastination, followed by paralysis. But then I started thinking about the work that the section does to support the membership, and the myriad of people who work together to make the Product Development Section one of the best

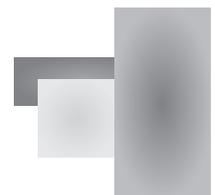


sections in the Society of Actuaries. I found my excitement again.

This article and my role as chair in the next year have all of the ingredients of the perfect role for me. Excitement and fear. Opportunity and challenge.

So, I'd like to start by acknowledging those before me. Thank you to the past

continued on page 3



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# CONTENTS

## COVER

- 1 Comments from the Chair: Excitement and Fear!  
*Kevin J. Howard*

## FEATURES

- 4 SOA Mortality Experience Studies  
*Faye Albert*
- 6 SOA Preferred Risk Surveys  
*Douglas C. Doll*
- 8 1995-1996 Individual Life Mortality Study  
*Douglas C. Doll*
- 10 Whither the Variable Annuity?  
*Douglas A. Eckley*
- 13 Passing the Baton  
*Noel J. Abkemeier*
- 14 Statutory Valuation Interest Rates for Life Insurance and Annuity Products  
*David G. Whitemore*
- 15 Weathering the Interest Rate Storm  
*Susan J. Sell and Noel J. Abkemeier*
- 16 2001 Individual Life and Annuity Expense Study  
*Sam Gutterman*
- 18 Late Duration Mortality Assumptions for Illustrated Life Insurance Values  
*Tracey J. Polsgrove*
- 20 Summary of the Life and Health Actuarial Task Force Meeting – September, 2003  
*Larry M. Gorski*
- 24 UL Secondary Guarantee – A Rebirth of Fixed Life?  
*David W. Simbro*

## ANNUAL MEETING SESSION: HIDDEN COSTS OF PRODUCT COMPLEXITY

- 26 Hidden Costs of Product Complexity  
*Vincent J. Granieri*
- 28 Blazing Trails—Using Patents to Recover the Cost of Innovation  
*Tom Bakos*
- 30 Hidden Costs of Administering Complex Products  
*Van Beach*
- 32 Survey on Pricing for Risk  
*Novian Junus*

chairs that I've been fortunate to work with. To Noel Abkemeier, Mary Bahna-Nolan, Deanne Osgood and Larry Stern, thank you for your support and mentoring.

Please read Noel's article, "Passing the Baton," in this issue. He summarizes the work of the council over the last year as well as acknowledging and thanking the contributors. I echo his comment regarding Nancy Kenneally and Anne Katcher. In addition, the section has been left in very good shape by Noel. He set the stage for the increased emphasis on research. The council will miss all of their contributions. But, I'm sure it won't be the last time the section benefits from the outgoing members, as Nancy and Noel have graciously accepted to be members of the 2004 Product Development Actuary Symposium planning committee.

I welcome the new members to the council, Mary Broesch, Elinor Friedman and Nancy Winings, who were elected for three-year terms on the council. Each has a strong interest in product development, has already served the section in a variety of ways and will provide fresh energy and ideas.

Of the remaining incumbent members, they have agreed to serve in the following roles:

- **Abe Gootzeit** – *Vice-Chair*
- **Kelly Levy** – *Secretary*
- **Susan Kimball** – *Treasurer*
- **Paul Haley** – *2003 Annual Meeting Program Coordinator*
- **Keith Dall** – *2004 Spring Program Coordinator*

Lastly, I'd like to acknowledge the support the section receives from the Society staff. Those who support us are too numerous to mention completely. I will mention specifically, however, two staff members who support us greatly.

Lois Chinnock supports all sections and councils and is always there for us. She is instrumental in making sure that the council fulfills its obligations and acts a liaison with the Society and other sections. Sandy Neuenkirchen has worked with the council to provide continuing education programs

including all seminars as well as the Product Development Actuary Symposium. Thank you to both of them.

There are plenty of opportunities and challenges facing the product development actuary today. These create opportunities (excitement) for the section to provide you with the information, programs and support you need to perform at the peak of your abilities. Noel's article outlines the work of the section council during the past year. It is the intention of the 2003-2004 council to continue focusing on both the research and risk management initiatives begun in prior years. We also continue to focus on our core activities as follows:

- Creating and sponsoring sessions at the Spring and Annual Meetings
- Sponsor the 2004 Product Development Actuary Symposium and other continuing education seminars
- Support the Life Practice Area
- Represent the needs of product development actuaries through involvement with various SOA committees.

While the council is certainly up for the challenge (fear) that these opportunities provide, the reality is that we are dependent upon volunteers in order to support the various efforts of the section. You don't have to be a section council member to be involved. I know that not everyone can commit a large amount of time. There are many ways to contribute and you can tailor your role to the amount of time you have available. Speaking at SOA meetings is one way to get involved but there are others. If you're a writer, please submit an article to the newsletter. If you like research, you may get involved there. You see the pattern—look at the list above and match up your strengths with that list. Please volunteer. This won't be the last time I will beg for help.

The council has a lot to accomplish in the next term. We are excited to be able to support you, the membership, in this way. I'll keep you posted on our progress, and when the year is over, the fear we felt at the beginning will be gone. All that will be left is the excitement of a successful year. □

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# SOA Mortality Experience Studies

by Faye Albert

*Editor's note: Faye is chair of the SOA's Life Practice Experience Committee.*

**H**ow often should the SOA be performing standard ordinary individual life insurance mortality experience studies? How often should reports be published showing the results of individual life mortality experience studies? The annual ordinary study has not been annual for a while. Is the experience reported useful, or should the data and the reporting format be modified? The Mortality Studies Working Group (MSWG) was created to review these questions. The objective is to recommend future goals with regard to the individual life insurance studies and reports.

Regarding frequency of reports, MSWG agreed that annual frequency should be resumed and maintained in the future for individual ordinary life insurance. The schedules for other mortality studies (e.g. by cause of death, by amount, ADB, reinsurance experience, conversion experience) still need to be considered.

According to Tom Rhodes, chairman of the Individual Life Experience Committee (ILEC), the process involves:

1. Collection of data
2. Analysis of data, and
3. Writing reports

The ILEC is committed to instituting a rapid turnaround of data and producing reports showing current industry experience. With annual submissions of data by May, companies can expect a report on current industry experience by the SOA Annual Meeting. Additionally, the ILEC will analyze the data submitted in the new LIMRA/SOA format that includes additional underwriting information and lab test results. The results

of these analyses will be incorporated into future reports.

The SOA experienced a drop-off in contributors and is working to solicit more company contributors so the reports will be credible and fairly represent the industry. The SOA has partnered with LIMRA for the latest data request for experience years 2001 and 2002. Twenty-five companies made commitments to contribute data by September 30, 2003.

ILEC agreed with the following schedule for experience year 2003 and suggested the annual ordinary experience report be produced for each succeeding year according to a corresponding time frame.

1. Data for year 2003 submitted by May 31, 2004. (Almost all year 2003 claims would have been reported by then. Also, companies would be able to produce the data without interfering with preparation of the annual statement, which is completed by March.)
2. Analysis and report writing targeted for completion in September, 2004. The report can be released at the annual meeting in October each year.

The ILEC needs to work on catching up on past experience years and then institute the new schedule. Standard Ordinary Mortality data has been collected in the same format as was used for 1990-1995 for policy experience years 1996-2000. A report and tables on standard underwritten individual policy experience for policy years between 1995 and 1996 is on the SOA's Web site under *Research*. The report on experience for policy years between 1996 and 2000 is anticipated by December 31, 2003. These reports will use the same mortality experience categories as the 1995 experience report.

With the 25 companies contributing data by the end of September 2003, the report and

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**The ILEC is committed to instituting a rapid turnaround of data and producing reports showing current industry experience.**

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experience for policy years between 2000 and 2002 is anticipated in the spring of 2004. Since the new LIMRA/SOA format includes persistency information, LIMRA will also be issuing a persistency study based on this data.

Perhaps the stickiest area is, "How can the reports be more useful?" Actuaries want mortality experience based on sophisticated risk classifications. Focusing on this will be more valuable than any other factor. In the past, concerns have been expressed that due to differences in risk classification practices among companies, industry level mortality experience by risk class would not be meaningful. There have always been differences among life insurance companies' underwriting practices and risk classification guidelines that impact each company's mortality, hence the standard risk composite reflected in the SOA's reports already is affected by individual company variations. Yet, current SOA mortality tables are considered valuable by users. The MSWG concluded that adding additional risk classes in the SOA tables will make them more valuable, in spite of the individual company differences with respect to risk classes.

After addressing the catch-up issue, MSWG specified two additional areas where resources are required for individual life mortality studies.

1. An approach using seriatim policy records with the raw underwriting data, including lab results, obtained at the time of policy issue is the long-term solution. This has been called the "FIRST" approach. The SOA should devote maximum resources and transition toward this process as quickly as possible. There is already a working group of volunteers under the leadership of Al Klein in place grappling with this expanded study.

The transition from the current data format to the new one should minimize inconvenience to contributors and the SOA should provide appropriate support to ensure this. A good communication/marketing plan to enlist maximum company support is essential.

The expanded data are an important part of SOA goals. The labs have agreed to provide companies with their own lab test results in the standardized LabOne format. Companies can simply request

this information from their labs and then use it for submission to the studies. The kinds of help that would most encourage companies to contribute needs to be identified and the SOA should work to provide that assistance.

Finally, the SOA needs to take the step of allocating resources in support of this important work.

