



Product Matters!

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

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Comments from the Chair

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by Noel J. Abkemeier

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The Product Development Section has just completed its 20th year — and what a successful 20 years it has been! Over the years, the Section has grown and broadened, and now provides a broad array of programs and services to support the needs of product development actuaries. It has been steady progress, and we plan to have more of the same. It is MORE because we plan to expand and intensify existing programs and activities, and it is the SAME because we will be continuing recent successful programs and bringing new activities planned during the past year to fruition.

But before I look forward, I'd like to take a brief look back, and thank a few people for their contributions. I'd like to congratulate Mary Bahna-Nolan for her leadership as chairperson for the last year and thank her for three years of service. Mary led us in establishing the Product Development Actuary Symposium as an annual highlight program for product development actuaries, in setting a direction to achieve more cross education through a papers competition and in redirecting our efforts to sponsor more research that supports product development work. All of these activities will provide good momentum as we begin our next 20 years.

I would also like to thank Lorraine Mayne and Ken McCullum for their

contributions as they complete their three years of service on the Section Council. Lorraine represented the Section for SOA Annual Meeting planning and helped develop our Web site, as well as sharing the load for recruiting speakers. Ken developed our first seminar within a meeting and led our new logo development, and also helped with speaker recruiting.

I welcome our newest council members Keith Dall, Abe Gootzeit and Kelly Levy. We look forward to the contributions you will make over the next three years. Returning council members are Kevin Howard, vice-chairman; Anne Katcher, secretary; Nancy Kenneally, treasurer; Paul Haley, Susan Kimball and myself.

Papers Competition

To mark our 20th anniversary, we have announced a papers competition on "Product Risk and Its Management." This is open to all SOA members and provides awards of \$5,000 for 1st place, \$3,000 for 2nd place, and \$1,000 for one or more 3rd places. Participants must choose a type of product risk and address its issues and solutions. The competition opened very recently at the SOA Annual Meeting and closes April 1, 2003. A more complete description is provided in an article on page 26 and on the Section Web site.

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475 N. Martingale Road, Suite 800
Schaumburg, IL 60173-2226

Phone: 847-706-3500

Fax: 847-706-3599

World Wide Web: <http://www.soa.org>

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2002-2003 SECTION LEADERSHIP

Noel J. Abkemeier, Chairperson
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Nancy M. Kenneally, Treasurer
Keith Dall, Council Member
Abraham S. Gootzeit, Council Member
Paul A. Haley, Council Member
Susan Kimball, Council Member
Kelly A. Levy, Council Member

Douglas C. Doll, Newsletter Editor
Tillinghast-Towers Perrin
3500 Lenox Road, Suite 900
Atlanta, GA 30326-1119
PHONE: (404) 365-1628
FAX: (404) 365-1663
E-MAIL: doug.doll@tillinghast.com

Joe Adduci, DTP Coordinator • NAPP Member
PHONE: (847) 706-3548
FAX: (847) 273-8548
E-MAIL: jadduci@soa.org

Clay Baznik, Publications Director
E-MAIL: cbaznik@soa.org

Lois Chinnock, Staff Liaison
E-MAIL: lchinnock@soa.org

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Articles Needed for the News

Your help and participation are needed and welcomed. All articles will include a byline to give you full credit for your effort.

Product Matters! is published quarterly as follows:

Publication Date	Submission Deadline
April 2003	Monday, February 17, 2003
July 2003	Monday, May 19, 2003

Preferred Format

In order to efficiently handle articles, please use the following format when submitting articles:

Please e-mail your articles as attachments in either MS Word (.doc) or Simple Text (.txt) files. We are able to convert most PC-compatible software packages. Headlines are typed upper and lower case. Please use a 10 point Times New Roman font for the body text. Carriage returns are put in only at the end of paragraphs. The right-hand margin is not justified. Author photos are accepted in .jpg format (300 dpi) to accompany their stories.

If you must submit articles in another manner, please call Joe Adduci, 847-706-3548, at the Society of Actuaries for help.

Please send an electronic copy of the article to:

Douglas C. Doll, FSA
Tillinghast-Towers Perrin
3500 Lenox Rd., Ste. 900
Atlanta, GA 30326
Phone: (404) 365-1628
Fax: (404) 365-1663
E-mail: doug.doll@tillinghast.com



Thank you for your help.



SOCIETY OF ACTUARIES

Not only is this a fitting anniversary recognition, but it also should provide good resource material for product development actuaries. It also may help identify additional areas in which we can meet member needs through either research or seminars.

Looking Forward

Many decades ago, it was indicated that 90 percent of all scientific research had been performed in the last 10 years. The statement is still true and can also be applied to life insurance and annuity product development. How many of today's products and issues did not exist in 1992, much less 1982?

Term insurance has grown from simple structures to layered guarantees that must fit into XXX and AXXX. Variable life has achieved great significance and has incorporated derivative-based risk through its secondary guarantees. Multiple underwriting classes and distribution methods have brought new dimensions to underwriting quantification. Reinsurance has become a profit component rather than a basic risk management tool. Variable annuities have brought an alphabet soup of derivative-based benefits (GMDB, GMIB, GMAB, GMWB, GPAF, EEB) that have added a new dimension to product risk. Equity-indexed and other indexed products have appeared on the scene, and the list goes on.

The explosion of computer capabilities has made much of this possible by providing the tools to manage the products and their development as well as guarantees that product evolution will continue at a brisk pace. The unknown areas and experience with recently developed products and the additional needs that will be created by tomorrow's products can help create a blueprint for what the Section should do. It was with this in mind that, earlier this year, the Council committed itself to increasing the emphasis on research that supports the needs of product development actuaries.

We recently requested suggestions from Section members for research topics to pursue and are currently prioritizing these with other potential projects. Our plan is to perform at least one research project annually, and to sponsor several more over the next few years. This is easily covered by our annual dues and surpluses accumulated from prior years. Our initial project should be under way in early 2003 and we should

have a mid-term research plan in the next *Product Matters!*

The third annual Product Development Actuary Symposium is scheduled for June 12-13 in Chicago. Once again, it is co-sponsored with the Reinsurance, Nontraditional Marketing and Actuary of the Future Sections. The most recent symposium had 150 attendees and we look forward to continuing growth this time. Additionally, we are continuing to expand and enrich the program to address emerging issues. A more complete description can be found on page 29.

Product Matters! has shifted into high gear and will be published three times this year, with next issues in April 2003 and July 2003. Doug Doll, our editor, has broadened the content to include a regulatory update, which should be of high relevance for product work. The frequency of publication will also better assure timeliness of the articles.

Our Section Web site within the SOA Web site contains a valuable array of links, meetings/sessions, publications and Section information, which we encourage you to check out. During the next year, we plan to broaden it even more with the help of our web liaison, Christopher Poirier. He also would appreciate any suggestions you might have.

I hope that all of these activities will meet your needs. If you have any suggestions or requests, please let me or any other Section Council member know.

Finally, I would like to comment on the long-term direction of Section activities. In June, the Task Force on Sections and Practice Areas recommended that sections and practice areas ultimately be brought more closely together under a "Section Driven" structure under which certain sections would take leadership of practice activities. While this is a long-term objective for which specifics must still be developed, communication, interaction and support between the Life Practice Area and the Product Development Section are being strengthened. Because of this, we are working more closely with and getting additional support from Narayan Shankar, the SOA's Life Practice Fellow. I will keep you informed as other features of the restructuring become known.

Over the coming year, the Section Council looks forward to serving you and getting your support as we address our common needs. □

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Noel J. Abkemeier, FSA, MAAA, is a consulting actuary at Milliman USA in Williamsburg, VA, and is chairperson of the Product Development Section. He can be reached at noel.abkemeier@milliman.com.

What We Did On Our Summer Vacation:

The Joint Regional Seminar in the Far East

by Jay M. Jaffe

Editor's Note: The following is a diary of the trip which Mary-Bahna Nolan, Al Klein and the writer of this article took to four cities in Asia to represent the SOA at the Joint Regional Seminars. The Seminars were held in Singapore, Shenzhen (the Peoples Republic of China), Taipei (the Republic of China) and Seoul (Korea).

It was the trip of a lifetime because of the warmth and hospitality of all the actuaries we met during the seminars. The purpose of this article is to share our excitement and pride at the reception we received as representatives of the SOA.

Our voyage was sponsored in part by the Nontraditional Marketing, Product Development and Reinsurance Sections. The trip was an extension of the June 2002 Product Development Seminar (Chicago).

The purpose of the seminars was twofold; first, to provide a way for many of our members in the Far East to obtain Professional Development credits without having to travel to North America, and second, to help many of the younger actuaries in Asia learn about some of the methods and concepts being used by actuaries in other nations for creating and developing new life and annuity products.

Two representatives of the Faculty/ Institute of Actuaries who are based on Hong Kong joined the three of us from the SOA.

June 28, 2002

We depart O'Hare for Singapore. Nothing prepares you for the 24-hour trip and the crossing of the International Date Line. The only way to describe the feeling is to compare it to an all-night study session in college. It feels great to disembark from the plane in Singapore and breathe fresh air, even though it is after midnight local time and extremely warm and humid.

June 30, 2002

We missed June 29 when we passed the International Date Line. Today is one of our few free days on the trip. We know we are physically

in Singapore but our bodies are somewhere closer to North America. After a night's sleep and a shower, we spend the day exploring one of the main attractions of Singapore called Sentosa. It is an island with many different types of recreational facilities, a pavilion with a historical exhibit of Singapore and many other attractions. There is a familiar feel to the area because Singapore is a new city with wide streets, skyscrapers, and so forth.

In the late afternoon we meet the Singapore organizing committee for refreshments. This meeting has to end early because the World Cup final (Brazil 2, Germany 0) starts at about seven p.m. and our hosts want to be in front of the TV. For dinner we went to one of the many "honker" areas, or outdoor markets, for a seafood dinner. Afterward we wandered around one of the major shopping streets and watched the end of the football (not soccer) game on a gigantic outdoor screen with thousands of Singaporeans.

July 1, 2002

The first seminar begins about 9:30 a.m. The audience includes actuaries not only from Singapore but also from Malaysia, Philippines and India. We quickly observe that the actuaries with a Singapore business address come not only from Singapore but also from the U.K., Australia, India, South Africa, Indonesia and other countries. It is truly an international audience of actuaries.

It is announced that the session is the largest actuarial meeting in at least five years in Singapore. Our presentations go well and the organizing committee hosts us at an Indochinese dinner. The evening allows for an exchange of personal information and, not unexpectedly, we discover many common non-actuarial interests. By the end of the evening we've made several new friends. This experience will be repeated throughout the trip.

July 2, 2002

We are up before sunrise for the flight to Hong Kong. Because Singapore is near the equator, daytime and night are roughly equal in length

The seminars were held in Singapore, Shenzhen, Taipei and Seoul. It was the trip of a lifetime because of the warmth and hospitality of all the actuaries we met during the seminars.

there. There is also constant heat and high humidity.

We arrive on time in Hong Kong. The flight on Singapore Airlines was delightful. The immigration line in Hong Kong is long and it takes nearly an hour to clear. When we leave customs, Sarah Hui from the SOA Hong Kong office is there to greet us and lead us on the next two stops of our trip. She has arranged for a very brief tour of Hong Kong including a visit to Victoria Peak and a quick lunch. The view from the peak is spectacular.

