SOCIETY OF ACTUARIES Reinsurance Section

Reinsurance news

Issue 73 | August 2012

Life Reinsurance data from the 2011 Munich Re Survey

By David M. Bruggeman

A few years ago, I did a presentation where I compared different life reinsurance pricing eras in the United States to various Beatles songs. For example, the mid-to-late 1990s was "I Want to Hold Your Hand" because reinsurers were heavily courting direct companies for additional business. "With a Little Help From My Friends" was perfect for the early-2000s when reinsurers helped out direct companies with capital strain/reserve relief brought on by Guideline XXX. This growth period for the industry was followed by "A Hard Day's Night" in the mid-2000s due to re-pricing efforts by several reinsurers. But by the end of the decade, relationships between direct writers and reinsurers had improved and "We Can Work It Out" seemed like an appropriate selection. But what Beatles song best captures the last couple of years for the life reinsurance industry? Is it "Got to Get You Into My Life," "Come Together," or how about "I Feel Fine"? To help you decide, let's take a look at the results of the 2011 Life Reinsurance Survey. First, some quick definitions of the reinsurance categories that will be discussed:

CONTINUED ON PAGE 6

Actuaries
Risk is Opportunity.®

Published by the Reinsurance Section Council of the Society of Actuaries

This newsletter is free to section members. Current issues are available on the SOA website (www.soa.org).

To join the section, SOA members and non-members can locate a membership form on the Reinsurance Section Web page at http://www.soa.org/reinsurance.

Reinsurance news

Issue 73 | August 2012

Call for Articles for next issue of Reinsurance News.

While all articles are welcome, we would especially like to receive articles on topics that would be of particular interest to Reinsurance Section members.

Please e-mail your articles to Richard Jennings (*richardcjennings@gmail.com*).

Some articles may be edited or reduced in length for publication purposes.

If you would like to assist in the editing process of the *Reinsurance News*, please contact Richard Jennings, Editor, *Reinsurance News*, or H. Michael Shumrak, Section Communications Leader at *Michael@H-MichaelShumrak.com.*

Chairperson's Corner By Kelly Levy

Your Section at work …

The Section Council has been very active in addressing the following section activities, all of which use section generated funds to advance:

- Our LEARN program to bring Life Reinsurance education sessions to state insurance regulators continues to be very well received and in high demand. We tried something new this year by offering the LEARN session at The Life Insurance Conference in the spring and found it to be very well received. Do you know of a body/organization that would benefit from some basic Reinsurance Education? Let us know.

- Other Reinsurance driven education:

  - Two completed webcasts to this point in 2012;
  - Sessions at the 2012 ReFocus, the Life and Annuity Symposium, Health meeting, Valuation Actuary Symposium and hope to see you at our section breakfast and sessions at the SOA Annual meeting;
  - Thousands of dollars in research activities (ours and other sections) including sponsoring a new edition of the Tiller Life Reinsurance textbook with expanded content (work is underway with a current print date expected in late 2013); and
  - Entertaining Socials that are heavily discounted for our section members at Life and Annuity Symposium and Annual meeting.

The section is beginning work to bring back the 'Intro to Reinsurance Boot Camp.' We hope this will be a venue to bring Reinsurance education to those new to Reinsurance as well as broaden the value proposition the Reinsurance Section provides. If you are interested in helping, we would surely benefit from your participation so please reach out to one of us on the council as we build the framework for this initiative.

It goes without saying that the reinsurance community has a long tradition of offering superb meetings. Proof of this being that; in the time that has passed since our last issue was published, the following events have transpired:

1. The Canadian Reinsurance Conference in Toronto, Ontario

What started in 1956 as a half-day meeting between Canadian Insurers

CONTINUED ON **PAGE 4**

Kelly Levy is vice president, capital management with Great-West Life in Toronto, Ontario. Kelly can be reached at kelly.levy@gwl.ca.

pooling their risks to be able to write larger face amounts has become a one-day learning and networking opportunity for reinsurance professionals. Concurrent sessions attract professionals from underwriting, administration, actuarial and finance. This year's tagline was "Creating opportunities amidst change."

2. ReFocus Conference in Las Vegas, United States

The first ReFocus meeting was held in 2007 and from the beginning this conference was deemed a gathering for senior life insurance and reinsurance executives. The 2 ½-day event includes a Legends classic golf tournament, raising funds for The Actuarial Foundation. The ReFocus banner for 2012 was "An Industry at a Critical Crossroads." See Ronnie Klein's ReFocus ReCap in this issue.