Devising a new mortality report format with several underwriting classifications will require a separate effort. There will be a number of lab data factors and interrelationships among them that can be used in studying mortality. Other underwriting factors need to be integrated into the study as well. This new report will be prepared annually and replace the annual ordinary mortality experience study.

2. An interim solution is needed to capture mortality experience information in additional risk categories. These interim reports need to use data available that is currently collected; the current data includes preferred issue information. This is a job for a new working group, not the ILEC, who needs to define what such expanded reports can include and how to produce them.

One suggestion for this interim report would require the SOA to map the current individual ordinary contributions into three classifications—two non-smoker classes and one smoker class. The non-smoker classes would be distinguished by individual company criteria used in issuing the case as "preferred." Perhaps more than three classifications could be used.

As you can see, there is a lot of work to be done, and much of it has not yet begun. We would most appreciate your view as to what you would like to see that is missing from the above plan. And, if you would like to volunteer to help, that would be welcome as well. Please e-mail me at [FayeAlbert@AlbertAssociates.org](mailto:FayeAlbert@AlbertAssociates.org). □



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## SOA Preferred Risk Surveys

by Douglas C. Doll

**T**he SOA recently released the “Preferred Underwriting Reinsurance Survey Report.” It is available on their Web site under *Research*. In addition, a presentation was made at the SOA’s Spring Meeting regarding the results of this survey and another not-yet-released survey of direct companies (to see the handouts, go to the Web site, under <http://www.soa.org/conted/cearchive/washington/presentations.html>). This article summarizes some of the results.

The direct company survey is a follow up to surveys conducted in 1995 and 1997. It was conducted last fall and covers information as of second quarter 2002. The reinsurance survey also was conducted last fall. It asked for answers based on quotes in 2001, for 10-year level term plans.

The surveys asked a number of questions about underwriting criteria needed to qualify for preferred risk. They also asked questions about the percentage of issues in each underwriting category and the mortality assumptions for the different categories.

The most prevalent number of underwriting categories was five: three non-tobacco and two tobacco. About 40 percent of direct responders answers/reinsurance quotes were on this basis. The second-most prevalent number is six: four non-tobacco and two tobacco.

From the reinsurance survey, the median percentage of issues for each of the non-smoker underwriting classes is shown in Table 1. There is a wide range of percentages among the individual responses.

**Table 1**  
Median Proportion of Issues in Each Nontobacco Risk Class

	2 Classes	3 Classes	4 Classes
Standard	38%	34%	32%
Preferred	62%	29%	22%
Preferred +	-	35%	17%
Preferred ++	-	-	29%

**Table 2**  
Median Reinsurer Nontobacco Assumption as % of 1975-80

	2 Classes	3 Classes	4 Classes
Standard	45%	45%	46%
Preferred	29%	33%	35%
Preferred +	-	25%	28%
Preferred ++	-	-	24%

The median response for reinsurer mortality assumptions, as a percentage of the 1975-1980 table is shown in Table 2 for issue age 45, duration three. In the slide presentation for the direct company survey, median results were shown only for the three-class system, and are approximately two percentage points larger than the reinsurer assumptions.

There was a wider range of mortality assumptions among the direct writing companies. For example, for the three-class system, issue age 45, preferred plus, the reinsurers' assumptions are all in the range of 20-34 percent. For the direct companies, 11 percent were lower and 9 percent were higher than this range.

The surveys asked for mortality assumptions through policy year 10. About half the respondents had level percentages of the 1975-1980 table. The other half varied by duration, with the median result being a slight increase of a percentage point or two by duration 10.

Regarding future mortality improvement, recall from an article in the last issue of Product Matters! that a survey of direct writers showed that only 25 percent assume this. The prevalence was much greater among reinsurers, with 87 percent assuming future

improvement. Several of the reinsurers varied this by age, sex and duration, but the average magnitude appears overall to be about 1 percent per year for 10-20 years.

For tobacco users, reinsurance results are shown for the system of two tobacco classes: preferred and standard. The median proportion of preferred vs standard tobacco issues is 63 percent versus 37 percent. The median mortality assumption, as a percentage of the 1975-80 table, is 80 percent for preferred tobacco, and approximately 100 percent for standard tobacco.

The surveys asked about how companies arrive at mortality assumptions. The results are shown in Table 3. Not surprisingly, the reinsurers have more experience to look at and, on average, have devoted more resources to developing assumptions. Also not surprisingly, most direct companies look to their reinsurers to provide input on assumptions, and the reinsurers make use of their client experience when available. Sixty percent of the reinsurers admitted that at least a portion of their assumptions is an "educated guess." I was somewhat disappointed not to see "consultant input" in this list, but perhaps that is included in the category of "educated guess." □

**Table 3**  
**How Do Companies Arrive At Mortality Assumptions?**

	Direct	Reinsurer
Internal UW Recommendations	42%	93%
Mortality Study Experience	39%	93%
Mathematical Formula	36%	80%
Industry Experience	16%	33%
Educated Guess	14%	60%
Reinsurer Input	91%	N/A
Client Input	N/A	47%



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## 1995-1996 Individual Life Mortality Study

by Douglas C. Doll

**T**he SOA recently released the results of its study of “Mortality Under Standard Individually Underwritten Life Insurance Between 1995 and 1996 Policy Anniversaries.” This data is pretty old. (See Faye Albert’s article in this issue regarding the SOA’s plans for bringing these studies up-to-date.) Also, with today’s multitude of preferred risk classes, there is less direct comparability of these results to pricing assumptions. Nevertheless, there are some interesting results to consider. The report and tables are available on the SOA’s Web site under *Research*.

Only 10 companies contributed directly to the SOA’s study, compared with 21 companies in the 1990-95 study. The SOA supplemented its select data with data from five additional companies that had contributed to studies performed by Bragg Associates. Some of the results are shown using SOA data only; other results include the Bragg data. Comparison with prior years’ results should be made with caution.

The results are shown as a percentage of both the 1975–80 Table and the 2001

Valuation Basic Table (VBT). There are tables showing results by issue age, policy year, policy size and underwriting class (but not for preferred versus standard). Results also are shown for the five-year period of 1991-96. I was somewhat disappointed not to see the 1995–96 experience separate by sex, although the 1991-96 experience is shown that way. I suppose the committee had to draw the line somewhere—the report already has 183 pages of tables!

The rest of this article presents some selected results from the report. Unless otherwise noted, the results are percentages of the 1975–80 Table.

The aggregate 1995-96 actual to expected results are 66.3 percent, compared with 71.4 percent in the 1994-95 study. The decrease could be attributable to the different mix of contributing companies. Some of it also could be attributable to increasing proportions of business represented by preferred risk underwriting. The latter point may be the cause of the increasing ratios by duration for the 1975–80 Table ratios (see Table 1 below).

**Table 1**  
1995-1996 Ratios by Policy Year

Policy Year	1975-80 Table	2001 VBT
1-2	54%	88%
3-5	63%	100%
6-10	64%	86%
11-15	73%	90%

**Table 2**  
1995-1996 Nonsmoking Select Ratios, by Issue Age and Underwriting Class

Issue Age	Medical	Paramedical	Nonmedical
30-39	55%	45%	55%
40-49	53%	49%	51%
50-59	50%	60%	60%
60+	64%	72%	71%

**Table 3**  
1995-1996 Nonsmoking Select Ratios, by Amount Band

Amount Band	Ratio to 1975-1980
Under \$25,000	89%
\$25,000 – \$49,999	75%
\$50,000 – \$99,999	62%
\$100,000 – \$249,000	54%
\$250,000 and over	49%

**Table 4**  
1995-1996 Smoker Ratios for Policy Years 1-15

Policy Year	Ratio to 1975-80			Ratio to nonsmoker		
	Medical	Paramedic	Nonmed.	Medical	Paramedic	Nonmed.
1-2	96%	103%	117%	1.65	2.54	2.33
3-5	110%	142%	146%	2.10	2.67	2.47
6-10	123%	124%	128%	2.34	2.28	2.23
11-15	137%	125%	127%	2.10	2.17	2.13

The report notes the large increase in ratios between policy years 1–2 and 3–5, and suggests there may be some degree of antiselection following the end of the contestability period. If this is so, I am surprised that the 2001 VBT does not already reflect this, as I expect that similar antiselection would exist in its underlying data.

Table 2 shows nonsmoking select experience. The advantages of medical versus nonmedical, and paramedical versus nonmedical are less than one might expect. The higher ratios for medical at the younger issue ages could be attributable to medical reports being requested on suspicious applications.

Several of the tables show results grouped by policy size. There is a nice progression of decreasing mortality by policy size. For

example, Table 3 shows the ratios for nonsmoking select.

Looking at smoking experience, the results are distorted by including experience for policy years 16–25, which appear to have a significant amount of “standard” (i.e., including nonsmokers) experience classified as smoker. The 1995–96 smoker ratios for policy years 1–15 are shown in Table 4.

The ultimate experience (now, policy years 26 and over) is somewhat strange. For 1995-96 the ratio is 113.7 percent. For 1991-96 the ratio is 97.1 percent. Either 1995-96 was a very bad year, or (more likely) the contributing company mix for 1995-96 is significantly different. Probably the ultimate data is dominated by a few companies, such that adding or deleting one can change the aggregate results significantly. □



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## Whither the Variable Annuity?

by Douglas A. Eckley

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**The advantage of tax-deferred savings has disappeared in some cases...**

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**P**ublic Law 108-27, "The Jobs and Growth Tax Relief Reconciliation Act of 2003," was signed by President Bush on May 28, 2003. This law, by changing the relationship between tax rates on ordinary income and the tax rate on dividends and long-term capital gains, changes the playing field for variable annuities and possibly other insurance products.