From there, we travel to Shenzhen in the People's Republic of China. It takes nearly 2 hours to make the trip even though it is not that many miles. Part of this time is spent clearing Chinese immigration. Fortunately, all of us had obtained the required visas in Chicago, and we pass immigration without a problem. We arrive at the hotel in Shenzhen just in time for a Chinese banquet with the participants. Almost immediately we are greeted by familiar faces as several of the participants have worked in the United States or Canada. It truly is a small world considering we're about 10,000 miles from home.

July 3, 2002

The meeting in Shenzhen has over 100 participants from both the PRC (People's Republic of China) and Hong Kong. As mentioned before, Shenzhen is close to Hong Kong, and, judging by the traffic on the road, there appears to be very open commerce between these two cities.

When we sit down, there is tea at each chair and the cups are refilled regularly. Wouldn't it be great to have coffee or tea delivered to each seat at the next SOA meeting? (This probably won't happen because we couldn't agree on the blend of coffee, regular or decaf, cappuccino or latte.)

The presentations go more smoothly than in Singapore. We are all now more comfortable with the program and the time allotted for each presentation.

During the Q&A one of the actuaries from China asks how to manage a company that is growing exceptionally rapidly. It has been a long time since any of us from North America have been faced with this matter. The responses to this question are centered on adopting good financial management techniques, but these may be difficult to implement in an environment which is "top-line" oriented. The Q&A session ends just before six p.m.

It has been a long day. We now have to drive back to the Hong Kong airport (the new airport is magnificent) for the flight to Taipei, Taiwan. One of the Hong Kong actuaries has told us he is the number-three ranked flyer for Cathay Pacific Airlines, and as soon as we enter the terminal he is greeted by name. We all go to the airline lounge for dinner (yes, Cathay Pacific provides good food for its first and business class flyers in its lounges) and then take a leisurely stroll to the gate. The plane leaves on time.

Our plane makes two or three attempts to land in Taipei. A typhoon has just hit Taipei and prevents our landing. We fly back to Hong Kong and finally deplane well after 1:00 a.m. The next stop is the airport hotel for a room (it is about 2:30 a.m. when we get to our rooms) and to await a call as to when we'll depart in the morning. We are all worried about the Taipei seminar because it is scheduled to start about 9 a.m. and there is no way we can make the meeting.

July 4, 2002

Sarah has alerted the seminar contacts in Taipei of the problem. The two Hong Kong actuaries with us are able to take a very early morning flight (because they are carrying only hand baggage) and arrive in Taipei about 10 a.m. Obviously, the seminar starts without the rest of us. We finally arrive in time for a box lunch and the afternoon session.

We are beginning to understand how life products are developed in many parts of the Far East. It seems that the insurance authorities require a net premium to be calculated and then the net premium is loaded. At this point there appears to be very little profit- or cash-flow-testing, as in North America or the United Kingdom.

We all note that we're missing Independence Day back home and all the celebrations. Our hosts in Taipei invite the speakers to a special dinner with the local organizing group. It is another very friendly evening that ends on the early side in consideration of our travel problems from the prior evening. The fireworks will have to wait until next year.

July 5, 2002

The meeting continues in the morning. Taipei's program is a one-and-a-half-day session and includes case studies. There is a very high level

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of energy from the audience during the case study discussions.

We end in the early afternoon and make plans to go to one of the local night markets for dinner and exploring. Getting to the night market involves using Taipei's public transportation system, but we manage without a hitch. Actually, we have no problem because one of the local organizers has asked her assistant, who is from Taipei, to escort us to the market on the subway. The night market is a beehive of activity with stall after stall of merchandise and hundreds of food stands. We particularly like an unusual ice cream dessert and wonder how it could be franchised in North America.

After the night market we go to the famous Palace Hotel, which has been host to U.S. presidents and other foreign dignitaries and events. We tour the hotel and linger for a rest in the hotel's 60s bar before returning to our hotel.

July 6, 2002

Saturday is a totally free day. We've arranged for a guided tour of Taipei. The first part of the day is spent on the outskirts of the city, and then we visit the Chiang Kai-shek memorial during a torrential rainstorm caused by one of the many typhoons, which hit Taipei each year. The afternoon is spent with our guide at the National Palace Museum that houses perhaps the finest collection of Chinese paintings, ceramics and sculpture in the world. This is a must stop on any trip to the Far East.

Sarah departs for Hong Kong, and we're now on our own. We appreciated having Sarah to help us, especially when we needed someone who could converse in the local language.

Dinner is at a local restaurant recommended by one of our hosts; we eat typical Taiwanese food. Fortunately, the restaurant has a menu with pictures so we are able to order in spite of not speaking the local language.

July 7, 2002

The president of the Actuarial Institute of Republic of China and his wife pick us up early for a very special treat. We are going to one of the famous Taipei dumpling restaurants. We plan to be the first in line because we need to depart for the airport immediately after the meal. When we arrive at the restaurant, there is already a line of people waiting to enter.

*Jay M. Jaffe, FSA, MAAA,
is President of Actuarial
Enterprises, Ltd. in
Chicago, IL. He can be
reached at jayjaffe@
compuserve.com.*

Everything works out perfectly. The dumplings are unique and delicious. We can be seated in the first sitting. Our hosts explain all that we are eating and have ordered a wide variety of dishes for us to taste. The texture and taste of the dumplings will linger all day.

Our plane for Seoul departs as scheduled and we arrive at the hotel around dinnertime. The hotel is near tomorrow's meeting site and in a very active section of Seoul. All around us are reminders of the World Cup, which finished just one week ago. For dinner we select a Korean barbecue, which is different from North American barbecue. This is also our first encounter with all the condiments served with Korean meals.

July 8, 2002

Another 100+ audience is in attendance at the seminar. There are several familiar faces in the audience, and our final session goes off smoothly. By this time we feel we could deliver each other's presentation but resist the temptation to switch topics.

One difference in Seoul is that the session is conducted with simultaneous translation. This is the only session where English was not the only language used. Having simultaneous translation means that we need to keep the presentations simpler and avoid most attempts at humor.

The Korean Actuarial Association has arranged a special dinner for us at a very traditional Korean restaurant. Afterward, there is an exhibition of several Korean folk dances and songs. We return to the hotel and meet in the Irish pub to say farewell to our fellow speakers from Hong Kong.

July 9, 2002

The formal part of the trip is over. Mary and Al head to Beijing for a couple of days of sightseeing. I head home. We all have special memories of the trip and hope that we have contributed to the actuarial knowledge of those who attended the sessions. The trip home seems short (scheduled for only 12-14 hours) as compared to our outbound journey. We know we will have jet lag when we return to Chicago, but this is a very small factor considering the many new friends we've met during the past 12 days. □

Federal Tax Issues Under the 2001 CSO Mortality Tables

by John T. Adney and John J. Spina

Federal legislation enacted in the 1980s introduced the notion that the tax treatment of life insurers and life insurance contracts should depend in part on the mortality tables “prevailing” at the time that the contracts are issued and the reserves for the contracts are first established. In 1984, Congress coined and defined the term “prevailing commissioners’ standard tables” for life insurance company tax purposes, thereby creating a device by which the deductible amount of life insurance reserves could be restricted to the lowest amount supportable by the officially promulgated mortality standards for determining reserves that were current when the reserves were set up. Then, with some modifications, in 1988 Congress copied this device for the broader purpose of constraining the investment orientation of life insurance. After the 1988 legislation, the “prevailing commissioners’ standard tables” limited the scope of life insurance contracts that could generate tax-free death benefits and a cash value buildup not currently taxed, and even further limited those from which lifetime distributions could be taken in a tax-favored manner.

The congressional insistence on “currency” in the mortality assumptions to be utilized in calculating the deductible reserve amounts and the maximum premiums or cash values under life insurance contracts necessitated the crafting of a complex set of rules in the tax law — hardly a surprise — including both rules of definition and rules of transition. The definitional rules were needed to say what mortality standard was current, or “prevailing,” at any given time for a specified class of reserves (and later on for contracts themselves), while the transitional rules were needed to address the prospect that the standard would change with the passage of time. Congress was no stranger to the latter possibility in 1984: the 1980 Commissioners Standard Ordinary Tables (“1980 CSO Tables”) were in the process of becoming the new prevailing tables, supplanting their 1958 predecessor, as Congress was completing its

historic re-write of the life insurance company tax rules.

Now, with improvements in mortality rates over the two decades since the advent of the 1980 CSO Tables, the National Association of Insurance Commissioners (“NAIC”) is about to promulgate the 2001 Commissioners Standard Ordinary Tables (“2001 CSO Tables”). Commentators have suggested that the improved mortality rates embedded in the 2001 CSO Tables will reduce life insurers’ reserve requirements by an average of some 20 percent. By virtue of the 1980s’ tax legislation, these improved rates likewise will lower, per dollar of death benefit, the deductible amounts of life insurers’ reserves and the tax law’s premium and cash value limits for life insurance contracts.

The manner in which, and the time at which, the advent of the 2001 CSO Tables will affect life insurers’ reserve deductions are fairly certain, and yet, given the revenue sums potentially at stake, official guidance applying the governing rules of the federal income tax likely will be forthcoming. In some degree of contrast, the manner and the timing of the new tabular rates’ impact on the premium and cash value limits applicable to life insurance contracts under the tax law are imbued with uncertainty. As life insurance industry representatives have been urging upon government officials of late, formal guidance from the Treasury Department (the “Treasury”) and Internal Revenue Service (the “IRS”) on the tax law’s requirements in this respect is virtually a necessity. Such answers as exist, along with the as-yet-unanswered questions, are recounted in the balance of this article.

MORTALITY TABLES AND LIFE INSURANCE COMPANY TAXATION

Reserve Requirements

An increase in the amount of a life insurance company’s “life insurance reserves” within

In 1984, Congress coined and defined the term “pre-vailing commissioners’ standard tables” for life insurance company tax purposes ...

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the meaning of Internal Revenue Code section 807(c)(1)¹ from one taxable year to the next is deductible in determining the company's federal income tax liability.² The amount of such reserves is in turn determined under section 807(d)(1) with respect to each contract for which life insurance reserves are held: it is the greater of the contract's "net surrender value" or its "federally prescribed reserve."³ Section 807(d)(2) then defines the means for computing this federally prescribed reserve — the device for restricting the deductible amount of the reserve to the lowest amount officially supportable when the reserve was set up — requiring that it be based upon (among other elements) the "prevailing commissioners' standard tables" applicable to the contract underlying the reserve.⁴

Section 807(d)(5)(A) defines these "prevailing" tables to be used in the federally prescribed reserve calculation by looking to the mortality tables applicable to the reserves for a contract at the time it was issued. In particular, the statute says that the prevailing tables with respect to a contract when it was issued are the "commissioners' standard tables" that were then (1) most recently prescribed by the National Association of Insurance Commissioners (the "NAIC") and (2) permitted to be used by at least 26 States in valuing the reserve for that contract. Because the 2001 CSO Tables will soon be the most recent NAIC-prescribed tables for valuing life insurance liabilities, they will become the "prevailing" tables under section 807(d) as soon as the 26th State permits their use. In creating the section 807(d) rules in 1984, Congress made use of the NAIC-approved mortality tables, as implemented in a majority of the States, to provide a reserve deduction that was at least as great as the reserve required to be held in most states, but not a greater amount.⁵ To achieve the goal of defining the minimum reserve amount generally required under State law, which then would be allowed as a deduction for tax purposes, it was necessary for Congress also to define a maximum interest rate and a reserve method, as well as to address a number of other details. This Congress did elsewhere in section 807(d) and in section 807(e), while also crafting special rules for market-valued separate account reserves in section 817

(and, in 1996, in section 817A for "modified guaranteed contracts"). However, in an effort to maximize tax revenues during a period of deficit closing in 1987, Congress diverged from the State-defined minimum reserve by requiring the federally prescribed reserves to be based upon an interest rate equal to the greater of the maximum rate allowed by most States and a special version of the "applicable federal rate," one designed (oddly enough) to discount the unpaid losses of property-casualty insurers under section 846. This was done not only to constrict the reserve deduction, potentially augmenting tax revenues from life insurers, but also in recognition of the primacy of the States in (and the absence of federal rules for) regulating life insurance companies and assuring their solvency.