In recent years both of the above mentioned events have each year attracted several hundred attendees. Much work is involved for those volunteers who make up the organizing committees, so how rewarding it must be for them to see these events become the successes that they have! Didn't these organizers also get it right with their taglines of "Creating Opportunities Amidst Change" and "An Industry at a Critical Crossroads"? We continue to see lower ceded recurring life reinsurance when we look at the results of the recurring life reinsurance ceded in the United States within the Munich Re survey results.* I believe there are both an Opportunity and a Crossroads of sorts speaking through this data. The lead article in our March 2012 issue really spoke to this so if you missed it, circle back for a thoughtful read.

Until next time, I wish you and your families a safe and wonderful summer.

*see full review of survey results in this edition of the Reinsurance Section Newsletter. ■

(1) Recurring reinsurance: Conventional reinsurance covering an insurance policy with an issue date in the year in which it was reinsured. For the purpose of this survey, this refers to an insurance policy issued and reinsured in 2011.

(2) Portfolio reinsurance: Reinsurance covering an insurance policy with an issue date in a year prior to the year in which it was reinsured, or financial reinsurance. One example of portfolio would be group of policies issued during the period 2005-2006, but being reinsured in 2011.

(3) Retrocession reinsurance: Reinsurance not directly written by the ceding company. Since the business usually comes from a reinsurer, this can be thought of as "reinsurance of reinsurance."

UNITED STATES

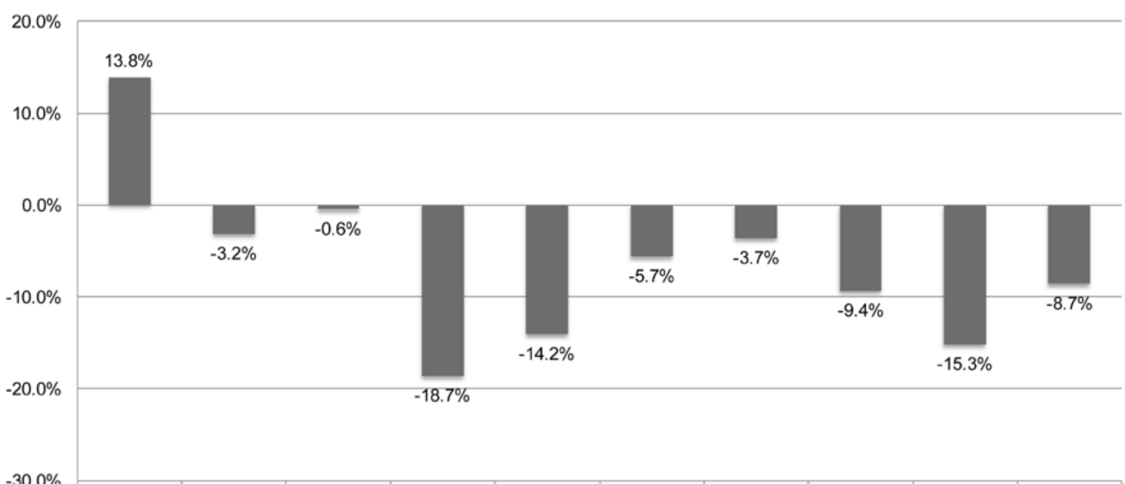
The biggest news in 2011 concerned acquisitions within the reinsurance industry. The largest being the SCOR Global Life acquisition of Transamerica Re. Transamerica Re was a perennial top five U.S. new business reinsurer with over $965 billion of individual life reinsurance in force in 2010. The acquisition immediately placed SCOR among the top U.S. life reinsurers. Another major acquisition within the industry was Hannover Re, who acquired a portion of Scottish Re's life business. The block Hannover acquired accounted for over $50 billion in new portfolio reinsurance. Finally, Manufacturers Life's (Manulife) retrocession business was acquired by Pacific Life. Manulife, a major player in the retrocession market, had reported $86 billion of in force retrocession business in 2010.

Reinsurance of in force blocks from direct writers also accounted for a large portion of several reinsurers new business writings. Most notably, Canada Life and Wilton Re reported sizable portfolio writings in 2011. Canada Life reported $79 billion of portfolio new business and Wilton Re reported $31 billion.