Sales of variable annuities should fall relative to sales of fixed annuities. Insurance companies may require a new assessment of product development.

### Summary of key changes

The 2003 Tax Rate Schedules have been revised to reflect the following changes.

The tax rate brackets of 27 percent, 30 percent, 35 percent and 38.6 percent, have been reduced to 25 percent, 28 percent, 33 percent and 35 percent, respectively. Lower brackets of 10 percent and 15 percent probably do not contain many prospective purchasers of variable annuities.

Here are the new tax rates for married people filing jointly:

Annual Income	Tax Rate
\$0 - \$14,000	10%
\$14,000 - \$56,800	15%
\$56,800 - \$114,650	25%
\$114,650 - \$174,700	28%
\$174,700 - \$311,950	33%
\$311,950 and over	35%

The maximum tax rate on net capital gains (net long-term capital gains reduced by net short-term capital losses) has been reduced from 20 percent to 15 percent (and from 10 percent to 5 percent for taxpayers in the 10 percent and 15 percent tax rate brackets). These rates apply for both the

regular tax and the alternative minimum tax.

The same 15 percent maximum tax rate that applies to net capital gains also applies to dividends paid by most domestic and foreign corporations after December 31, 2002. Certain dividends from mutual funds, real estate investment trusts and some foreign corporations do not qualify for the reduced rates. Such dividends will continue to be taxed as ordinary income.

While the rate cut on dividends falls far short of President George W. Bush's original plan to essentially eliminate that particular tax, it is still enough to rearrange the investment landscape. Dividend-paying stocks are now far more attractive relative to corporate and Treasury bonds.

### What next from Congress?

To reduce the budgeted cost of the tax changes, Congress decided that the lower rates on dividends and capital gains would expire after 2008. But the idea of taxing these investment returns more lightly than interest or wages is likely to persist, and may even receive increased emphasis.

Since significant federal government budget deficits are projected over the next ten years, the tax rates on ordinary income may eventually rise. That could increase the advantage for dividends and capital gains.

### Analysis

The advantage of tax-deferred savings has disappeared in some cases and diminished in others. Investors will weigh carefully whether to lock money in a tax deferred account. With the assistance of their agents and brokers, some investors will make projections to determine the tradeoff. Some may retain a preference to defer the (certain) payment of taxes today in exchange for the (uncertain) payment of taxes in the future.

401(k) and IRA accounts postpone taxes

until retirement, but then their proceeds are taxed as ordinary income. For many taxpayers, particularly in the top brackets, it will now be more attractive to pay taxes each year on earnings at the low 15 percent rate.

Variable annuities (and variable life insurance to a lesser extent) have lost some of their attractiveness. Investors will be less willing to pay the somewhat higher fees in annuities to get the tax deferral.

The following table shows the number of years that a buyer must leave his money in a variable annuity before it catches up to direct investment in the same underlying funds, assuming that **all** the returns in the mutual funds are taxed at dividend or long-term capital gains rates (15 percent). If some of the mutual fund returns are interest or short-term gains, the number of years will shorten.

Ordinary Tax Rate	Rate of Return	Excess VA Charge	B-E Year
25%	8%	0.50%	42
28%	8%	0.50%	49
33%	8%	0.50%	61
35%	8%	0.50%	66
25%	10%	0.50%	31
28%	10%	0.50%	35
33%	10%	0.50%	43
35%	10%	0.50%	47

Ordinary Tax Rate	Rate of Return	Excess VA Charge	B-E Year
25%	8%	0.20%	27
28%	8%	0.20%	32
33%	8%	0.20%	41
35%	8%	0.20%	45
25%	10%	0.20%	26
28%	10%	0.20%	28
33%	10%	0.20%	33
35%	10%	0.20%	36

continued on page 12



“Excess VA Charge” in this table refers to the excess of annual fees in a variable annuity that do not attach to the underlying mutual funds. The Rate of Return shown in the table is attributed to the mutual fund, and the Rate of Return less the excess charge is attributed to the variable annuity. Both 0.20 percent and 0.50 percent are shown because opinions will differ as to the realities of the marketplace. The lower differential might be more applicable if the products are from comparable distribution systems. Another issue is whether to ascribe any value to variable annuity benefits such as the GMDB.

That most variable annuities have heavy surrender charges is less subject to debate. The effect of heavy surrender charges is the loss of a real option to the variable annuity buyer, and that is not considered in this analysis.

The variable annuity does dramatically better as the assumed rate of return increases.

Fixed annuities retain their appeal compared with interest-paying investments, except to the general extent that investors move money from investments paying inter-

est to investments paying dividends and capital gains.

Deductible IRAs and 401(k)s, that allow an investor to save pre-tax dollars, remain excellent bargains. Those accounts may be used more for investments that would otherwise be taxed at ordinary income rates, such as bonds. Active stock traders who take frequent short-term gains, which will still be taxed as ordinary income, will do more of their trading in IRA accounts.

Insurers should continue monitoring sales practices in the tax-deferral area. Comparative analyses of tax deferral versus paying taxes each year used by agents and brokers should be re-engineered, or at least closely examined.

### Product Development

Annuities may be attractive as a niche product for investing in high-yield bonds, which are otherwise currently taxed at ordinary income rates. Insurance companies might begin to emphasize high-yield bond funds within their variable annuities. Companies may try to segment the general account, so as to pay high-yield bond returns to fixed annuities. Inflation-indexed bonds will also appeal to investors concerned about that particular risk, and may provide another area for research and development.

Guaranteed Minimum Income Benefits and other variable annuity guarantees should continue to receive emphasis, since they are an attractive feature that cannot be offered by other types of investments.

A sophisticated investment strategy might be to use mutual funds to provide for years prior to the break-even year, and variable annuities to provide for years after the break-even year. Research could judge whether such an idea can lead to a useful product offering.

If these tax changes do in fact cause a reduction in assets under management by insurers, the industry will look for ways to turn the tide. An idea that is largely untried would be health insurance with a savings element. The concurrent sea changes of President Bush’s tax cut and reduced health insurance coverage from employers may generate new ideas in this area. Perhaps actuaries from the health and investment sub-disciplines will combine their efforts. □

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# Passing the Baton

by Noel J. Abkemeier

**T**he Annual Meeting of the Society of Actuaries marks the beginning of a new year for the sections and it is appropriate to take a look to measure our progress and our positioning for the future.

First, I would like to thank retiring council members Nancy Kenneally and Anne Katcher, both of whom contributed greatly to council activities during the last three years. While both were involved in the full spectrum of council activities, Nancy played a key roll in organizing the section's programs at last year's Annual Meeting and in getting the Product Development Actuary Symposium established. Anne helped revive our research activities, always joined in when new initiatives were being structured and reliably served as our secretary. We also owe special thanks to Christopher Poirier, who built a very useful Web site as our Web site liaison for the past two years. His departure leaves an opportunity for a new volunteer.

Kevin Howard is beginning his term as chairperson, and is well-positioned to identify new opportunities because of his having been involved deeply in every aspect of council activities over the last three years.

## A Look Back

The last year carried forward our core activity with successful product development oriented program offerings at both the Spring and Annual Meetings, under the guidance of Susan Kimball and Paul Haley, respectively. The Product Development Actuary Symposium became firmly established as an annual event through its third offering and the pre-symposium seminar, *Designing and Pricing Secondary Guarantees on UL and VUL Products*, has indicated the permanence of a pre-symposium seminar. In both cases, the strong registration and growth over the previous year indicate that we are responding to a true need. We thank the many section members who helped as presenters in these programs.

An initiative in the past year was to increase the emphasis on research that serves the needs of product development actuaries. In recognition of the section's 20th anniversary, we sponsored a papers competition on *Product Risk and Its Management*. We are pleased to announce and congratulate the winners as David J. I. McIntosh for his paper titled *Valuing Commodity Risk in Leasing Products*, and Ian Duncan for his paper titled *Population-Based Risk Management: Identifying and Managing High-Risk Health Plan Enrollees*. Although the papers do not directly address life insurance and annuity issues, they can stimulate parallel thinking about applications to those lines. Both papers have been posted on the section Web site. Thank you also to the other competitors who submitted entries.

Our ongoing research commitment was initiated with the release of a request for proposal on an *Analysis of Product Guarantees*, for which proposals were due September 15 and the selection of the best proposal is now in process. As products have evolved, new and often more difficult to manage risks have been embedded in life insurance and annuity policies. This research should identify and quantify those risks, and may provide a roadmap for subsequent focused research.

All of these activities have been well reported in *Product Matters!* with Doug Doll as editor. The thrice-annual publication of ever-increasing size has provided a very valuable forum for sharing product development concepts. We thank Doug for his commitment and ask that you make it even better by submitting articles for publication.

As we move into 2004, I offer best wishes to Kevin and the newly constituted council. I also ask your support of and participation in the section activities so they can provide the greatest value to the most members. □



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## Statutory Valuation Interest Rates for Life Insurance and Annuity Products

by David G. Whittemore

### Maximum Statutory Valuation Interest Rates

**M**oody's Investors Service has released its June 2003 Corporate Bond Yield Averages Index. This index affects maximum interest rates under the 1980 Amendments to the Standard Valuation and Nonforfeiture Laws. This article reports the maximum statutory valuation and nonforfeiture interest rates for calendar year 2004 issues of life insurance products and the maximum statutory valuation interest rates for calendar year 2003 issues of annuity products. Looking ahead to next year, the maximum valuation interest rate for life insurance products could easily drop by 50 basis points if interest rates decline even slightly from the July 2003 levels.