Hence, subject to the transition rules discussed below, the mortality rates in the 2001 CSO Tables will apply in determining the federally prescribed reserves for contracts issued after the use of the new rates is first permitted by the 26th State. Given that the tables which are defined by section 807(d)(5) as "prevailing" are determined when a contract is issued, guidance is needed to clarify how the prevailing-table rule operates in the case of master group contracts. Similarly, given that there can be a number of tables that fit the definition of "prevailing" set forth in section 807(d)(5)(A), and recognizing that Congress made use of the prevailing table concept to limit reserves (from a tax perspective) to the lowest State-required amount, guidance also is needed to clarify how the rule operates where multiple tables potentially apply. This was true under the 1980 CSO Tables, and it certainly will be the case under the 2001 CSO Tables — some 84 of them, by one count.

Master group contracts

The statute endeavors to speak to these needs through two special rules included in the original 1984 enactment. First, a special rule in section 807(e)(2) provides that in the case of a group life insurance contract, the contract's issue date for purposes of section 807(d) is the issue date of the "master plan." That said, however, the statute goes on to stipulate that with respect to a benefit under a group contract that was guaranteed to a "participant" at a date after the master

In particular, the statute says that the prevailing tables with respect to a contract when it was issued are the "commissioners' standard tables" that were then (1) most recently prescribed by the National Association of Insurance Commissioners (the "NAIC") and (2) permitted to be used by at least 26 States in valuing the reserve for that contract.

plan's issue date, the later date of that guarantee is the relevant date for section 807(d) purposes. The statute, in other words, views the group contract as if it were merely a collection of individual contracts, with each "participant's" coverage — presumably meaning the coverage typically evidenced by a certificate issued to the insured — constituting a separate contract, and consistently with this view it adopts the date that such coverage was guaranteed to the participant as the issue date utilized to identify the mortality table applicable in determining the federally prescribed reserve for the coverage. Thus, under the section 807(e)(2) rule, where a group contract was issued prior to the date when the 2001 CSO Tables become "prevailing" (taking account of the transition rules described under the next heading), the federally prescribed reserves for the coverages provided under the contract could be determined using two different mortality tables, i.e., the 2001 CSO Tables with respect to coverages guaranteed on or after that date, and the 1980 CSO Tables for the pre-existing coverages.

Multiple Tables/Options

A second special rule, appearing in section 807(d)(5)(E), addresses the problem posed where multiple tables otherwise fit the definition of "prevailing" tables in section 807(d)(5)(A). The rule in 807(d)(5)(E) requires that with respect to any "category of risks" for which two or more tables meet the general definition of prevailing, or for which multiple "options" under one or more tables are prevailing, the table and option "generally" yielding the "lowest reserves" are to be used. (The reference to options was included specifically to address the availability of select and ultimate mortality rates under the 1980 CSO Tables.) This rule is somewhat vague in its phrasing, but it hints liberally at the result desired by describing the production of the lowest reserves as its reason for being.

In the context of the 2001 CSO Tables, this lowest-reserves rule raises questions about the use of (1) select and ultimate mortality versus ultimate mortality and (2) smoker/nonsmoker tables versus composite tables. Anticipating these questions, a recent report by a working group of the American Academy of Actuaries to the NAIC's Life and

Health Actuarial Task Force on the 2001 CSO Tables, making use of a study undertaken by the American Council of Life Insurers (the "ACLI"), observed that "the reserves on an Ultimate basis are less than the reserves on a Select and Ultimate basis for the industry and its current mix of products." In addition, the report noted "[I]n regards to unismoke versus smoker distinct, the same ACLI study reports that there is no



material difference in the aggregate results of using either version." Thus, if the lowest-reserves rule is implemented utilizing the Academy's observations, the federally prescribed reserves will be based upon ultimate mortality and on smoking status as used for annual statement reserves. That said, in view of the paucity of authorities interpreting that rule to date and the tax revenues potentially at stake, the IRS may well decide to review the questions involved and issue its formal guidance for life insurers and revenue agents to follow.

Timing and Transition

At this writing, the proposed 2001 CSO Tables are expected to gain NAIC approval during the association's meeting in December, 2002. Whereas the 1980 CSO Tables generally were adopted by statutory enactments in the States, that will not be the case with the 2001 CSO Tables. Rather, pursuant to enabling legislation on the books

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of virtually every State, the new Tables will be adopted by regulations promulgated by each State's insurance regulator. This should lead to adoption of the 2001 CSO Tables with some rapidity, and to facilitate this process, the NAIC will have before it this December a proposed model regulation to implement the new mortality standard. The model, as currently envisioned, will allow insurers to utilize the 2001 CSO Tables on a plan-by-plan basis, with a requirement that the new Tables be used for all products offered for sale beginning on January 1, 2009 — the so-called "mandatory date."

Given the ability of the States to adopt the 2001 CSO Tables by regulation, and assuming the NAIC gives its approval to the new Tables before the end of 2002, it is possible that the new Tables will become "prevailing" under section 807(d) due to the 26th State's adoption some time in 2003, and it seems quite likely that the requisite State adoptions will have been completed before the end of 2004. The life insurance industry will, of course, be following the State approval process quite closely, and the IRS will undoubtedly be doing the same. As it has done before, the IRS can be expected to issue formal guidance announcing the 26th State's approval, and hence the advent of the 2001 CSO Tables as "prevailing," not long after that approval occurs.

Congress, aware of the practical and other issues involved in a transition to a new mortality standard as it wrote the section 807(d) rules in 1984, provided detailed statutory guidance relating to the transition. This guidance appears in section 807(d)(5)(B) in the form of a three-year transition rule, which is permissive in nature. Specifically, section 807(d)(5)(B) provides that if there is a change to new prevailing tables during a calendar year, the insurer may use the previously prevailing tables to value reserves for contracts issued through the end of the calendar year three years after the year of change. Thus, if the 2001 CSO Tables become prevailing in mid-2003, the 1980 CSO Tables may be used for contracts issued through 2006. For purposes of the federally prescribed reserves, then, the mandatory date (in this example) would move up to January 1, 2007.

Furthermore, according to the express terms of section 807(d)(5)(B), the permission to continue use of the "old" tables is granted

"with respect to any contract." This wording suggests that an insurer may choose to employ the new standard in determining the reserves for some contracts while continuing use of the old standard for others. This grant of discretion to the taxpayer, however, presumably is constrained by the plan-by-plan adoption rule contained in the proposed NAIC model regulation. It also is limited by the section 807(d)(1) rule precluding the federally prescribed reserve for a contract from exceeding the annual statement reserve for the contract.

Mortality Tables and Life Insurance Product Taxation

Sections 7702 and 7702A

Both section 7702, defining a "life insurance contract" for tax purposes, and section 7702A, defining a "modified endowment contract," make use of the prevailing table rule of section 807(d) by requiring "reasonable" mortality to be assumed in determining the net single premiums and guideline premiums under section 7702 and the seven-pay premiums under section 7702A. Specifically, section 7702(c)(3)(B)(i) requires the guideline premiums for a life insurance contract to be based, *inter alia*, on "reasonable mortality charges" which do not exceed the "mortality charges specified" in the prevailing tables within the meaning of section 807(d)(5) as of the time the contract is issued. The section 7702(c)(3)(B)(i) reasonable mortality requirement, introduced into the statute in 1988, applies as well to net single premiums under section 7702(b)(2)(B) and to 7-pay premiums under section 7702A(c)(1)(B).⁸ Under section 7702(c)(3)(B)(i), the prevailing tabular rates constitute a general ceiling for the mortality assumptions that may be employed in the section 7702 and 7702A calculations, although the statute allows the Treasury and the IRS to write regulations that increase or decrease these rates, e.g., to raise the ceiling in the case of substandard risks (discussed further below).

When the 2001 CSO Tables become prevailing for section 807(d) purposes, the wording of section 7702(c)(3)(B)(i) will automatically invoke their use in the section 7702 and 7702A calculations. In the context of the life insurance product tax rules, this

... this transition to the new standard will bring with it significant reductions per dollar of death benefit in the guideline premiums, net single premiums, and seven-pay premiums for contracts.

transition to the new standard will bring with it significant reductions per dollar of death benefit in the guideline premiums, net single premiums, and seven-pay premiums for contracts.⁹ The transition also promises to raise many more questions than the few that present themselves in the corporate tax context — and primarily for the reason that the transition to the new standard was well thought out in the crafting of the section 807(d) rules in 1984 and was not at all considered when the reasonable mortality requirement was inserted into section 7702 in 1988. The balance of this article addresses a number of these questions.

Which Tables?

As noted above, many 2001 CSO Tables will be published, and one apparent question is: which of these tables may be used as providing “reasonable” mortality rates for purposes of sections 7702 and 7702A? Immediately following on the 1988 enactment of the reasonable mortality requirement, IRS Notice 88-128¹⁰ generally allowed the use of sex-distinct, smoker/ nonsmoker/aggregate mortality rates under the 1980 CSO Tables for these purposes. Proposed regulations under section 7702, issued in 1991 but never finalized, permitted far greater leeway, subject to a consistency rule.¹¹ Under the proposed regulations, 1980 CSO-based mortality rates were deemed reasonable, if consistently applied within a class of contracts, whether or not distinctions were made according to the insured’s sex or tobacco use. Any new regulations promulgated by the Treasury and the IRS in response to the advent of the 2001 CSO Tables would do well to follow the earlier proposed regulations in granting similar leeway to insurers. The section 7702 and 7702A calculations with respect to any contract should be able to draw upon any rates derived from the new Tables as appropriate for that contract.

Transition: Three-Year Rule and the Need for Regulations

When the 2001 CSO Tables become prevailing within the meaning of section 807(d), insurers are permitted the three-year transition period as set forth in section 807(d)(5)(B) in determining their federally prescribed reserves for newly issued life

insurance contracts. Another question that the transition to the new mortality standard raises under sections 7702 and 7702A is: will the same three-year transition period apply? As noted above, the rule in section 807(d)(5)(B) provides that if there is a change to new prevailing tables during a calendar year, the insurer may use the previously prevailing tables for a contract issued through the end of the calendar year three years after the year of change. Further, the rule is permissive, and the permission to continue to use the old standard is granted contract by contract. The answer appears to be yes, it will apply, for the reason that section 7702(c)(3)(B)(i) refers to section 807(d)(5), not simply section 807(d)(5)(A), in its effort to incorporate the prevailing tables as the basis for reasonable mortality. The reference to section 807(d)(5), as a matter of statutory construction, includes section 807(d)(5)(B) — the three-year rule — thus importing that rule into the reasonable mortality requirement.