RECURRING

U.S. Recurring new business continued to decline in 2011. Overall, recurring new business was down 8.7 percent in 2011. This marks nine straight years of a decrease in new business. The graph below shows how recurring new business has fared over the last decade:

Annual Percentage Change in U.S. Recurring New Business (2002-2011)



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
% Change	13.8%	-3.2%	-0.6%	-18.7%	-14.2%	-5.7%	-3.7%	-9.4%	-15.3%	-8.7%

CONTINUED ON PAGE 6

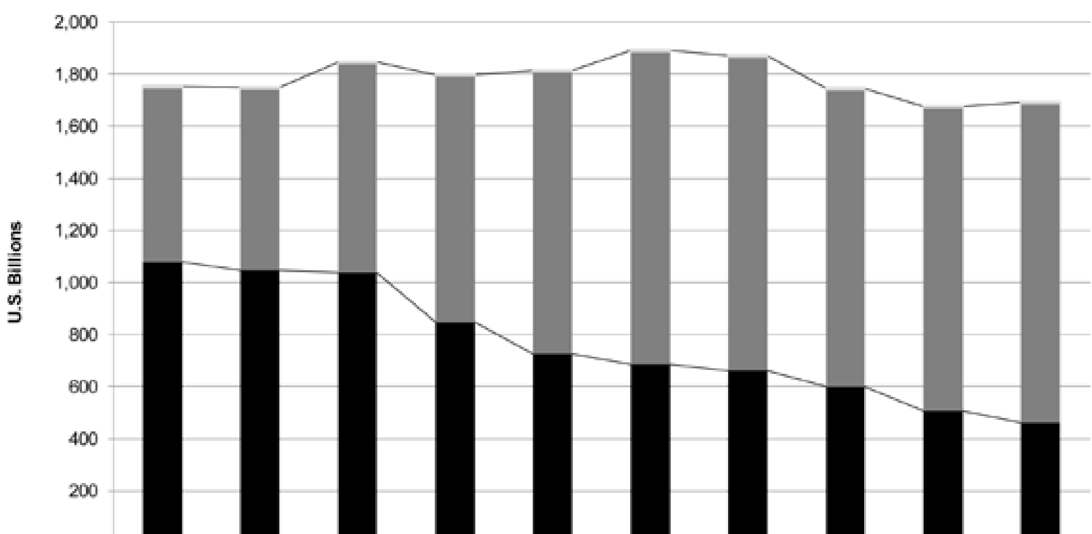
David M. Bruggeman, FSA, MAAA is assistant vice president and actuary with Munich American Reassurance Company in Atlanta, GA. David can be reached at dbruggeman@munichre.com.

Another measure often used to gauge the popularity of reinsurance is the cession rate. The cession rate is defined as the percentage of new business writings that were reinsured in that year. Ten years ago, the U.S. life reinsurance industry was enjoying cession rates in excess of 50 percent—meaning the majority of the life insurance business written in that particular year was actually reinsured. More recently however, cession rates have been steadily declining, eventually falling to 30 percent in 2010. LIMRA estimates direct sales grew by 1 percent in 2011. Sales increased for universal life (UL), variable universal life (VUL) and whole life (WL) products, but term life sales declined by 3 percent. Using LIMRA's estimate for 2011 U.S. life sales and this survey's recurring reinsurance figure equates to a cession rate of 27.3 percent for 2011.This represents yet another decrease in cession rates and is the lowest rate the market has experienced since 1995. The drop in cession rate suggests direct writers are continuing to retain more of their risk—either by moving from first dollar quota share arrangements to excess retention arrangements or by raising their excess retention limits.

The following graph illustrates how the cession rate has steadily fallen in recent years. One telling statistic is since 2002, U.S. recurring new business has fallen almost 60 percent but direct sales have only dropped 4 percent.

One of the key factors contributing to this overall decline is coinsurance of level term business. It's no secret that much of the growth in the early 2000s can be attributed to coinsurance of level term products as a result of the introduction of Guideline XXX in 2000. Reinsurers were able to help out with the reserve strain direct writers had because of the new reserving guidelines. But as the years went by, direct writers were finding more economical ways to handle its surplus needs, and the need for coinsurance gradually lessened. This is evident when comparing the percentage of coinsurance for new business to the percentage for in force. From a new business perspective, the percentage of reinsurance that is coinsured has steadily dropped over the last few years. In 2009, 37 percent of reinsurance was coinsured, but dropped to 28 percent in 2011. However,