The maximum statutory valuation interest rates for some typical insurance products are as follows below:

The calendar year 2004 maximum statutory valuation interest rates for life insurance products are the same as last year. Most of the maximum statutory valuation interest rates for calendar year 2003 issues of annuities decreased by 50 basis points although a few 75- and 25-basis point decreases were noted.

### Maximum Statutory Valuation Interest Rates for Future Years' Issues

The formulas used to determine maximum statutory valuation interest rates for life insurance products generally require large swings in yield indices before a change in the maximum valuation rate will occur. As previously shown, the maximum statutory valuation interest rate for calendar year 2004 issues of whole life insurance products will be 4.50 percent. For the whole life maximum statutory valuation interest rate to change for calendar year 2005 issues, one of the following scenarios must occur:

Target Maximum Statutory Valuation Interest Rate	Required 12-Month Mean for July 2003 - June 2004
4.00%	6.21% or less
5.00%	10.93% or greater

The Moody's average corporate bond yield index was 5.85 percent in June, 2003 and 6.26 percent in July, 2003. If the Moody's index drops slightly and produces a mean yield over the next 12-month period of no greater than 6.21 percent, a 4.00 percent maximum statutory valuation interest rate for calendar year 2005 issues of whole life insurance policies would be the result. The corresponding 12-month average that will cause a 50-basis point reduction in other life insurance products are 6.24 percent and 6.03 percent for guarantee durations of 10 years or less and more than 10 years but not more than 20 years respectively.

Note that a change in valuation interest rates will also cause a change in nonforfeiture interest rates. The reduced non-forfeiture interest rates (125 percent of the valuation rates) would be mandatory in 2006. There is a one-year grace period for nonforfeiture interest rate changes—a new interest rate is optional for the following year but mandatory for the succeeding year.

Many companies are currently contemplating a re-pricing effort to incorporate the 2001 CSO mortality table with an expectation that reserves and nonforfeiture value will be reduced. A reduction in the maximum valuation interest rate will act to increase required reserves and traditional cash values, somewhat offsetting the reduction due to the change in the mortality table. It would seem prudent to maintain a keen awareness of the Moody's indices over the near term so as to avoid a re-pricing of the re-priced 2001 CSO products. □

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Year of Issue	Whole Life Insurance	Typical Single Premium Deferred Annuity	Single Premium Immediate Annuity
2000	4.50%	5.75%	7.00%
2001	4.50%	5.50%	6.75%
2002	4.50%	5.50%	6.50%
2003	4.50%	5.50%	6.00%
2004	4.50%	N/A	N/A

# Weathering the Interest Rate Storm

by Sue Sell and Noel J. Abkemeier

**Y**ields on Treasury investments fell to very low levels in mid-June but rebounded subsequently. How well did insurers weather the storm and are there any lingering after effects? What is the reaction to the subsequent rate rebound?

The rates experienced in June were certainly low, but they were not unprecedented. In the early 1950s, short-term rates fell nearly as low and long-term rates were lower—10-year rate below 2.4 percent and 20-year rate at 2.6 percent. As Treasury yields fell during the first half of 2003, spreads on corporate bonds also fell, so investment yields fell as much as 1.0 percent. A seven-year A-rated corporate bond fell to 3.6 percent, while a BBB-rated bond fell to 4.0 percent. Ten-year A and BBB bonds fell to 4.1 percent and 4.6 percent, respectively. How did insurers react? In a disciplined fashion, it would appear.

## The Growing Storm

In the early part of 2003, fixed annuity carriers were experiencing significant increases in fixed annuity sales, despite having reduced crediting rates. Contracts with a 3 percent minimum rate guarantee became attractive investment vehicles. Credited rates on fixed annuities exceeded those on certificates of deposit by a significant margin, fueling sales through the bank channel. Equity indexed annuity sales were booming, although a strong portion of the premium went into traditional fixed accounts in multi-bucket products.

Despite low credited rates, margins on fixed annuity products were being squeezed. Carriers found it difficult to support the credited rates guaranteed in their existing contracts. This led to actions to reduce the guarantees, whether by lowering the crediting rate guarantee while still using a 3 percent nonforfeiture rate or by taking advantage of the stopgap reduction of the nonforfeiture interest rate to 1.5 percent. Crediting rate guarantee reductions under the old nonforfeiture law were achieved by reducing the crediting minimum, generally to 2 percent for the first 10 years, an approach that still produces minimum contract values above the nonforfeiture minimum. However, although these steps gave insurers room to dramatically reduce credited rates, few took the actual credited rates below 3 percent.

As investment yields fell further and reductions of guarantees were insufficient or undesirable, commissions were cut in nearly every channel. Until recently, banks continued to demand historic compensation levels, but these also saw reductions. Commissions were dropped just enough to accommodate the spread compression from low interest rates.

In parallel with crediting and commission adjustments, many carriers began moving to the more aggressive end of their normal range of

investment policy. Average investment grade moved moderately lower and asset durations lengthened to take advantage of the steep yield curve. Generally, this combination of actions allowed insurers to remain active in the market, although sales had to be discontinued for many multi-year guarantee products that allowed surrender charge free withdrawals at the end of the guarantee period, thus required short investment horizons, and for products not protected with adequate surrender charges.

## Rates Rebound

The period of low Treasury yields was relatively brief, and rates rose 100-130 bps on three to 10 year Treasuries within six weeks, by early August. Although corporate spreads slipped by approximately 10 bps during this period, the available investment yields had increased dramatically. How did the annuity market react?

Credited rates began to rebound in August and have continued in September at levels that parallel the increase in investment yields, showing a strong sensitivity to market expectations. Although commissions were the last step in adjustments for low interest, they were not the first component to rebound, perhaps recognition that commissions had crept up in recent years and merited a more permanent adjustment.

Although investment yields have risen, insurer interest in utilizing lower nonforfeiture rates has not abated. This both strengthens solvency protection and creates an opportunity for higher crediting. The primary focus currently remains on the stopgap 1.5 percent law, because it is available in 33 states; while strategizing continues for use of the indexed nonforfeiture law, which has been adopted by only 12 states. A clear direction for utilization of the indexed law still awaits adoption of the model by more states and a clarification in the supporting regulation (under development at the time this article was written) of the degree of flexibility permitted in the determination of the nonforfeiture rate by the wording "Treasury Rate...as of a date, or average over a period...no longer than fifteen (15) months prior to the contract issue date..." This literally allows great leeway in setting nonforfeiture rates, but some constraints may be imposed.

There is some concern that as interest rates increase, fixed annuity products could be surrendered for better rates. Carriers may be protected since the affected products are newly issued and deep within their surrender charge period.

The steps taken by insurers as rates fell sharply and then rebounded showed a balanced approach to addressing the issue from all perspectives. The current position leaves insurers better prepared to provide value to customers than before the drop, and leaves them better positioned to protect their solvency if rates again drop. □



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## 2001 Individual Life and Annuity Expense Study

by Sam Gutterman

*Editor's note: Sam, with Tim Harris, co-chairs the SOA's Committee on Life Insurance Company Expenses (CLICE).*

**C**LICE has recently completed its first inter-company study of expenses for individual life and annuity business. The report of this study is now available on the SOA's Web site.

CLICE distributed a call in August 2002 for contributions of 2001 expense data from life insurance companies doing business in the United States. Over the course of several months, contributions of life insurance and annuity expense data were received from 26 life insurance companies.

Contributors were asked to provide expense data for the following product categories:

- Life insurance – term, permanent, variable, COLI and BOLI. It was thought that these product groups had product or expense characteristics that would result in distinct unit expenses. For these life insurance products, contributors were further asked to provide, to the best of their ability, acquisition expense data broken down by the following distribution channels: Career, Brokerage, PPGA, Multi-Line, Direct Response, Other and Unallocated (that

expense that wasn't split by channel).

- Annuities – immediate, deferred, variable immediate and variable deferred. For these annuity products, the following distribution channel detail was requested: Career, Brokerage, PPGA, Stockbroker, Financial Institutions, Other and Unallocated.

The data received from the contributors was aggregated and unit cost calculations were developed. As part of the aggregation process, a series of data integrity checks were performed and contributors were contacted to resolve missing or anomalous data. Based on feedback from the contributors and Committee discussions, the raw data was refined over the course of several months.

Nevertheless, due to variations in expense allocations used by companies, the variety of companies that contributed, and the limited number of contributors in certain categories provided, the results should be viewed with caution. If more companies contribute in the future, CLICE hopes that enhanced information can be provided.

The exhibits in the report present unit-cost calculations for the various product and distribution channels for which sufficient data was available. Interestingly, about 30 percent of life insurance expenses were categorized as overhead, while 13 percent of

Acquisition Expense for Individual Life Insurance							
Product Type	Number of Comp.	Per Policy Issue	Per \$1,000 Face Amount Issued	1st Year Comm. as % of Prem.	Single Prem.* Comm.	% of 1st Year Prem.	Renewal Comm.
Term	23	\$137.26	\$0.65	56.1%	N/A	39.7%	4.3%
Permanent -Fixed	26	\$120.64	\$1.27	53.5%	0.4%	17.1%	3.6%
Variable	10	\$480.38	\$0.54	44.3%	2.4%	27.4%	3.4%
Total	-	\$155.93	\$0.74	50.0%	0.6%	24.8%	3.7%

\* includes dumps/pour-ins and dividends applied

Non-Acquisition Expense for Individual Life Insurance				
Product Type	Number of Companies	Per Policy Inforce	Per Death Claim	Premium Tax
Term	23	\$71.72	\$427.94	1.78%
Permanent-Fixed	26	\$52.87	\$69.40	1.32%
Variable	10	\$204.04	\$155.99	2.23%
Total	-	\$68.02	\$83.17	1.59%

Acquisition Expense for Individual Annuities					
Product Type	Number of Companies	Per Policy Issued	First Year/ Renewal Commission	Percent of First Year Commission	Renewal Commission
Deferred – Fixed	21	\$105.50	5.2%	1.0%	3.6%
Deferred – Variable	11	\$133.00	6.0%	1.3%	5.1%
Immediate	12	\$194.86	3.3%	1.3%	N/A
Total	-	\$120.31	5.6%	1.2%	4.9%

Non-Acquisition Expense for Individual Annuities				
Product Type	Number of Companies	Per Policy Inforce	Per Termination	Premium Tax
Deferred – Fixed	21	\$93.32	\$38.39	0.07%
Deferred – Variable	11	\$173.72	\$33.38	0.09%
Immediate	12	\$109.66	\$444.93	0.28%
Total	-	\$137.08	\$38.79	0.08%



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annuity expenses were categorized as overhead. Summarized results follow.