All that said, whether or not the three-year transition period applies to the section 7702 and 7702A calculations is at best a stalking horse for the deeper concern presented by the arrival of the 2001 CSO Tables as “prevailing.” The truth is that the section 807(d)(5)(A) rule, built to address the valuation of insurers’ liabilities, interacts awkwardly, at best, with the nonforfeiture requirements that State law imposes on life insurance contracts. If State X withholds its approval of the 2001 CSO Tables beyond the time that those Tables become prevailing (plus three full years, assuming that section 807(5)(5)(B) applies), contracts issued in State X after that time must continue to meet the requirements of the nonforfeiture law incorporating mortality based upon the 1980 CSO Tables, even though the section 7702 and 7702A premium limits will then be calculated using the rates in the 2001 CSO Tables. Such a conflict raises the specter of a federal “ceiling” that falls below the State “floor,” rendering the issuance of a contract problematic and even, in the case of contracts attempting to qualify under section 7702’s cash value accumulation test, impossible.

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While formal guidance from the Treasury and the IRS on transition to the 2001 CSO Tables is expected, the timing of such guidance is currently unknown.

To preclude the occurrence of such difficulties, the ACLI has asked the Treasury and the IRS to issue formal guidance paving the way for an orderly transition to the 2001 CSO Tables. Such guidance could, of course, adhere strictly to the reserve rules, including the three-year delay, casting aside the problems of coordination with the nonforfeiture law, but the Treasury and the IRS presumably will work toward achieving a more sensible result. One possibility assuring effective coordination would be to delay the implementation of the 2001 CSO Tables until the mandatory date under the proposed NAIC model regulation. It is questionable, however, whether the government would tolerate continued use of 1980 CSO mortality for new contracts issued until 2009. An alternative for guidance includes the imposition of the 2001 CSO Tables as the reasonable mortality standard for contracts issued in a given State within a specified period of time after that State allows use of the Tables, although this brings with it the prospect that different requirements will apply simultaneously in different States. The authors understand that the ACLI is asking the Treasury and IRS to issue guidance that combines the preceding two ideas, providing that the Notice 88-128 safe harbor remains in place until the earlier of the 2009 mandatory date or the actual date of issue for a contract issued using the 2001 CSO Tables in its underlying computations. Another alternative would entail the stipulation of a uniform period, several years into the future, for transition to the 2001 CSO Tables nationwide. While formal guidance from the Treasury and the IRS on transition to the 2001 CSO Tables is expected, the timing of such guidance currently is unknown.

Substandard Risks

If formal guidance is forthcoming from the government on the subject of reasonable mortality under the 2001 CSO Tables, that guidance might also address the treatment of substandard risks. Notice 88-128 was silent on this topic, and the 1991 proposed regulations under section 7702, which attempted to address it, proved controversial and never has been finalized. This leaves as the governing law on the matter the transition rule provided in TAMRA, *i.e.*, which somewhat vaguely provided that the mortality charges assumed in the section 7702 and

7702A calculations for a contract covering a known substandard risk were reasonable if they did not differ materially from the charges actually imposed under the contract. While the associated uncertainty has not hindered the issuance of coverage on substandard lives, the advent of the 2001 CSO Tables alters the situation to an extent. This follows from the tendency of the new Tables to move the “standard” for standard mortality, placing greater pressure on the substandard risk classification. It remains to be seen whether the life insurance industry and the government will seek to give sharper definition to the treatment of substandard risks under sections 7702 and 7702A in the course of dealing with the transition to the new Tables.

Maturity Dates

For purposes of the calculations under sections 7702 and 7702A, a life insurance contract’s maturity date is deemed to be between the insured’s ages 95 and 100. This maximum maturity assumption, imposed by one of the so-called computational rules of section 7702, was consistent with the limiting age of 100 under the 1980 CSO Tables, the “new” mortality standard coming into being when section 7702 was enacted. At the time of its creation, section 7702 contained no external standard of “reasonable” mortality, but instead relied on contractual guarantees to determine the mortality component of its premium limits. The upper age limit on the computational rule was included in the statute because it was thought to be an appropriate means of discouraging abuse of the statute via contractual charges based upon the assumed post-age 100 survivorship of insureds.

The facts of mortality have changed with the times, however, and the 2001 CSO Tables now assume that a portion of the cohort of insureds will survive through age 120. Fortunately, nothing in section 7702 requires a life insurance contract to endow at age 100, or precludes an insurer from charging for mortality based upon the more favorable assumptions of the 2001 CSO Tables. The advent of the new Tables, however, presents several conceptual challenges to section 7702’s maturity date computational rule. First, the use of the statute’s age 100 limitation, versus an age 121 limitation derived

from the 2001 CSO Tables, leads to slightly higher premium limits under certain assumptions. While this difference would not seem material enough to warrant statutory change, the prospect of insureds surviving past age 100, as more and more people do with the passage of time, leads to the question whether the premium limits of sections 7702 and 7702A should extend beyond age 100. Under the statute as written, the premium limits arguably would stop at the maximum deemed maturity date of a contract, although that is not entirely clear. What is clear is that a change in the age 100 rule would require congressional action, and that is itself a daunting prospect, one filled with possibilities and pitfalls for the life insurance industry.

Material Change Issues

At least one more, potentially overarching question is presented by the arrival of the 2001 CSO Tables: assuming that they have become “prevailing” as of a given date for newly issued life insurance contracts, what changes, if any, in a pre-existing contract could require the use of the new Tables in the section 7702 and 7702A calculations for that contract? The legislative history of section 7702 provides that certain changes in contracts that are deemed “material” can lead to new-issuance treatment. This is also true with respect to section 7702A, as expressly provided in section 7702A(c)(3) and as built into that statute’s own transition rules. While the prospect of new-issuance treatment is not exactly a new concern with respect to the application of sections 7702 or 7702A (or other Internal Revenue Code provisions) to life insurance contracts — a number of IRS private letter rulings have addressed the material change issue — the advent of the new mortality standard will likely bring with it a new focus on the point. Contracts today tend to have maximum flexibility built into their structures, and it is arguable that any adjustment event under section 7702(f)(7)(A) or material change under section 7702A(c)(3) would trigger application of the new standard, potentially posing significant difficulties for compliance with the two statutes.

To obtain clarity on the material change question as it relates to the 2001 CSO Tables, and also to obtain a measure of relief



from the possible application of the new standard, the industry may decide to request specific guidance from the Treasury and the IRS. The government, it would seem, likewise would have an interest in addressing the issue. Any such effort, however, should be undertaken with eyes wide open, as the answers it provokes could prove quite troublesome. The Treasury and the IRS may find it fitting to exclude certain kinds of changes in contractual benefits from categorization as material changes in the 2001 CSO context, but any such conclusion may be difficult to reconcile with broader concepts of material change under the federal tax law. And the industry may find that changes it has not heretofore treated as triggering the application of new mortality standards, such as when the 1980 CSO Tables replaced their predecessor in the 1980s, would receive contrary treatment in the view of the Treasury and the IRS.

Conclusion

The advent of the 2001 CSO Tables raise significant federal tax issues for life insurers, especially at the product level. It is likely that Treasury and IRS guidance will be forthcoming to address some of the unanswered questions, although the substance and timing of such guidance currently are unclear. Actuaries and others charged with oversight of corporate income tax obligations or the design of life insurance products will

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need to pay close attention as action is taken by the federal tax authorities and the mist slowly lifts from the mortality component of the federally prescribed reserve and reasonable mortality rules of the tax law. □

Footnotes

1) Unless otherwise noted, all references herein to “sections” are to sections of the Internal Revenue Code of 1986, as amended. References to regulations are to the Income Tax Regulations.

2) The deduction is provided under section 805(a), relying upon the rules of section 807(a) and (b). The latter rules also provide for an income item under section 803(a) in the event of a decline in reserves. Whether a life insurance company is treated as such for federal income tax purposes, invoking the rules discussed in this part, is determined by applying the so-called reserve ratio test set out in section 816(a).

3) Section 807(e)(1)(A) requires the net surrender value of a contract to be determined by subtracting any applicable surrender charges but by disregarding any market value adjustment. In addition, the total amount of the reserve for a contract claimed for tax purposes cannot exceed the contract’s reserve as reported on the insurer’s annual statement filed with State regulators. See section 807(d)(1).

4) The federally prescribed reserve rules were enacted as part of the revision of the life insurance company tax provisions contained in the Deficit Reduction Act of 1984, Pub. L. No. 98-369 (“DEFRA”). Technically, the purpose of the provision was to limit life insurance reserves, in the context of deductions allowed in determining insurers’ federal income tax liability, to the state-mandated minimum. Lowering the deductible amounts of life insurance reserves generally had the effect of increasing life insurers’ federal income taxes over the amount payable under prior law, all else being equal.

5) The net surrender value of a contract, if greater, is allowed as the deductible amount of the reserve, but this was done with the recognition that the valuation law for life insurance generally would require such a greater amount to be held as the reserve for the contract.

6) Report of the American Academy of Actuaries’ Commissioners Standard Ordinary (CSO) Implications Working Group, Presented to the National Association of Insurance Commissioners’ Life and Health Actuarial Task Force (Sept. 2002) (the “AAA report”), at p. 10.

7) Id. In making the comparison, a weighted average of smoker/nonsmoker reserves was employed, with the weights based upon the underlying distribution of smokers and nonsmokers in the 1990-95 mortality study from which the new standard was derived.

8) The reasonable mortality charge rule was enacted as part of the Technical and Miscellaneous Revenue Act of 1988, or “TAMRA,” Pub. L. No. 100-647, with the avowed purpose of combating artificial inflation of mortality assumptions in net single premiums and guideline premiums, and also limiting the 7-pay premiums under the then new modified endowment contract rules.

9) The AAA report lists average reductions in guideline single premiums of up to 30 percent and in 7-pay premiums of up to 15 percent. See AAA report at pp. 10-11.

10) 1988-2 C.B. 540.

11) See Prop. Treas. Reg. § 1.7702-1.

12) In similar fashion, quite apart from a State-by-State adoption rule, the transition to the new standard raises the prospect that different requirements will apply within the same group contract, as new participants are added under the contract after the new standard takes effect. The only way a regulation could preclude this from occurring would be to treat the contract’s “issue date” as being that of the entire group contract, without regard to when a participant joined the group (contrary to the section 807(e)(2) rule). A practical approach to avoiding any such disparity would be to close off new entry into a pre-existing group contract, requiring the issuance of a new contract to cover new participants.

13) See section 7702(e)(1)(B).

John T. Adney and John J. Spina both work at Davis & Harman in Washington, DC. John Adney can be reached at jtadney@davis-harman.com and John Spina can be reached at jjspina@davis-harman.com.

What Is Critical Illness Insurance?

by Susan Kimball

Editor's Note: This article has been adapted from an article on the same topic that Ms. Kimball wrote for the Vol. 17, no. 4 issue of On The Risk.

Critical Illness Insurance (CII) typically provides a lump sum payment on first diagnosis of one of a number of specified critical illnesses. A CII product can take on one of three forms: a stand-alone health product, which is the most common in the U.S.; an additional benefit rider, which is generally considered a health product; and an accelerated benefit rider, which is typically considered a life product.