U.S. Ordinary Individual Life Insurance Sales



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
% Reinsured	61.5%	59.7%	56.2%	47.0%	39.9%	36.1%	35.2%	34.2%	30.2%	27.3%
Amt Retained	675	705	809	952	1,089	1,207	1,212	1,148	1,168	1,229
Amt Reinsured	1,078	1,043	1,037	844	724	683	658	596	505	461

"... WILL DIRECT WRITERS LET THE POST-LEVEL TERM EXPERIENCE PLAY OUT WITH THE REINSURERS OR WILL THEY TRY TO RECAPTURE THE BUSINESS AFTER THE LEVEL TERM PERIOD?"

the percentage of coinsurance based on in force is much higher. Over half of the recurring in force, 52 percent, is reinsured on a coinsurance basis. This reflects the higher amount of coinsurance business that was written in the early- to mid-2000s as compared to recent years. There is no doubt the decreasing coinsurance levels have had a large impact on overall recurring levels.

As we have reached the end of the level term period for the first wave of Guideline XXX 10-year term products, post-level term experience is just emerging. With this milestone, will direct writers let the post-level term experience play out with the reinsurers or will they try to recapture the business after the level term period?

One constant in the U.S. reinsurance market over the last several years has been the level of market concentration. Once again, 85 percent of the reported recurring new business was captured by five reinsurers: RGA, SCOR (with the acquisition of Transamerica Re), Swiss Re, Generali and Munich Re. The table below shows the recurring results at the company level:

RGA was the leading recurring writer in the United States. Its $103 billion was $25 billion above its closest competitor, and equated to a 22 percent market share. However, the $103 billion represents a 22 percent drop from its 2010 production. The next four reinsurers reported similar new business levels, with SCOR Global, Swiss Re and Generali USA Life Re reporting new business writings within $3 billion. SCOR's $77.5 billion reported in 2011 gave it a 16.8 percent market share and the number two position among recurring writers. For comparison purposes, SCOR and Transamerica's Re's 2010 numbers have been combined. This results in a 16 percent reduction from the combined 2010 recurring writings. Close behind SCOR is Swiss Re which wrote $75.9 of recurring in 2011. This gave Swiss Re a 16.5 percent market share. By amount, Swiss Re reported the largest increase from 2010, with its new business increasing from $70.6 billion in 2010 to $75.9 billion in 2011. Less than $1 billion away from Swiss Re was Generali. Generali reported $75 billion in 2011, which was good enough for a 16.3 percent market share. Compared to 2010, Generali's production fell slightly; only by $2.7 billion. The final member of this group is Munich Re. Munich's $61.9 billion in 2011 recurring new business was a 4.7 percent increase over 2010, and gave it a 13.4 percent market share. After Munich, there is a sizable drop-off in production levels. There is $32 billion difference between the top five and Hannover Life Re, the number six writer. Hannover grew organically and by acquisition of in force blocks in 2011. Its $29.3 billion of recurring reported in 2011 is a 17 percent increase from 2010, increasing its market share from 4.9 percent in 2010 to 6.3 percent in 2011. Canada Life's recurring new business fell 21 percent—dropping from $19.7 billion in 2010 to $15.5 billion in 2011—while holding a 3.4 percent market share. General Re recorded a 26 percent increase in recurring writings compared to 2010. It wrote $12.7 billion for a market share of 2.8 percent. Optimum Re, Wilton Re and RGA Re (Canada) round out the rest of the U.S. recurring cast. Optimum Re and Wilton Re both have a 1 percent market share while writing close to $5 billion of new business. It should be noted there was one company that declined

U.S. Ordinary Recurring Reinsurance (U.S. Millions)

	2010		2011		
Company	Assumed Business	Market Share	Assumed Business	Market Share	Change in Production
RGA Re. Company	132,936	26.3%	103,108	22.4%	-22.4%
SCOR Global/Transam.	92,574	18.3%	77,505	16.8%	-16.3%
Swiss Re	70,599	14.0%	75,912	16.5%	7.5%
Generali USA Life Re	77,782	15.4%	74,993	16.3%	-3.6%
Munich Re (US)	59,157	11.7%	61,922	13.4%	4.7%
Hannover Life Re	24,971	4.9%	29,275	6.3%	17.2%
Canada Life	19,698	3.9%	15,543	3.4%	-21.1%
General Re Life	10,041	2.0%	12,695	2.8%	26.4%
Optimum Re (US)	5,034	1.0%	5,002	1.1%	-0.6%
Wilton Re	5,264	1.0%	4,826	1.0%	-8.3%
RGA Re (Canada)	428	0.1%	392	0.1%	-8.4%
Ace Tempest	6,478	1.3%	DNR	0.0%	0.0%
TOTAL	**504,962**	**100%**	**461,173**	**100%**	**-8.7%**