CLICE has recently called for contributions to a corresponding study of 2002 expenses; it hopes that additional compa-

nies will contribute to the future success of its studies. The Committee expresses its appreciation to all of the contributing companies for their assistance and support of this study. □

# Late Duration Mortality Assumptions for Illustrated Life Insurance Values

by Tracey J. Polsgrove

*Editor's Note: Tracey is chair of the AAA Illustration Work Group.*

**I**n the July 2003 issue of *Product Matters!* an article on the AAA Illustrations Work Group (IWG) described how the IWG was created to provide feedback to constituents on issues with respect to life insurance illustrations. The first issue addressed by the IWG is mortality assumptions in late durations. The IWG concluded that no new regulation is needed, but that additional education of illustration actuaries regarding this issue



would be beneficial. This article describes the issue and some considerations that an illustration actuary should take.

The purpose of the Model Illustration Regulation adopted by the NAIC in 1995 was to “provide rules for life insurance policy illustrations that will protect consumers and foster consumer education.” To accomplish this objective, the regulation requires, among other things:

1. The illustrative values shown in an illustration may not exceed the lesser of the current payable scale and the disciplined current scale. The disciplined current scale should be “reasonably based on actual recent historical experience.”

2. The experience assumptions underlying the disciplined current scale, which are also used in the lapse and self-support tests, should not “include any projected trends of improvements in experience or any assumed improvements in experience beyond the illustration date.”

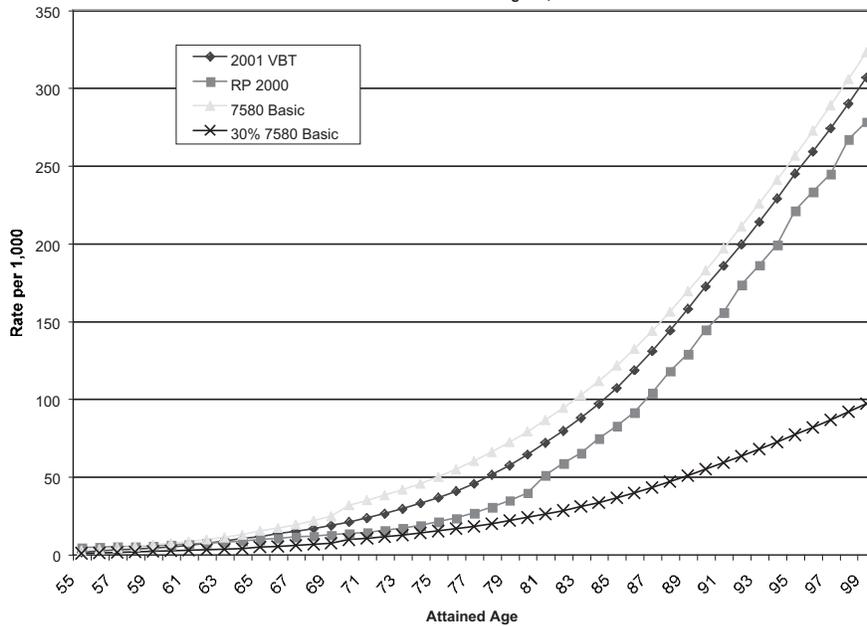
On its surface, these requirements seem pretty straightforward. But, when setting mortality assumptions, illustration actuaries may discover that it is harder than they thought to ensure that they are in compliance with these requirements. This article will attempt to explain why that is true.

When developing mortality assumptions, especially at older ages and later policy durations, the illustration actuary must use a significant amount of professional judgment. This is due to the fact that there is little recent, credible mortality data on insured lives at these durations and ages. This is particularly true when an illustration actuary goes in search of data broken down by the multiple underwriting classes that are common today (e.g., super preferred, preferred non-nicotine, standard non-nicotine, etc), but which were almost nonexistent a decade ago.

What do illustration actuaries do when faced with this issue? According to the SOA Mortality Improvement Survey, one approach often adopted is to use a constant, level percentage of a recognized inter-company mortality table (e.g. the 1975-80 Basic Table, the 1990-95 Basic Table, the 2001 Valuation Basic Table), where that percentage replicates the early duration experience, since this may be the only experience available.

At first blush, setting assumptions in this manner may seem both reasonable and consistent with the prohibition against assuming future mortality improvement. However, upon closer investigation, one may begin to question the validity of the approach since the resulting mortality rates:

**Comparison of Mortality Rates per 1,000**  
 calculated based on various industry tables  
 Issue Age 55, Male



1. May not begin to approach 1.00—even at ages like 100 or 110 and
2. May be much lower than mortality rates observed in other studies.

The graph above sheds light on this issue. It includes three common mortality tables: 1) The 1975-1980 Basic Ultimate Table, 2) The 2001 VBT Ultimate Table and 3) The RP 2000 Table. While each has a different overall mortality rate by attained age, the slopes of these tables appear to be quite similar. The graph also shows a line that is 30 percent of the 1975-80 table. You can see how much flatter the slope of this curve is at the older attained ages and, as a result, how much lower the late duration mortality is than any of the three tables.

As there is no clear-cut answer as to the appropriate mortality assumptions for each new class of business, where can the actuary turn for guidance? Actuarial Standard of Practice (ASOP) No. 24, *Compliance with the NAIC Life Insurance Illustrations Model Regulation*, provides some guidance. However, Standards of Practice are generally not intended to provide guidance at this level of specificity.

So, whatever assumption the illustration actuary winds up using should be compared to the level and slope of other available mortality data—even if that data isn't based on insured lives. This is especially

true at the older attained ages where the assumptions can have a large impact on the illustrated values and where the many years since underwriting should minimize the error introduced by the fact that the data is not based on insured lives. Alternatively, given the lack of credible data, the actuary may choose to use more conservative assumptions. □

For more discussion on this topic, consider the following resources.

- 1) Warren, Larry. 2002. "The Relationship of Mortality Projections and the Underlying Mortality Tables Used," *Product Matters!* (August): 53.
- 2) Fitch, Timothy. 2001. "Low Mortality Assumptions Could Hurt Buyers Confidence in Life Insurance," *National Underwriter* (July 16).
- 3) Fitch, Timothy. 2001. "Don't Shoot Yourself in the Foot with Policy Illustrations," *National Underwriter*, (July 8).
- 4) Taht, Michael. 2002. "Mortality Table Slope and Future Improvements," *Product Matters!* (November): 54.

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# Summary of the Life and Health Actuarial Task Force Meeting – September, 2003

by Larry Gorski

### Annuity Nonforfeiture Work Group

**D**ue to a scheduling conflict with the Valuation Actuary Symposium, the NAIC Life and Health Actuarial Force's (LAHTF) usual one-and-a-half day meeting was shortened to a single day. Friday's session opened with a status report from the American Academy of Actuaries Annuity Nonforfeiture Work Group. The work group is working towards the development of a regulation that implements the recently adopted NAIC Annuity Nonforfeiture Model Law.

Four methods to deal with the disclosure issue were identified. The methods ranged for requiring a full and detailed description in the contract to no required disclosure. The LAHTF was asked to indicate a preference but no method was a clear favorite.

Two methods were suggested for demonstrating compliance with the requirements for the additional reduction in minimum nonforfeiture interest rates available to equity index option costs. The first method was based on evaluating contractual guarantees but without any discounting for voluntary withdrawal or annuitization. This method was called the "Book Value" methodology. The second method utilized current contractual values and required recognition of voluntary withdrawals and annuitizations. Regulators were not asked to choose between the methods but to provide comments concerning the acceptability of the two methodologies.

Due to time constraints, the draft recommended actuarial certifications were not discussed.

To obtain guidance from the LAHTF, two specific questions for LAHTF were raised by the AAA Work Group. First, what threshold, if any, should be used in the process for evaluating potential reductions due to option values? The thought is that the threshold would act as an "on-off" switch. If the methodology described above developed a reduction in excess of the threshold, a reduction up to 100 basis points could be used to set the minimum nonforfeiture interest rate. Otherwise, no reduction is permitted. Some sentiment for a threshold of 50 basis points was expressed but no



The AAA Report focused on three issues: (1) identifying methods for disclosing the methodology used by the insurer to set the contract interest rate; (2) identifying acceptable methods for determining the reduction in interest rate to reflect the option values in equity indexed annuities; and (3) recommending actuarial certifications concerning the acceptability of the additional offset.

consensus emerged. Second, what discount rate should be used to determine level annual option costs? LAHTF expressed a desire for a simple process for determining the discount rate. During the discussion, a question concerning the “as-of” date of the discount rate was asked but left unanswered.