The stand-alone product can take on any form that life insurance can, such as whole-life or level-term, and can have various premium payment schemes. Riders are usually attached to life products, such as term- or universal-life, but may also be attached to other products such as disability income or long term care. Under the accelerated rider, the policyholder can usually choose to accelerate 25-100% of the life proceeds. CII products are represented in almost every market including individual, voluntary (worksite), direct response and group. Some products may offer a series of benefit payments vs. a lump sum. The illnesses covered will vary by product.

The most commonly covered conditions are life-threatening cancer, heart attack, stroke, renal failure and major organ transplant. Coronary artery bypass surgery is often covered at 10-25% of the benefit amount, while angioplasty, which has been covered at 10 percent, is falling out of favor due to increased usage and non-critical nature. In the case of a partial payment, the remainder of the benefit amount will typically be paid on a second different covered condition.

Disability has not been covered in U.S. CII plans. This is a good trend, as disability is often covered in U.K. plans, resulting in problems, including anti-selection, leading to greater than expected claims.

Carcinoma in situ is covered in some CII plans, usually at 10-25%. This is not an ideal

trend, as carcinoma in situ is a very early stage of cancer, is not critical and can lead to anti-selection. However, it has been included in some products due to marketing pressure. Marketers are concerned that consumers may not understand the difference between life threatening cancer and carcinoma in situ.

Multiple Sclerosis (MS) and Alzheimer's disease may also be covered, but because they rely on a "clinical" vs. "test" diagnosis, they can be difficult to define and not easily verified at claim time. MS definitions typically require symptoms for a certain length of time. Some conditions may be covered to target a certain market. A CII plan targeting younger ages, for example, may include paralysis, coma and MS. Some markets, such as worksite, prefer to keep it simple and cover only five to eight conditions.

From a risk management perspective, the "ideal" CII product would cover conditions perceived by the public as "critical"; in other words, conditions that could afflict them and leave them in need of a lump sum of money. The covered conditions would also be precisely and clearly defined, be easily verified at claim time, have adequate data for pricing and not allow anti-selection. Of course, we do not live in an "ideal" world and must consider the marketing aspects of the product as well.

Why CII?

CII benefits may be used to cover expenses not covered by other insurance, such as experimental treatment and deductibles. It can also be used to pay off a mortgage or other debts, preserve assets, invest for income, change jobs, retire early, pay for children's education, fund self-care or child care or go on a vacation. Consumers value highly the non-restrictive nature of CII.

Many trends support the need for CII. People are living longer and are concerned about living comfortably throughout life. Medical advances increase the likelihood of surviving a critical illness and the length of

From a risk management perspective, the "ideal" CII product would cover conditions perceived by the public as "critical."

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survival. The reputation of managed care is deteriorating and consumers want more choice. There is great disappointment in expenses not covered by other insurance. Lastly, CII aids in retirement program funding by protecting assets and savings.

CII Pricing Assumptions

The key assumption in pricing a critical illness product is the set of incidence rates developed for each major covered condition. An incidence rate is the probability that someone will be diagnosed with a particular critical illness.

Incident rates are based on current U.S. population statistics, and are adjusted to reflect the insured population. We must start with U.S. population statistics because we do not have insured experience due to the product's recent entry in the United States. The adjustments to reflect the insured population will be tailored to the specific product, market and distribution systems. Another country's experience should be used for comparison only, as that country's experience can differ markedly from the United States. For example, heart attack and stroke incidence are much lower in Japan than in the United States.

If pricing a stand-alone product, one needs only to account for morbidity risk, typically denoted by i_x . If there is a survival period, i_x

must be adjusted by the probability of death during the survival period, given a covered condition has occurred ($i_x(1-q'_x)$).

When pricing an accelerated benefit rider, the morbidity risk (i_x) and the mortality risk (q_x) must be included. Typically, the rider and base plan are priced together. Deaths due to a covered illness ($k_x q_x$) and deaths from a cause other than a covered illness must be considered. The extra cost to cover CI is $i_x - k_x q_x$, while the total cost to cover CI incidence and non-CI deaths is $i_x + (1-k_x)q_x$. An excellent source covering the pricing aspects of CII is the landmark paper by Dash and Grimshaw.¹

There is some evidence that incidence rates may deteriorate (i.e., increase) in the future. Greater health awareness, improved diagnostic techniques and increased use of health screenings have led to earlier detection, which means earlier and additional claims. Environmental or lifestyle factors can lead to higher stress and more cancer-causing agents. There is a reduction in other causes of death leaving more lives exposed to CI risk. As surgery (such as bypass) becomes safer and more frequent, it may eventually be performed to prevent future heart problems, causing incidence to rise. Courts can interpret CII definitions differently than expected. They may redefine, disallow exclusions, do what seems "fair", even if not in the definition, or expand the definition to include additional illnesses. We also need to look at trends in incidence by condition and adjust for these.

Incidence rates should be adjusted for selection due to underwriting. The amount of selection depends on the underwriting (full, simplified issue, etc.) and the market (direct response, worksite, individual, etc.). Life insurance selection is typically 15-20 years; however, given the fact that we do not have the long-term experience for CII (even in other countries), we should be prudent in this assumption and only have selection factors for 5-10 years.

There are a multitude of data sources for the major conditions. For cancer, the Surveillance Epidemiology and End Results (SEER) Study of the National Cancer Institute contains very useful information.

The American Cancer Society and National Foundation for Cancer Research are also good sources. For heart attack and stroke, the



National Heart, Lung and Blood Institute's Framingham Study is widely used. The American Heart Association and Heart and Stroke Facts provide valuable data as well. The United States Renal Data Systems, American Kidney Fund and National Kidney Foundation are useful sources for renal failure incidence. For major organ transplant, the United Network for Organ Sharing's U.S. Registry on Organ Transplantation is a good source.

There are limitations to the incidence data. The information is sometimes dated, as is the case in the Framingham Study. The impact of smoking is difficult to find. Future trends are uncertain. For example, if heart attack incidence decreases, it does not mean bypass surgery will not increase. Note that there is often not enough data to derive incidence rates for the non-core conditions. In that case, the incidence rates for the non-core conditions are often determined as a percentage of the incidence rates for the sum of the core conditions.

Other important assumptions should be considered as well. Lapses may be as high as 30 percent in year one, grading down to 5-10 percent. This will vary by product and market. Age distributions will also vary by product and market, with the average age in the early 40s. Male/female split is typically around 50%/50% and smoker percentage is about 15-25 percent.

If pricing a CII rider, many assumptions will closely follow that of the base plan. Reserves for a stand-alone policy or an additional benefit rider are based on the Two-Year Full Preliminary Term Method with the incidence table often equal to the pricing incidence rates loaded by, say, 25 percent. Reserves will follow the base plan if it is an accelerated rider. Claim expense and training costs will likely be higher than for a life plan since claim investigation will be more rigorous, and more training will be required for underwriting and marketing. Commissions tend to follow that of the distribution system selling the CII product. Profit targets may be higher since this is a new product with greater uncertainty (risk) and less competition.

Scenario testing in order to see the effect of a change in assumptions is especially important in this new market. Results vary greatly by product and market. A 10 percent increase in incidence rates may cause a 7-10 percent increase in premium. A five-point decrease in

ultimate lapse rates can mean an increase in premium of 5-15 percent. If the earned interest goes from 7.25 percent to 6.25 percent, the premium may increase 2-4 percent.

CII Policy Specifications

Almost all products have a waiting period of 30-90 days which is the time the policy must be in force before filing a claim. Often cancer has a longer waiting period, such as 90 days, because it is the most heavily affected by anti-selection. Other conditions usually have a 30-day waiting period.

The survival period is the time the insured must survive after being diagnosed with a qualified condition to receive payment. A survival period of 30 days was often included in the early CII products; however, it was soon discovered that the cost of excluding this was not large and that consumers and producers disliked it greatly. Thus, there is often no survival period in today's CII products.

A pre-existing condition exclusion during the first two policy years is often included. Other exclusions may be for war, HIV, drugs, alcohol, self-inflicted injury and committing a felony.

Issue ages are typically 18-65, and the maximum insured age is usually 65-75, though the product may provide coverage for life. Insured amounts depend on the market. Worksite may start as low as \$5,000-\$10,000 and go up to \$250,000, while in the high-end individual market, amounts may be as high as \$1-2 million. Usually, due to the high cost at the older ages, if benefits are provided over age 65, they are reduced to 50 percent. Premiums may be level, step-rated or ART with a very short (one- to three-year) guarantee. The product is typically guaranteed renewable. Underwriting classes are male/female (often unisex in the worksite market) and non-tobacco/tobacco.

Staple Inn Actuarial Society Report

The Staple Inn Report, compiled in March 2000, looked at U.K. population incidence data, CII experience to date and surveyed current reserving practices in the U.K. Each topic will be reviewed below on the next page.

Scenario testing in order to see the effect of a change in assumptions is especially important in this new market.

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The declines due to definition emphasizes the importance of agent and consumer education with respect to definitions.

The CIBT93 Population Table

The CIBT93 (Critical Illness Base Table 1993) Population Table was developed for benchmarking experience and as a starting point for pricing and valuation, though there was no adjustment for insured population. It encompassed the seven core conditions (cancer, heart attack, stroke, coronary artery, bypass graft (CABG), MS, kidney failure and major organ transplant in addition to total and permanent disability (TPD). The table is split by male/female, but is not smoker distinct, and covers ages 20-80. Double counting was eliminated by only including first incidences (e.g., excluding re-admissions) and adjusting for overlap with other conditions (e.g., removing kidney transplants from major organ transplant data as they would already be included in kidney failure data). Experience was also adjusted for unreported cases.

The CIBT93 Table was adjusted for trends by condition based on experience over 4-18 years. Cancer showed an increase of one-two percent per year, while heart attack showed a decrease of two percent per year. CABG has increased dramatically, but an adjustment of five percent per year was made; however, this is a very uncertain estimate. Stroke, MS, kidney failure and major organ transplant showed no clear trend, so no adjustment was made.

CII Insured Experience

The CII experience (1991-1997) of 32 U.K. companies was studied. This incorporated 60 percent of industry claims, with 5,000 accelerated claims and 450 stand-alone claims. This experience as a percentage of CIBT93 was 46 percent for males and 43 percent for females, highlighting the difference between insured and population incidence. The experience improves from 1991-1996 and then worsens in 1997. The experience varies significantly by condition and age, as well as by company. There is some correlation with distribution channel.

Cancer, heart attack and stroke account for 80 percent of claims, while the core seven and TPD make up 97 percent of claims. Sixty-five percent of claims are from males, 35 percent from females. Twenty-one percent of claims are declined, with 70 percent of these declines due to the definition not being met and 22 percent of declines due to non-disclosure. The declines due to definition emphasizes the

importance of agent and consumer education with respect to definitions.

Smoker/nonsmoker differentials are at 150 percent for males and 137 percent for females. With a very low ratio company removed from the data, these ratios are 162 percent and 149 percent. This increased from the differentials shown in the 1991-1995 report where ratios were 135 percent and 120 percent, respectively. These differentials are expected to continue to increase as the portfolio is still immature and has a low age profile. The incidence ratios are less than for mortality, possibly due to CII products being more strictly underwritten than life products.

The experience study shows that there is marked selection. The fear of major anti-selection in the early years did not materialize, likely due to the inclusion of waiting periods. Experience was split by duration: Year 0, 1 and 2+. The ultimate experience is not mature, so it is too early to draw firm conclusions about the length of the select period. Male experience as a percentage of CIBT93 is:

Duration 0:	31%
Duration 1:	45%
Duration 2+:	53%

The study group was hoping to produce a CI Insured Lives Standard Table, but decided against it because there is relatively little data at longer durations, no evidence of the length of the select period, very little data to judge the shape of rates above age 60, variations over time and wide variations by company.

Reserve Practices

Reserving practices in the United Kingdom are not relevant in the United States, except to note that companies in the United Kingdom use a valuation incidence table equal to, on average, 123% of the pricing incidence table for conventional business.

Claims Experience

Claims by cause in the Staple Inn United Kingdom Study are outlined below, along with other countries' experience for comparison. In the United Kingdom, cancer is by far the largest percentage of claims, especially for females. There is an apparent lack of additional risk for smokers; however,

	U.K.	Australia	Singapore	South Africa
Cancer	54%	46%	75%	41%
Heart Attack	18%	24%	8%	32%
Stroke	8%	5%	6%	9%
CABG	4%	11%	3%	13%
MS	5%	-	-	-
Kidney Failure	-	-	5%	-
Other	11%	14%	3%	5%

smoker-related cancers are expected to emerge with increasing duration. The cancer experience in relation to CIBT93 is higher than for other conditions. Heart attack is the next largest percentage and is a more prevalent claim for males than females. Smoker experience is twice that of nonsmokers for heart attack claims.

Note that heart conditions are a much lower percentage of claims in Singapore, where diet plays a role. They are much higher in South Africa, where the CII product concept started, due to a focus on cardiovascular disease.

Lessons we can learn from other countries with respect to claims are:

- Including waiting periods to help alleviate anti-selection.
- Having clear, precise definitions to lessen denied claims.
- Using strict underwriting that translates into good selection.
- Pricing needs to accurately reflect underwriting, definitions, experience and possible anti-selection.
- Conducting claims analysis when enough data exists, adjusting pricing, definitions and underwriting, if necessary.
- Training and educating the sales force to help consumers understand definitions.

Regulation

There are many state variations making CII product development difficult. Fourteen states have issues with waiting periods. They may require a maximum number of days

(such as 30) or insist on first dollar coverage during the waiting period (such as a 10 percent benefit). Other state issues include survival periods, lump sum payments, and, notably, family history questions (which is a very important underwriting tool for CII). There is also the loss ratio issue. Most states expect a 50 percent loss ratio, but some require 55-65 percent. Products need to be revised for these higher-loss ratios by lowering premiums and/or commissions.

Summary

There are strong reasons to consider adding CII to your product portfolio:

- Supplementing declining life sales.
- Leveraging a traditional distribution system.
- Offering potential for higher return on capital.
- Meeting the sales force's desire for a new product.
- Satisfying consumers' unmet needs.

Critical Illness Insurance is a new, exciting product with many challenges. The product will evolve as we obtain more claims experience and market exposure. Education is key to the growth of CII; the more consumers, marketers, insurance companies and regulators learn about this product, the more eager they will be to have this new insurance offering. □

Footnotes

1) "Dread Disease Cover, An Actuarial Perspective" by Alison Dash and David Grimshaw, Presented to Staple Inn Actuarial Society, January 1990.

Susan Kimball, FSA, MAAA, is actuarial director of Living Benefits at ING Re in Denver, CO. She can be reached at susan.kimball@ing-re.com.

Are You A Product Actuary or A Marketing Actuary?

by Mike Kaster

Several years ago, the concept of a marketing actuary was in vogue. Many job titles were changed to reflect this new concept, and some new jobs were created. But the question is, did the job really change? There is a distinct difference between a product development actuary and a marketing actuary. Because this distinction exists, there will be greater demands on actuaries in the future to evolve their skills. Those who add marketing and communication skills to their repertoire will have a distinct advantage over others who simply perfect their technical skills.

The actuarial profession, and actuaries in general, are suffering today from a perception problem. Employers of today's actuaries have decided opinions about actuaries, and whether or not you fit the image, you are being impacted by this image. Recently, the SOA performed some market research to explore exactly what employers of actuaries felt about their professionals. The majority opinion is that very few actuaries have both the quantitative skills and the business savvy to analyze situations and then create common sense solutions that are easily communicated to all target audiences. Is this really how we want to be viewed?

Today, companies expect that, as a product actuary, you will be the technical expert — the person who can “engineer” the product concept into an acceptable design. They expect and assume that you know and understand all the relevant actuarial issues that need to be incorporated into the product design. You must have thorough knowledge of pricing mechanics as well as strong knowledge of the regulatory parameters in order to build a product that is acceptable to the regulators who will need to approve the product prior to introduction.

These same company leaders do not view actuaries as business leaders. Many company executives have expressed frustration, stating that the actuaries they employ are extremely bright and technically proficient, but because they can't communicate, their knowledge and ideas are being left on the boardroom floor. The situation has deteriorated over the last few years. Actuaries have never been known as outstanding communicators, but according to our market research, employers and executives do not expect actuaries to communicate well.

Again, this is not a good situation for our profession to be in.

OK, so company executives have clearly identified an area for improvement — communication. What about our top actuaries? What did they have to say about product actuaries? At a recent gathering of chief actuaries in the life insurance field, they were asked to discuss the needs of product development and product development actuaries. A growing trend that causes them to be concerned is the increasing acceptance of results that come from the actuarial modeling software packages that most companies use for product pricing. These software packages (we all know the usual suspects) have been a godsend in efficiency and productivity. But increasingly, more and more product actuaries are simply accepting the results coming from these “black boxes” without challenging the results or understanding the root of the calculations. How do you know the results you are getting are the right results? Do you check your answers? The chief actuaries stated that it is important to know and understand the calculations. One of my most valuable learning exercises when I was a product actuary was to build a pricing spreadsheet from scratch. I did this for a simple deferred annuity product, so the calculations were not terribly complex. But what it drilled into me regarding the actual mechanics of pricing is something I will never forget.

The “chiefs” also saw the communication problem in the younger generation. They indicated that, in the past, actuaries were actually tested during their credentialing on their ability to communicate and their usage of the English language. Many suggested that our profession should consider evaluating some sort of process where we actually ask our candidates to communicate, rather than regurgitate. Currently there are working groups within the SOA working on these very recommendations.

The typical product actuary today is someone who is technically solid, knowledgeable in the product line, and usually viewed as the “product expert” in his or her company. Product actuaries know how to balance the equity challenge, see the need to balance the tri-pod of constituents — the owner, the distributor and the customer. No other professional in the insurance industry is better positioned to take

The majority opinion (of employers) is that very few actuaries have both the quantitative skills and the business savvy to analyze situations and then create common sense solutions that are easily communicated to all target audiences.

on assignments with these needs. But is this enough? What other skills are needed to be a successful product developer? Many people would say that without a solid foundation in marketing skills, one cannot adequately manage a product development process. Is this true?

Outside the insurance industry, many companies rely on marketing professionals to perform their product development work. Most MBA programs will offer course work in product development, and marketing professors teach these courses. This would certainly imply that, as a product actuary, if you want to step up to the next level, you must turn yourself into a marketing actuary.

How does one become a marketing actuary? It first requires an understanding of what “marketing” is. If you look up the definition of marketing in the dictionary, it is defined by one source as:

“The act or process of selling or purchasing in a market”

This definition may be correct, but it doesn't explain enough. If you look up the definition in a typical MBA program textbook, you might find the following definition:

“Marketing is the process of identifying needs/wants/demands, and establishing products with value to meet such desires, and creating a transaction in a way that produces value and relationship.”

And to quote Peter Drucker:

“Marketing is so basic that it cannot be considered a separate function. It is the whole business seen from the point of view of its final result, that is, from the customer's point of view...Business success is not determined by the producer but by the customer.”

One final definition, from Kotler's Marketing Management it is:

“Marketing's job is to convert societal needs into profitable opportunities.”

There is no one better positioned in the insurance field to take on the role of “marketing” than the actuary, and it is the product development actuary that is best suited to take on this task.

Do you, as a product actuary, know the difference between sales and marketing? I've already told you the definition of marketing, and the function of selling is quite obvious. They are clearly different functions. So, why is it that so many insurance company marketing departments are run by people who came up through the sales side of the house? Do these professionals really understand what it means to “market” products? One could argue that they ascended to these positions in the home

office largely because sales individuals learned business savvy and communications skills well (they practice these every day). The actuaries are severely lacking in this arena.

To become a marketing actuary, you must not only possess the skills of the product actuary, but you must also be able to communicate, understand the whole of the business, realize the relationship between customers and products and know how to do all of this in a manner that results in profitable growth for the company. This is a pretty tall order for anyone.

The following chart may help you better understand the distinction between a product actuary and a marketing actuary:

Skills Required	
Product Actuary	Marketing Actuary
<ul style="list-style-type: none">o Technical actuarial skillso Regulatory knowledgeo Pricing mechanicso Assumption developmento Product knowledgeo Conceptual thinkingo Creative problem solving	<ul style="list-style-type: none">o All skills of a product actuary, plus the followingo Strong communicationo Marketing savvyo Financial analysiso Customer researcho Distribution management

There are many skills here that people in various positions will identify with and say are a part of their job. So, in the ultimate evaluation of whether or not you are a product actuary or a marketing actuary, if you identify skill areas that you need to further improve, I would suggest that you explore the development of these skills. The areas of weakness that I have previously identified for our profession are really opportunities for the eager and ambitious to find ways to excel and prosper.

Above all else, whether you consider yourself a product actuary or a marketing actuary, improving your communication skills will help you in your professional life more than any other skill. Improving your ability to communicate your ideas requires practice. A recent speaker at an SOA function, speaking on the subject of effective presentations, quoted Vince Lombardi. He said it doesn't require practice to make perfect, but rather that “perfect practice makes perfect.” Work at this skill and practice your communication opportunities diligently. It will carry you a long way in the future. □

Michael L. Kaster, FSA, MAAA, is managing director of Practice Areas at the Society of Actuaries in Schaumburg, IL. He can be reached at mkaster@soa.org.

Introduction to Private Placement VUL

by Dan Theodore

The Market

Many companies have been moving to offer private placement variable universal life (PPVUL) policies. Some entering this market are U.S.-domestic companies, while many are located in far-flung exotic lands around the globe. The issuers range from the largest multi-line carriers to the smallest offshore independents, but they are all drawn to this market by one thing: the potential customers are wealthy U.S. taxpayers with sizable onshore and offshore assets. This group is the holy grail of marketing executives — the high-net worth market.

...the policies are sold as private placements, allowing unique investment instruments that may be provided on a policy-by-policy basis and avoiding SEC registration.

What do these customers want?

- They are looking to place enormous amounts of money into these policies. These amounts are high enough to push up against the maximum amounts of life cover available in the reinsurance marketplace.
- Their funds should be accumulating on a tax-deferred basis, and must thereby qualify as life insurance under the U.S. Tax Code.
- They want the policies to be issued in a jurisdiction where separate account statutes protect the cash values from the insurer's bankruptcy.
- They want the values to be held in U.S. dollar denominations.
- Some want offshore assets to stay offshore, maintaining their existing protection from U.S. creditors.
- Finally, because of who they are and the amounts involved, many expect to negotiate the cost to obtain the best possible deal.