NAIC staff will take the AAA Report and comments from the meeting and develop a draft Regulation. A conference call before the December NAIC meeting to further analyze the AAA Report and develop regulatory responses to the questions presented to LAHTF is anticipated.

New questions concerning the use of published Constant Maturity Treasury rate data to set the minimum nonforfeiture interest rate and ambiguities in the Model Annuity Nonforfeiture Law were identified in a memo from a regulator. These issues will be addressed by the AAA Work Group.

### General Nonforfeiture Project

Next on the agenda was a status report from the AAA Nonforfeiture Improvement Work Group concerning the General Nonforfeiture Law project. The report identified four issues in need of regulatory input:

(1) How broad a scope should be considered for a general nonforfeiture law? All lines? Life & health? Life and annuity? Life only? Individual & group? Individual only? While not unanimous, the regulatory leaned towards starting “small,” i.e. life and annuity.

(2) What is the proper balance between providing some form of equity versus comprehensive disclosure? Regulatory comments leaned towards the complete disclosure end of the range of choices.

(3) In what ways should nonguaranteed elements be addressed in any revision of the nonforfeiture law? Consistent with the regulatory view expressed to question two, nonguaranteed elements should be treated the same as guaranteed elements.

(4) What’s broken in the current nonforfeiture law? A few regulators felt that in today’s environment and current products, the current nonforfeiture is flawed in its entirety.

The AAA Work Group will utilize the input from the meeting to continue its work.

### Reserves for Variable Annuities – the “Dollar for Dollar” Issue

The next item was the “hot topic” on the agenda. The LAHTF exposed for comment a revised Actuarial Guideline 34. The guideline states “While the method described in this Actuarial Guideline does not reflect future partial withdrawal activity, the appointed actuary must perform a standalone asset adequacy analysis of the variable annuity contract risks. Such analysis shall ...”

The goal is for the NAIC to adopt the Actuarial Guideline at the December 2003 NAIC meeting. In order to accomplish this, LAHTF will be meeting with the NAIC A Committee in the near future to “get the ball rolling.”

During the process of exposing the revised Actuarial Guideline 34, some interesting questions were asked:

(1) For variable annuities with Guaranteed Living Benefits, Actuarial Guideline 39 requires a standalone asset adequacy analysis. A natural question is, “What requirements apply to a variable annuity containing both a Guaranteed Minimum Death Benefit and a Guaranteed Living Benefit?”

(2) Should the revised Actuarial Guideline 34 contain a minimum future partial withdrawal rate or a floor formulaic reserve that includes future partial withdrawals?

While a preliminary response to the first question was discussed, everyone agreed that more research was needed before the question could be answered with authority. LAHTF answered the second question with a “no.”

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**A few regulators felt that in today's environment and current products, the current nonforfeiture is flawed in its entirety.**

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continued on page 24



### **Reserves for Variable Annuities with Guarantees – The Long Term Solution**

The revised Actuarial Guideline 34 is considered the “short-term” solution to reserving for variable annuities with Guaranteed Minimum Death Benefits. The next agenda item was a report from the AAA Variable Annuity Reserving Work Group dealing with the “long-term” solution. The report started with a discussion of a timeline culminating in adoption by the NAIC of the new requirements at the December 2004 meeting. In order to meet the timeline, the AAA requested input on three questions:

(1) What form should the guidance take: Actuarial Guideline; Model Regulation under Section 9 of the SVL; or a new section in the SVL. LAHTF favored an Actuarial Guideline.

(2) Should the new guidance apply to enforce business at the effective date of the guidance? LAHTF leaned towards a “yes” response.

(3) What level of Conditional Tail Expectation (CTE) should establish reserve levels. The tentative answer from LAHTF was “65 percent.”

For those actuaries following this issue, the NAIC Life Risk-Based Capital Working Group exposed for comment the latest Report including recommendations from the AAA dealing with the so-called C-3 Phase II project. The Risk-Based Capital C-3 Phase II and the LAHTF Reserving for Variable Annuities with Guarantees project are intimately linked in a coordinated effort to address an extremely complex issue. Unfortunately, the much awaited Alternate Factors were not ready for distribution and exposure. A more detailed summary of the NAIC Life Risk-Based Capital meeting appears at the end of the summary of the LAHTF meeting.

### **Credit Insurance Mortality Tables**

LAHTF exposed for comment the July 2003 Draft Regulation concerning Credit Insurance Mortality Tables.

### **Other Items**

The task force adopted a response to a question from the Financial Analysis Handbook Working Group concerning the use of certain financial ratios to determine the adequacy of reserves. The response contained the following statement: “The LAHTF members believe that these tests are of limited value ... the consensus is that the review of the actuarial memorandum is the only effective way in which the adequacy of the reserves can be determined.”

LAHTF discussed the provision in the SVL for a reserve certification by the commissioner (Section 2 of the SVL). The LAHTF generally agreed that this requirement could be eliminated. LAHTF intends to review a number of issues concerning the SVL and after developing a position on each, produce an amendment that contains the

complete collection of revisions. With this strategy, it may take a few years to finalize this project. The next item to be reviewed by LAHTF is the need for deficiency reserves in light of asset adequacy analysis.

The last item on the agenda was a status report from the AAA Illustrations Work Group. The project arose out of some questions concerning the use of flat multipliers in setting the mortality assumption underlying the Illustration Actuary's Reports. The AAA Work Group previously recommended a course of action involving increased education for illustration actuaries and revising the applicable practice note. The status report discussed efforts to have a couple of sessions at SOA meetings in 2004 and contained a draft question and response for inclusion in the practice note. The question deals with the use of a fixed multiple of the 1975-80 Basic Table to risk classes that, when combined, equate to the old standard class. The draft question is currently being reviewed by the AAA Work Group charged with revising the Illustration Practice Note.

*Editor's note—see also an article by Tracy Polsgrove, chair of the AAA Work Group, in this newsletter.*

### Life Risk Based Capital Meeting

This meeting was dominated by the presentation of the Report from the AAA Life Capital Adequacy Subcommittee (LCAS) concerning "Setting Regulatory Risk-Based Capital Requirement for Variable Products with Guarantees (Excluding Index Guarantees)." The following significant changes from the December 2002 LCAS reports were noted:

(1) Variable life products were excluded while all variable annuities, even those without death benefits or living benefits, are included. Also included were insurance contracts that offer death benefit guarantees for specified investment funds.

(2) For purposes of modeling, the "working reserve" was set equal to the cash value. This is intended to simplify the modeling process.

(3) The calibration standards were modified.

(4) The risk measure was changed from modified CTE to CTE, and the modeling time horizon was changed to begin at time zero.

(4) The assumptions underlying the Alternate Factors for Guaranteed Minimum Death Benefits were finalized.

(5) An interest rate risk component for the guaranteed fund option was added.

(6) Insurers with guaranteed fund options within variable annuities are able to model their interest rate risk exposure as though they are not "exempt" from cash flow scenario testing.

Much to the disappointment of many interested participants in the process, the Alternate Factors and the Pre-Packaged Stochastic Equity Scenarios (10,000 scenarios for each of six asset classes) were not available for distribution.

The AAA Report was exposed for comment with the goal of having the recommendations adopted by year-end 2003 for implementation by 12/31/04.

Recommendations from the AAA LCAS concerning the treatment of the dividend liability addition to Total Adjusted Capital under modco reinsurance treaties and Worker's Compensation carve-out business were not acted upon by the NAIC Life RBC Working Group. □

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# UL Secondary Guarantee – A Rebirth of Fixed Life?

by David W. Simbro

*Editor's note: This article is based on David's presentation at the "Rebirth of Fixed Life Products" session at the Product Development Actuary Symposium last June.*

**H**as a "rebirth" occurred in the fixed-life product marketplace, in particular with UL products with a secondary guarantee (SG)? The answer to this question depends, in part, on one's interpretation of the word rebirth. Rebirth is commonly defined as a reincarnation. This might imply that the old form of fixed life product (traditional permanent life insurance) is no longer with us. This has

rebirth, it is valuable to contrast the two types of fixed life products.

UL with secondary guarantees is a UL product that includes a guarantee that coverage will continue uninterrupted, either until a specified attained age but more frequently until death, if certain premium commitments are met, even if the policy's account value is exhausted. My company, Northwestern Mutual, has not introduced such a product, so my view represents an outsider's view.

Lifetime guarantees aren't new. Traditional permanent insurance policies have a lifetime guarantee. What distinguishes UL with SG is first, the relatively low required premium commitment and second, the possible lack of any nonforfeiture (cash) value even if the premium commitment is kept.

A few quick examples demonstrate the low required premium commitment. The average required annual UL/SG premium (with a lifetime guarantee) for three respected companies, for a 65 year old male, best class, is roughly \$21 per \$1000 of face amount. In Canada, interestingly enough, the same three companies sell Term to 100, (which is less valuable because there are never any cash values and the coverage expires at age 100), for an average premium of roughly \$29 per \$1000. The 2001 CSO 4 percent net annual premium (payable to 100) is \$36; 1980 CSO 4 percent net annual premium is \$46. Of course, net annual premiums can be calculated on more favorable assumptions. The net annual premium (payable to 100) using 60 percent of 2001 CSO and 7 percent interest is \$21 per \$1000.



obviously yet to occur. However, it is true that secondary guarantees have many characteristics of traditional permanent life insurance, while having come to life in a different form. To better understand the

With interest rates today at such low levels, UL/SG interest crediting rates are such that many current illustrations produce account values that do not reach \$1000 per \$1000 by age 100, while account values on guaranteed assumptions frequently fall to zero after just a few years—even if the required premium commitment is kept. This is quite different from traditional permanent life insurance. Whether UL/SG policies are “lapse-supported” or not has been a matter of some actuarial debate. However, using any reasonable assumptions as to interest and mortality, there is no doubt that after many years of premium payments, the present value of future benefits (if the premium commitment is kept) can far exceed the present value of the required premium commitment. If a company can extinguish its obligation to pay the benefit, while incurring only a minimal nonforfeiture cost, if any, it will be a favorable economic event for the company.