These buyers are drawn to PPVUL, issued either as a modified endowment contract (MEC) on a single premium basis or with limited payment periods to produce a non-MEC. Because of the sophisticated nature of the purchasers, the policies are sold as private placements, allowing unique investment instruments that may be provided on a

policy-by-policy basis and avoiding SEC registration.

Naturally, this market is not reached through normal distribution channels, but through high-level agents experienced in providing the level of personal service to which these high-net-worth individuals are accustomed. But, reaching these potential customers means satisfying their personal advisors, with whom the agents often have existing relationships. Finally, this level of service must continue after issue.

Onshore vs. Offshore

The offshore companies have certain advantages, primarily freedom from state regulation and neither premium nor federal income taxes for the company to pay. More and more domestic companies are choosing to offer PPVUL without these advantages, with good reason. Onshore distributors have the advantage of being able to market their products directly to U.S. customers while their offshore counterparts must struggle to market and issue policies while remaining offshore and avoiding being drawn into U.S. regulatory jurisdiction.

Simplicity

For policies with jumbo face amounts, the sources of profit are simple to identify, especially because the buyer will attempt to negotiate everything down to cost. Actual taxes and compensation, if not paid directly by the customer, may be charged directly as premium loads. Per policy charges may include an at-issue charge to cover acquisition costs plus a recurring fee for marginal administration expenses. Because the policy sizes generally far exceed the maximum retention limits, the cost of insurance is generally equal to the reinsurance costs, plus a very small margin.

That leaves the per asset charge (often called the M&E) as the primary source of profit. This provides an ongoing profit stream as dependable as that on a variable annuity. Consider that a meager M&E of 40

basis points applied to single policy with \$25 million of net premium can generate \$100,000 annually for the company (assuming a constant account value).

It is easy to see that even only a few sales are sufficient to make this a profitable line of business. It is also easy to see why the customer feels empowered to negotiate the lowest cost product, trying to reduce the per premium and COI charges to cost and minimizing the M&E.

Compliance

Because the policyowner is a U.S. taxpayer, the policy must be in compliance with the definition of life insurance under Section 7702 of the Internal Revenue Code. This requires that the policy be considered life insurance under applicable state (or local) laws and that it satisfy either the Cash Value Accumulation Test or the Guideline Premium/Cash Value Corridor Test, of which most VUL policies are issued under the latter test. Furthermore, there are rules regarding minimum asset diversification and investor control to be satisfied.

The primary measure of competitiveness is internal rate of return (IRR) on surrender. That is, the objective is to minimize total charges and still qualify as insurance under U.S. tax code. As a result of the customer's empowerment in this market, every issuer has already reduced the relative level of charges to near cost.

How else can charges be reduced? Because many of the buyers are focused on the cash value, it makes sense that the policy could be made more competitive if there were less need for insurance and its associated cost. That is, a lower face amount would result in a lower net amount at risk, producing lower insurance charges and higher cash values.

These policies are generally issued at the minimum face amounts that will satisfy the Guideline Premium Test under IRC 7702 for the given premium level. Although these provisions of the code were made effective in 1984, final regulations for them are still pending, leaving many open questions. The domestic life insurance industry has, over the years, reached some broad consensus on how to calculate guideline premiums, but there is still a range of interpretation because some companies are careful to be conservative in uncertain areas. Some



companies may choose to utilize less conservative approaches that produce higher guideline premiums, resulting in a lower minimum face for a given premium. In this way, those companies compete by offering the lowest face amount and thereby, the highest IRR on surrender.

For non-MEC policies, the premiums are spread out over several years, increasing the net amount at risk. The purchase of a non-MEC is making a trade-off, linking liquidity without tax penalties with lower overall returns.

Some may choose to reduce the long-term cost of a non-MEC by a substantial face amount reduction sometime after the seventh policy year when no future premiums are planned. The reduction is done once the cumulative guideline level premiums exceeds the actual payments and produces a future guideline level premium of zero. This can reduce the insurance cost in later durations as the COI rates rise to more substantial levels.

Liquidity and Timing

Another factor unique to this market is that the underlying investment options may provide for very limited liquidity. The qualified investor in these private placement products is drawn by dynamic hedging strategies and other funds that may not offer the daily liquidity required by publicly traded mutual funds. In fact, there may be an advance notice requirement for any transfers or withdrawals.

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Under both the Guideline Premium and Cash Value Accumulations Tests of Section 7702, the minimum death benefit is a multiple of the cash value. But on what date is the death benefit determined? Limited liquidity may result in policy values that are not determinable on an everyday basis. One interpretation is that the policy value on a given day is the value that is eventually paid if a surrender were requested on that day (without regard to surrender charges and policy loans). So the policy may be written such that the death benefit payable is based on the value at the next possible surrender date following the date of death.

But, what if a death is not reported immediately? Typically, the death benefit is determined on the date of death and that amount is payable (with interest) once proof has been received. For a variable life policy, any investment gains or losses on the separate account between death and notification are absorbed by the company. Because this risk is not subject to anti-selection, and is spread over many relatively small policies, it is an acceptable risk.

But when the account value of a single policy may eventually exceed \$50 million, even one month's investment shifts may exceed a company's risk tolerance. Therefore, the timing between date of death and notification may create unacceptable financial risks. Some companies may not have addressed this risk in their policies while others have solved this concern in policy provisions or reinsurance to transfer this risk to the beneficiary or reinsurer.

Limited liquidity also complicates processing of recurring charges. Some companies require that the investment managers maintain some level of liquidity to cover these monthly charges. Other companies address this difficulty by using a "liquidity" account that is constantly kept at a level sufficient to pay the next few months' anticipated charges, or simply by accumulating overdue amounts and withdrawing them at intervals.

Reinsurance and Administration

Jumbo death benefits of \$25 million or more exceed the retention of even the largest direct issuers. PPVUL mortality risks are generally reinsured on a term basis, where

the actual policy COIs are derived from the reinsurance charges. It is important that any reinsurance treaty coordinate the reinsurance with the policy benefits. For example, if the COIs are deducted at the beginning of the month, a death during the month may result in the minimum death benefit determined at the end of the month. The reinsurance should be designed to cover the actual death benefit.

Finally, the company has to track any policies it sells. Even established offshore market entrants may have never issued a 7702-compliant life insurance policy. Some have specialized in annuities while others have not previously focused on the U.S. taxpayer as a potential customer. While the administration of a VUL policy is difficult enough, the 7702 and 7702A issues add significantly to the problem. For the offshore issuers, it is necessary to keep all records offshore and out of U.S. jurisdiction.

U.S.-based companies typically have the experience with domestic VUL products and may utilize in-house systems or onshore TPAs. The limited liquidity resulting from the private placement investment options will result in unique problems to solve. Offshore companies may approach the problem from different directions. Some are using offshore TPAs, who may be associated with U.S. companies with experience in these issues. In-house administration may involve purchase of an off-the-shelf system, development of a home-grown system or a shoebox administration. For those companies who expect never to sell more than a few policies, the approach may not be unreasonable provided sufficient documentation is kept and if their work is supported by calculation programs that fill in the more difficult values.

Conclusion

There are definite opportunities for profitable sales in the private placement VUL market, but these sales require the issuer to face many challenges. As this market grows, only those who have properly addressed the regulatory, marketing and administrative issues will succeed. □

Limited liquidity may result in policy values that are not determinable on an everyday basis.

Daniel Theodore is a consulting actuary at Milliman USA in New York, NY. He can be reached at daniel.theodore@milliman.com.

NAIC Update on Issues Affecting Life and Annuity Product Development

by Andrew M. Erman

First, how do things work at the NAIC?

The NAIC has several committees, task forces and working groups that collectively serve the objectives of the NAIC. One such task force is particularly relevant to this discussion — the Life and Health Actuarial Task Force (LHATF), which is currently chaired by New Mexico (Mike Batte). This task force reports into the Life Insurance & Annuities Committee, often referred to as just the “A Committee”.

Amongst other things, the NAIC discusses and develops laws, regulations and actuarial guidelines. The form of rule depends on the purpose of the rule and how the regulatory authority is executed. The development of these rules is done at the National Meetings (which occur four times each year) as well as through interim meetings and conference calls. While there are some exceptions, the approvals are done at the National Meetings. There are multiple levels of approvals. After an exposure period that typically lasts three months, LHATF will consider approving the rule. If approved by LHATF, then it goes to the A Committee for approval. Those two approvals typically happen in the same meeting. Lastly, it goes to Executive and Plenary for final approval. The final approval is typically at the next National Meeting, or three months after LHATF first approves the rule and six months after LHATF exposes the rule for comment.

As of the time of the writing of this article, the most recent NAIC National Meeting occurred September 9-12, 2002, in New Orleans, LA.

What’s going on today?

The new CSO Tables are coming to fruition and include a 25-year select period, endowment at age 121 and lower rates overall. Insurers can expect lower basic reserves (both statutory and tax) as well as lower guideline premiums and more net amount at risk. Two reports are available from the Academy of Actuaries (“Academy”) that discuss the devel-



opment of the tables and many of its implications. To adopt these tables, the NAIC needs to approve a regulation which empowers its use. That regulation was approved by LHATF and is in exposure period for Executive and Plenary approval in December. Assuming Executive and Plenary approve the regulation in December, it will then need to be adopted by the states, which may take a few years. There are, of course, several details and intricacies of this adoption that are beyond the scope of this article.

There is an Actuarial Guideline (AG MMMM) in the works for Variable Annuity Guaranteed Living Benefits (VAGLB's). LHATF voted to expose the most recent version of the guideline, which provides guidance for setting reserves for these features. A fast-track December adoption may make the guideline effective for the end of this year. This Actuarial Guideline is considered a stop-gap measure, because the proper place to address these risks are in a capital context

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With interest rates so low, the annuity writers have significant concerns with the existing annuity nonforfeiture law, which specifies a 3 percent minimum guarantee.

Andrew M. Erman, FSA, MAAA, is vice president of Annuity and Health Solutions at USAA Life Insurance Company in San Antonio, TX. He can be reached at AErman@exchange.pallic.com.

rather than valuation context. Consequently, the “C-3 Phase II” project will bring the modeling techniques of AG MMMM into a solvency framework.

With interest rates so low, the annuity writers have significant concerns with the existing annuity nonforfeiture law, which specifies a three percent minimum guarantee. Both the Academy and the American Council of Life Insurers have proposed alternatives that will provide for some indexing of that interest rate. While nothing is currently in the exposure period, this will likely move quickly due to the strain caused by the current economic environment.

LHATF voted to adopt a new GRET Table for 2003, which is an expense table that some companies use to comply with the sales illustration rules.

While not an LHATF issue, the Life Liquidity Risk Working Group of the NAIC did adopt a prototype that will lead to more disclosure in the annual statements for stress liquidity risk exposures. This would apply to products such as GICs with bail-out provisions. The Academy also reported that an effective approach to regulating these risks is to circulate letters to the insurance companies requesting more information on the nature of the products that could lead to

these risks. These letters are commonly referred to as “circular letters”, and they can help lead to a worthwhile discussion of the company’s risk exposure.

What can we expect tomorrow?

There is a regulation being considered (Reg XYZ) that will require minimum cash values for UL and VUL products that have long-duration secondary guarantees. Alternatives are being discussed and reviewed.