I have been told by people who should know that a common long-term lapse assumption for UL/SG is between 3 percent and 4 percent annually. This means that after just 20 years, more than half of all policyholders would have lapsed their policies, and overall 2/3 to 3/4 of policies would generally be assumed to lapse without payment of a death benefit. Because UL/SG products are often sold in the estate market, and because of the existence of life settlement firms, it is very possible that lapse rates on these products could end up being quite a bit less. If this occurs, this may lead to a rebirth of another sort. Previously the insurance industry has suffered when it has counted on a certain level of lapse rates in the pricing of its products (e.g. tontines, earlier versions of Canadian Term to 100, and, most recently, long-term care).

Another example of UL/SG taking on a different form is with reserves. Traditional permanent life products have reserves held at a level sufficient to fund future benefits, based on reasonably conservative assumptions.

UL/SG products, however, may generate reserves at much lower levels. Creative uses of shadow accounts and/or the use of financial reinsurance can produce reserves significantly lower than the reserves for traditional products offering the same death benefit guarantee, effectively creating a reserve “discount” to recognize assumed lapses and more aggressive mortality assumptions. And so we have actuarial seminars teaching how to minimize reserves on UL/SG products.

Will the rebirth of fixed life products via UL/SG work financially for insurance companies? Insurance companies are paid to take risks. Whether the prices they charge are sufficient for the risks they take can only be known over time, as experience unfolds. All that an outsider can say about the risks inherent in many of these products is that they appear to be considerable. The low premium levels can be justified using an infinite number of combinations of mortality, interest and lapse assumptions, but to the extent they are justified by a consistently favorable view of mortality (low), interest (high) and lapses (high), companies increase their own risk of not being fairly paid. □



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# Annual Meeting Session: Hidden Cost of Product Complexity

*Editor's Note: The following three articles are based on a Product Development Section-sponsored session at the 2003 Annual Meeting on the Hidden Costs of Product Complexity. These three speakers have all graciously agreed to write up their presentations for Product Matters.*

## Hidden Costs of Product Complexity

by Vincent J. Granieri

### Introduction

**T**here was a time when product-driven companies at the cutting edge of insurance innovation were the envy of their peers. Early entry brought brand recognition and respect in the marketplace. Competitors would scramble to develop their version of the innovative product, but this took significant time. The world has changed somewhat since then, which is not to say that it is *disadvantageous* to be an early entrant. However, clearly there are more things to consider when pursuing a first-to-market strategy. One of the issues that arises in these circumstances is the effects of the increased complexity of some of today's new products on profitability. Complexity can be defined in many ways, but for purposes of this article, we define it as being different than what is currently done. More and more, companies are recognizing that there are hidden costs of product complexity

and are reacting to limit their exposure in this regard. This article will outline some of the sources of these hidden costs.

### People

People-related costs, principally salaries and benefits, remain the biggest single expense category for life and annuity writers. It may be surprising then that people costs are listed among the hidden costs of product complexity. While it is clear that people cost money, it is less obvious how people costs can skyrocket when bringing complex products to market.

Companies can incur hidden people costs if there is an **expertise** gap between the company's skill set and that needed to launch the product successfully. For example, a company wishes to introduce a multi-bucket variable annuity product but lacks the necessary modeling expertise to price the product. The company may choose to utilize its own resources and allow them to learn to model the product's complexities on the job. Alternatively, the company may decide to enlist the aid of a consultant. Under both of these circumstances, the eventual costs are likely hard to know in advance or to quantify after the fact and thus are hidden in assessing the success of the new product.

Similar gaps could exist in the acquisition and/or administration of the product. Buying or renting expertise may be the correct solution or the only solution, but it tends to be costly in the short run.

Another hidden people cost is the **opportunity cost** of a given decision. In today's competitive environment, most, if not all, of a company's resources are constantly at work in one form or another. There is little slack



designed into the system. Therefore, the decision to commit resources to Project A means that some other project will likely lose resources. Since product issues are at the forefront of a company's strategic focus, it is most likely that the lion's share of a company's resources will be committed to product development at the expense of other areas. This suggests that prioritization is a key determinant of success.

Year after year of decisions favoring product development and customer acquisition over other less visible areas will eventually lead to a backlog of **deferred maintenance projects** that threatens the organization's efficiency. When a product is first introduced, it's easy to push aside programming product features that commence in year five because "we have plenty of time to deal with so-called Day Two Issues." Sooner or later, the time comes to support those features. We often find that we still don't have time to lay aside the glamorous new product development initiatives and work on the more mundane maintenance projects. The hidden costs still exist, whether manifested as an inability to bring new products to market or the extra costs of manual workarounds and the occasional error due to manual intervention.

## Communication

Complex products may require extra time and effort to communicate and explain them sufficiently to the home office, the field and regulators. Home office associates in virtually every functional area—new business, IT, policyholder service and legal to name a few—need to be familiar with the product to carry out their duties. At times, even the other side of the actuarial house, the valuation, cash-flow testing and reporting actuaries is overlooked. The field force must also comprehend the product's features and gain comfort with them to successfully sell the product and avoid market conduct problems. Regulators must also understand the product to ensure swift passage through the approval process.

Each of these situations potentially adds costs to the product development process. **Training** costs escalate with increasing complexity. It is shortsighted yet tempting to cut corners in this area. Most companies find these dollars to be well spent when compared to the cost of cleaning up a problem that arises out of lack of training. **Market conduct** issues are less likely to occur if proper communication and training

is implemented to the field force. Again, prevention is preferable but this adds to costs. Complex products may also lead to more **state variations** and/or an **extended product approval process**.

## Scale

It is more difficult to achieve **critical mass** in a complex product because of its unique nature. Being unique has advantages but it also means that the product shares fewer elements with other product offerings. New processes, separate administrative platforms and the like contribute to higher levels of fixed costs or initial costs that will produce high unit costs for the product. Eventually, it is expected that sufficient sales are achieved to bring these costs back in line with pricing. In the meantime, hidden costs of small scale are experienced.

Particular issues arise when products are dependent on derivative **investment products** to achieve success. Huge scale is a prerequisite to a cost-effective hedging program, for example. The same can be said about unique administrative platforms to support complex product features or strategies, but that is the subject of a companion article (see Van Beach's article on page 32).

## Features

Complex product features may be difficult to properly price, even in an uncompetitive environment. Today's insurance market is efficient in exploiting any weaknesses through **antiselection**. Disproportionate sales at certain ages or of certain coverages, once overlooked in the euphoria of a new product's introduction, are now scrutinized. Still, the immediate cost of the design flaw and the cost to correct it through redesign are typically unanticipated.

## Conclusion

In this article, we explored the hidden costs of product complexity. To some degree, these hidden costs are similar to those encountered in developing any product. However, as complexity increases, each layer of costs becomes more likely to be incurred and more likely to be substantial. This suggests that companies will increasingly consider ways to protect their innovative ideas from being copied to ensure that these hidden costs can be recouped (see Tom Bakos's article on page 30). □

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## Annual Meeting Session: Hidden Cost of Product Complexity

# Blazing Trails—Using Patents to Recover the Cost of Innovation

by Tom Bakos

**Y**our Yogi Berra travel planner is useless when there is no fork in the road. Even a decision to take the path less traveled is not an option when ahead of you, as far as you can see, is nothing but a well-beaten trail. Yet, you know there is a better way off to the left or right somewhere.

Blazing a new trail is riskier than following the old one and usually requires an investment in time, effort and money. These are things to be considered before hacking a new path through the forest, or in our case, the forest of product development. The cost of being innovative needs to be identified. This is often overlooked and among the hidden costs of product development.

The basic rule in blazing new trails is, if you have gone as far as you can go and are still nowhere, suck it up and try again. The reality is you can only expect a payoff from success. But, even in success there is a challenge. Success means two things: (1) you have found a new or a better way, and (2),

because of the trail you left behind, so has everyone else. The difference is you've paid for it but your competitors haven't.

So, the recoverability of any time, effort and money you have invested in inventive, trail-blazing product design becomes an issue. Typically, you would want to roll these costs (including the cost of the failures preceding the ultimate success) into the unit expense assumptions of the new product and amortize them through sales of the successful new design. But, if your competitors can benefit from your inventive efforts just by following the trail you blazed, they could offer your new product design at a lower premium because they do not have your developmental cost burden. Typically, in the insurance industry, you could be a leader or a follower. In the past, the only advantage a leader got was being first. This is becoming less of an advantage.

Fortunately, there is a solution to the problem of how one recovers the cost of blazing new trails. Some of us may remember it from the old Part 5 syllabus—toll roads! Toll roads are a metaphor for the way patents can be used to protect your investment in inventive product design processes. Just as a toll road will let you recover the cost of blazing a new trail through the forest, a patent allows you to protect, and it encourages, your investment in new product development by granting you exclusive use of your invention for a limited period of time. You can also license your patented invention to others and recover your developmental costs through royalties (tolls).