The Academy continues to push for a valuation and nonforfeiture environment that does not rely on specific, promulgated formulas. The Academy’s position is that such formulaic approaches result in a continual volley of industry innovation followed by regulatory fixes. The Academy’s position is that a context can be developed where the professionalism of the actuary can better accomplish the objectives of the valuation and nonforfeiture rules.

LHATF is also exploring revisions to the Standard Valuation Law that will retain the formulaic approaches for now but clean-up some other issues. Primarily, the proposals will remove deficiency reserves from the law and incorporate the actuarial opinion (currently a regulation) into the law. □

Product Development Section Papers Competition

The Product Development Section is sponsoring a Papers Competition on the topic of “Product Risk and Its Management.” This is open to all SOA members and provides awards for worthy papers of \$5,000 for 1st place, \$3,000 for 2nd place, and \$1,000 for one or more 3rd place awards. All papers must be submitted by April 1, 2003.

Entrants must identify a type of product risk, fully describe it, and discuss its effective management. Product risk can be based upon: a **risk characteristic**, such as equity derivative risk or substandard/nonstandard mortality; a **product line**, such as annuities, variable annuities, variable universal life, or term insurance; a **market practice**, such as viatical settlements, lifetime settlements, and/or other secondary markets; a **basic requirement**, such as mortality or investment risk; or **any other product risk** you choose to identify.

Entries will be judged by a panel formed by the Section Council. Papers will be evaluated on the basis of originality, comprehensiveness, thoroughness, and practical applicability to product development issues. All papers must be available for posting on the Product Development Section web site; winning and other worthy papers will be posted. □

Entries must be submitted electronically to SOA’s Life Fellow, Narayan Shankar, at nshankar@soa.org.

Letter from the Editor

by Douglas C. Doll

I am pleased to begin serving as editor of Product Matters! as the section begins its third decade. The editor of the original newsletter was Dick Robertson, and there have only been eight editors over the years. Tim Pfeifer has the record for most issues—15. I edited six issues from 1986-1988, but am not likely to challenge Tim's record.

The sophistication of this newsletter's current layout far surpasses that of the inaugural issue of October 1983, but the newsletter's focus has not changed. It is section news (activities, programs, plans) and product news (news of interest to actuaries involved with product development).

I noticed that, years ago, the newsletter articles generally were far shorter. The

majority of articles were less than one page in length. It truly was a newsletter, not a magazine. Long articles are good. I chose not to shorten any of the articles in this issue. However, I want to encourage more short articles. Many section members are too busy to write long articles, but a short blurb should be manageable. I also want to encourage letters to the editor, which I will publish at my discretion.

The next two newsletters are scheduled for April and July, with article submission deadlines of February 17 and May 19, respectively. I challenge section members to consider their product development experiences and to share them with our members. □

Douglas C. Doll, FSA, MAAA, works at Tillinghast-Towers Perrin in Atlanta, GA. He is editor of Product Matters and can be reached at doug.doll@tillinghast.com

Comments from the Outgoing Chair

by Mary J. Bahna-Nolan

Happy 20th anniversary! I write this column with mixed emotions as I turn over the reins as Chairperson of the Council to Noel Abkemeier and the rest of the Council members. This past year has been a very productive one. The council is financially strong and I am excited about the many initiatives the council has begun to better put our funds to use. I look forward to seeing the new council continue to see these initiatives to completion. I welcome and thank our newest council members, Abe Gootzeit, Kelly Levy and Keith Dall who have

already become active participants and volunteers. I want to thank the other members whose terms are also ending, Lorraine Mayne and Ken McCullum. Both have been very active with the council during their three-year terms and I thank them both for all their contributions. I have enjoyed my time on the council and have had the opportunity to meet and share ideas with many of the section members. I encourage all of you to get involved in one way or another. I look forward to continuing to serve the council in any way necessary, but I know I leave it in great hands! □



Mary J. Bahna-Nolan, FSA, MAAA, is vice president of product development at North American Co-Life/Health in Chicago. She can be reached at mbnolan@nacolah.com.

Survey on Mortality Tables

by Douglas C. Doll

Earlier this year, Tillinghast conducted a survey of mortality tables that life insurance companies used for pricing life products in 2001. One objective was to determine the underlying table being used, and the prospects of the 2001 CSO-related tables becoming a new basis for mortality measurement. This article summarizes some of the results.

Surveys were sent to 70 of the largest individual life writers. Responses were received from 32 companies. We limited responses to those companies that had significant sales of a product with average face amount of at least \$100,000. Mortality assumptions for both term and permanent were inquired about — not all companies had qualifying products for both.

With regards to the underlying table used for pricing, the responses were as follows:

Table	% Respondents
SOA 1975-80	69%
SOA 1985-90	12%
Homegrown	16%
Other	6%

Of the 22 companies utilizing the SOA 1975-80 table, five indicated that they modified the table to extend the select period and one extended the issue age range. Of the five companies utilizing a homegrown table, three said that the table had a slope similar to the SOA 1975-80 table, one said it had a steeper slope, and one had no comment.

Among those companies that used the SOA 1975-80 table, were underwriting factors constant or did they vary? Sixty-four percent (14 out of 22) varied the factors by duration. The others offered no comment or varied factors by issue age/attained age. Of the 14:

- Four increased factors by duration
- Three used “Tillinghast” factors (which grade off smoker/nonsmoker differentials at high ages)
- One used different factors for select vs. ultimate
- Six just indicated that factors vary by duration

We asked whether the respondents believe that the SOA’s 1990-95 table, or the 2001 Valuation Basic Table (2001 VBT) will become the new standard table against which experience mortality ratios will be measured. (Note that the 2001 VBT was created from the SOA 1990-95 data—it is smoother, has smoker/nonsmoker versions, and was projected to 2001 using population mortality improvement factors.)

(The number of responses for each answer is shown in the table on page 29.)

There seems to be a preference for the SOA 1990-95 table, but neither table is a “highly likely” preference for a majority of companies.

Below are representative comments as to why or why not the 2001 VBT or SOA 1990-95 tables would be used:

- Somewhat likely because both are based on more recent data and have a longer select period.
- 2001 VBT is too conservative. We use our own experience so probably won’t switch to SOA 1990-95 table.
- SOA 1990-95 table may have adjustments made and repackaged, but in some form it will become the experience standard.

	2001 VBT		SOA 1990-95	
	By your company	By the industry	By your company	By the industry
Not likely	14	10	10	4
Somewhat likely	10	14	14	12
Highly likely	5	1	5	8
No opinion	2	6	1	6

- It is highly likely that one of these two tables will emerge as the industry standard, but not clear which of the two will be.
- 2001 VBT or 2001 CSO is a useful basis for determining X factors.
- Acceptance probably will depend on the base table the reinsurers use.
- 2001 VBT is preferred because it reflects recent experience (e.g., smaller male/female gap), has separate smoker/nonsmoker tables, smooths out bumps in SOA 1990-95 table and is consistent with 2001 CSO table.
- The SOA 1990-95 table is based on experience from different cohorts of business (before blood testing/after

blood testing), so the slope of mortality is too steep.

There appears to be some support for a new pricing basis within the industry, but issues such as differences in slope between the SOA 1975-80 table and other more recent mortality tables will hinder acceptance of any new mortality table basis. However, there are also those in the industry calling for an examination of mortality slope (at least regarding mortality used in illustration regulation testing). Where will this issue end up? Stay tuned. □

*Douglas C. Doll, FSA,
MAAA, works at
Tillinghast-Towers Perrin in
Atlanta, GA. He is editor of
Product Matters and can
be reached at doug.doll@
tillinghast.com*

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The 3rd annual Product Development Actuary Symposium will be held in Chicago on June 12 & 13, 2003.

The 2002 Symposium was well-attended and was a useful, informative session. The planning committee has already started to plan the 2003 event. More details will follow. □

Mortality Table Slope and Future Improvements

by Michael S. Taht

Many actuaries are starting to pay more attention to the later duration slope of pricing mortality. There have been a couple articles wondering whether mortality assumptions are taking a too aggressive posture for later durations. The NAIC's Life and Health Actuarial Task Force has a new charge for 2003: to "Investigate whether inappropriate mortality assumptions are being incorporated in life insurance illustrations." Note that mortality at very long durations, while not material for pricing (a present value basis including lapse), can have a material effect on illustrations at longer durations.

In the August 2002 issue of *Product Matters!*, Larry Warren compared the slope of the 1990-95 S&U mortality table to the 1975-80 S&U mortality table. He noted that the 1990-95 table has a steeper slope and concludes that actuaries who price off of the 1975-80 table may unwittingly be taking an aggressive posture on future mortality. I agree that the difference in slope of the two tables is significant, and that slope is an issue that the pricing actuary should address explicitly. I disagree that the 1990-95 table is proof of the inadequacy of the 1975-80 table.

Why is the 1990-95 table steeper than the 1975-80 table? I can think of two reasons, neither of which invalidate the 1975-80 table. First, we have seen a large increase of nonsmoker and preferred-risk underwriting classes since 1980. This business undoubtedly has a disproportionate effect on the early durations of the 1990-95 table, making it steeper. Second, there were higher industry lapse rates in the early 1980s, so the later durations of the 1990-95 table may be suffering from antiselection that occurred then. The 1990-95

table is built from non-homogeneous data. The 1975-80 table may be the most recent table that has homogeneous data for all durations.

There are (at least) three issues that the pricing actuary ought to consider in evaluating the appropriateness of later duration mortality:

1. What portion of the underwriting improvement should wear off over a "normal" select period (e.g., 15-25 years)?
2. Should the remaining underwriting improvement wear off at the higher attained ages?
3. What role does underlying population improvement have?

Regarding the "normal" select period, some medical studies demonstrate that the effects of underwriting selection can persist for a long time.

- Alcoholism: A 1952-76 study of the effects of alcohol abuse showed that the mortality ratios (as calculated against the 1965-70 Basic Tables) remained relatively constant by duration.
- The Framingham study on cholesterol showed that for males with a cholesterol level of 270 or higher, the mortality ratio in durations 1-12 was 150 percent while it was 140 percent for durations 13+.
- Blood pressure and urine abnormalities: A study of policyholders issued

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between 135-50 showed that the extra mortality for those with abnormalities in the urine and high blood pressure persists well into durations 10-15 and increases with duration.

- Diabetes: A 20-year study of diabetes showed that the impact of diabetes continued well into durations 15-20.

Regarding the high attained ages, opinions are mixed. Smoker/ nonsmoker differentials wear off at high attained ages, but male/female differences do not. The RP2000 table shows blue/white collar and annuity size differences grading off at higher ages. I believe that much underwriting will wear off at high attained ages, but suspect that family history differences would persist.

Regarding underlying population improvement, there are various population projection scales that have improvement factors that peak somewhere between age 50 and 80. Therefore, if population improvement is used to update an old mortality table, it will flatten a table at younger issue ages, but steepen a table at older issue ages.

The issue of slope is not going to go away, and the data required to address this issue does not exist, and will not for many years. However, it is important that pricing actuaries understand any implicit assumptions they are making through the selection of a base mortality table and understand the impact of these assumptions. □

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*Michael S. Taht, FSA,
MAAA, works at Towers
Perrin in Atlanta, GA. He
can be reached at
tahtm@towers.com.*

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475 N. Martingale Road • Suite 800
Schaumburg, Illinois 60173
Web: www.soa.org