Since the development of insurance ideas into patentable inventions is a relatively new business approach in the insurance industry and may seem rather foreign to most practitioners, a little background may be helpful. The U. S. Constitution provides for the protection of intellectual property through



issuance of a patent. Federal law allows a patent to be granted to the inventor of a process, machine, article of manufacture or composition of matter. Typically, in the insurance industry, most inventions fall into the *process* category of patentable subject matter. These types of insurance patents are called *business method* patents. A *business method* is a type of *process*.

In order to receive a patent from the United States Patent and Trademark Office (USPTO) the business method must be new, useful and not obvious. "Non-obviousness" is judged from the point of view of someone skilled in the art of the business method claimed by reference only to "prior art." Prior art is any written publication publicly available prior to the date the invention was made. In addition, it is important for the business method to have some "technical effect." This follows from the fact that business method patents fall into patent class 705 which is reserved for "apparatus and corresponding methods for performing data processing operations, in which there is a significant change in the data ..."

It was the desire to protect innovative efforts in software design which prompted the recent explosion in business method patents. Software has a "technical effect" through its manipulation of data as described in the class 705 definition. Of course, most insurance products are implemented through the use of computers and software. It is natural, therefore, that insurance business method patents be expressed in terms of a data processing, computer implementation. The useful result of these insurance inventions is, typically, a rate or premium calculation although the application of an insurance business method can produce other useful results.

Perhaps an example would be helpful. Patent #5,754,980 is, essentially, for a process used in the issuance of a reversionary annuity policy. A reversionary annuity pays a death benefit to a beneficiary if the beneficiary survives the insured but no benefit if the beneficiary dies first. The business method patented in this invention is the use of underwriting data on the beneficiary life as well as on the insured to set the premium for the reversionary annuity. The use of underwriting data on a *beneficiary* to establish a premium rate for a life insurance policy was not taught by the prior art.

Another, slightly more complicated example is patent #5,704,045, which is for a

method of matching investor capital to insurance risk in a process that can be called insurance securitization. In effect, this new business method "replaces" traditional insurance methodologies by transferring 100 percent of a risk to investors who have put up in an earmarked reserve funds equal to a maximum loss if the insured event occurs. While the securitization process can be worked through an insurance company, the inventors don't require that.

Time and effort went into the development of these business methods. And this is also true for the other insurance inventions with patents issued or pending (currently well over 500). You may be involved in searching for solutions to problems associated with underwriting insurance policies; marketing insurance; structuring or packaging insurance products to reduce cost, spread risk, or tailor benefits to specific needs; or taking advantage in new technologies. One thing that's certain is that any solution you find, once revealed, will probably be easily copied and become a tempting new path for followers—just like a new trail cut through the forest.

The advantage of a patent is that it gives the inventor exclusive use of his or her invention that includes the right to license it to others for a fee. This exclusivity is meant to encourage invention and the sharing of inventive ideas by allowing the inventor the sole opportunity to benefit financially from his or her inventive effort. Of course, the level of financial gain, if any, depends entirely on the quality of the invention. Nevertheless, any inventive effort hidden in a product development solution is intellectual property worth protecting with a patent. A patent allows the inventor to recover his cost of development through either the pricing of products using the invention or receiving royalties for licensing the invention to others.

The use of patents to recover the cost of product innovation is a well-established practice in many other industries. In the insurance industry, however, it has only recently become more widely recognized as a valuable tool. An experienced product development actuary will recognize product innovation when he or she sees it or creates it. Seeking the advice of a qualified patent agent or attorney to determine if this inventive effort is patentable is a step that should be considered. □

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## Hidden Costs of Administering Complex Products

by Van Beach

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**For the company to have the best chance to meet profitability goals, the company must select the administration solution that minimizes the combination of the explicit costs and the hidden costs.**

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**P**roduct innovation is one of the keys, if not *the* key, for sustaining a successful product manufacturing business. Without innovation, products are differentiated primarily by price, leading to intense competition and erosion of pricing margins. A new, innovative product may offer the potential to uniquely satisfy a market niche and produce greater returns.

Innovative products generally have complex features that make them uniquely different from other products—therein lies the potential. But companies that choose to pursue new designs also incur additional costs as a result of the complexity—research and development, additional state filing costs, agent training and education, etc. Likely the largest cost, however, is the cost to modify an existing administration system or purchase a new system to accommodate the new product features.

### More Than Just the Price Tag

The cost associated with various administration solutions seems explicit and easily quantifiable—just look at the “price tag.” This explicit cost is often where the cost-benefit analysis ends, but there may be other “hidden” costs associated with an administration solution that will have important implications for the success of the product and the company. For the company to have the best chance to meet profitability goals, the company must select the administration solution that minimizes the combination of the explicit costs and the hidden costs.

### Hidden Administration Costs

Although it is more difficult to quantify the financial impact of these costs, they will impact profitability and need to be considered.

- **Product Design Constraints**  
In many cases the administration system simply can't accommodate all of

the innovative features of the new product, so these features are removed from the final product specifications. As a result, the product that is brought to market may only have a limited ability to address the market's needs. This leaves room for competitors to respond to the unmet needs and ultimately the system limitations will cost the company money in the form of lost sales and reduced market share.

- **Inefficient Operations**

When implementing a system to accommodate a new product, a typical goal is to meet the minimum functionality requirements while keeping the initial investment as low as possible. This often includes seemingly less expensive manual processes instead of systematic workflow designs. However, the true cost of this short-sighted approach is realized as the company loses money through increased operational costs for the life time of the system. Highly manual procedures cost the company money through additional staff, extra training and documentation, slower processing speed, etc. In addition, manual procedures introduce errors that are expensive to identify and fix and have many potential bad consequences (data reliability issues, customer service complaints, unrecoverable payments to unintended parties, etc.).

- **Increased Time-to-Market**

The implementation of the solution could result in an extended time-to-market for the product. Even if the administration system is being implemented on a fixed-cost basis, an extended implementation will cost the company money in the form of lost sales.

- **Inability to Monitor Experience**

If the data collected and stored by the system is incomplete, it may not be possible to monitor and value the emerging block of business. As products become more complicated, with more features, benefits, etc., the need for detailed data regarding the specific benefits and associated premiums and claims becomes more critical. The risk is that a given product feature or benefit was mispriced and is costing the company money. If there is not sufficient detail in the system to identify specific benefits, the aggregate claims and premium data might mask the emerging experience. This will prevent the company from identifying the problem and taking corrective action to prevent further loss.

- **Lost Cross-Selling Opportunities**

Additional product complexity will allow a product to specifically meet the needs of the market. With each additional benefit, feature and option selected, the company is building a detailed profile of the policyholder or insured. This information, if captured and combined with other sources of customer information, can be used for future cross-selling and customer relationship management initiatives. However, if the system does not adequately capture this detail, or the system cannot link policyholders or insured across multiple products, the system is costing the company money from lost cross-selling opportunities.

- **Misleading Pricing Data**

Product complexity is often added in the form of additional risk classifications. This allows the insured to be included in a cohort where the risk characteristics are increasingly homogeneous and the product pricing reflects the specific risk characteristics. In many cases, however, exceptions and “business decisions” are made where the insured gets a premium rate that is better than his risk characteristics would indicate. The effects of these business decisions are magnified as the number of risk classifications is increased and the size of the risk cohort is reduced. An administration system needs to be able to differentiate between the “true” risk classification and the “sold” risk classification. If this differentiation is not available, the experience that emerges from this block will not

accurately reflect the underlying risks. The company will be affected financially through the skewed pricing assumptions that will be based on this experience.

- **Locked Into Old Technology**

The company may not be able to upgrade to new technology because the administration system was “hardwired” to accommodate the unique product features. This is a common dilemma faced when the business rules defining the product are inextricably intertwined with the underlying technology. In this case, any custom modifications that were made when the product was implemented would again need to be made after the upgrade. The company, if it were to choose to pursue the upgrade, would again incur the customization costs to implement the unique product features.

- **Discounted Value of the Block**

Unique products, by definition, are different from other products on the market. If the company chooses to sell the block of unique products, this complexity could impact the ability of the company to move the block. The acquiring company may find it difficult or impossible to achieve economies of scale by integrating with other blocks. If the block can't be integrated, acquiring companies may be hesitant to assume potentially costly administrative operations. The impact to the selling company is a limited market and likely a discounted selling price.

## Conclusion

Administration systems directly impact a company's ability to innovate. Beyond the explicit costs of implementing an administration solution for a complex product, there are many other potential “hidden” costs. Both the explicit cost (i.e., the “price tag”) and the “hidden” costs need to be considered when choosing an administration solution. The best solution may require a larger initial investment, but by reducing the ongoing maintenance costs and minimizing opportunity costs the company can save money over the life of the system. By minimizing the combination of the explicit costs and the hidden costs, the company will have the best chance to meet profitability goals for the current product and leverage the solution to continue to be an effective, profitable innovator. □



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# Survey on Pricing for Risk

by Novian Junus

The Pricing for Risk subgroup of the Risk Management Task Force performed a survey in 2002 to determine prevalence of practices with regard to reflecting risk in pricing and use of various profit measures. This survey was cosponsored and funded by the Investment and Individual Life and Annuity Product Development Sections. There were 275 respondents to the survey, mostly actuaries practicing in the United States, from a broad range of employers and practice areas. The results show that, in general, asset-related risk is better modeled than liability related risk. This survey is a good starting point for more detailed discussions and determination of sound practices for reflecting risk in pricing. The Pricing for Risk Subgroup has finalized a report summarizing the results of the survey and the report can be found in the RMTF section of the SOA Web site at <http://www.soa.org/sections/rmtf/rmtf.html>. □



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