DNR- Did Not Report

CONTINUED ON **PAGE 8**

to participate in the survey this year: Ace Tempest. It is not known what it wrote in 2011, but in 2010, it held a 1.3 percent market share. If Ace is excluded from the 2010/2011 comparison, the total change in production for the companies reporting in 2011 is actually a 7.5 percent decrease instead of the 8.7 percent shown in the table.

PORTFOLIO

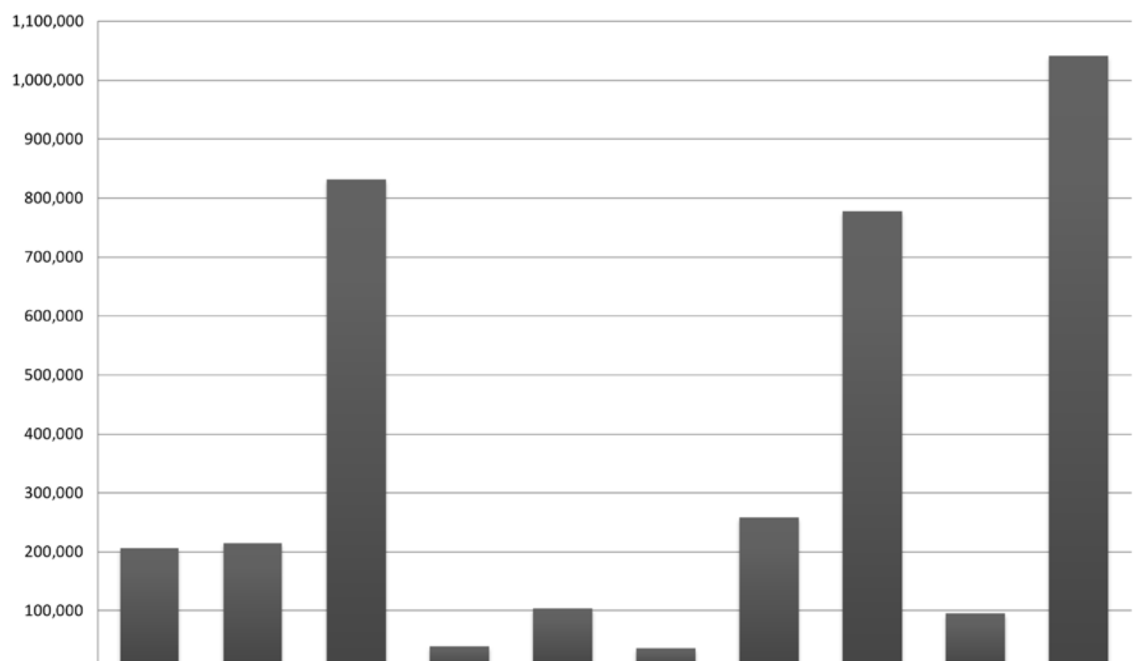
As mentioned earlier, U.S. portfolio was very active in 2011. The $1.0 trillion reported in 2011 was the largest portfolio amount ever recorded. Much of this, of course, is related to the SCOR acquisition of Transamerica Re. This one acquisition accounted for $830 billion of the $1.0 trillion portfolio total. Outside of that large transaction, Hannover reported $88.0 of portfolio business in 2011 with approximately $56 billion of Hannover's portfolio writings coming from the acquisition of a portion of Scottish Re's in force. The portfolio amounts were not limited to activity within the reinsurance community, there were several other sizable portfolio amounts reported originating from direct writers. Some of the notable companies reporting portfolio business originating from direct writers include Canada Life ($79.4 billion) and Wilton Re ($31.3 billion).

Portfolio production over the last 10 years is shown in the chart below. The spikes seen in 2004 and 2009 are also a result of acquisition activity within the reinsurance industry. What is worth noting, however, is they both represent the same source of business … the ING Re block of business. In 2004, Scottish Re acquired ING Re, and then, in 2009, Hannover acquired this same block from Scottish Re.

RETROCESSION

After several years of significant decreases, the U.S. retrocession market recorded an increase in 2011.

Portfolio ($ Millions)

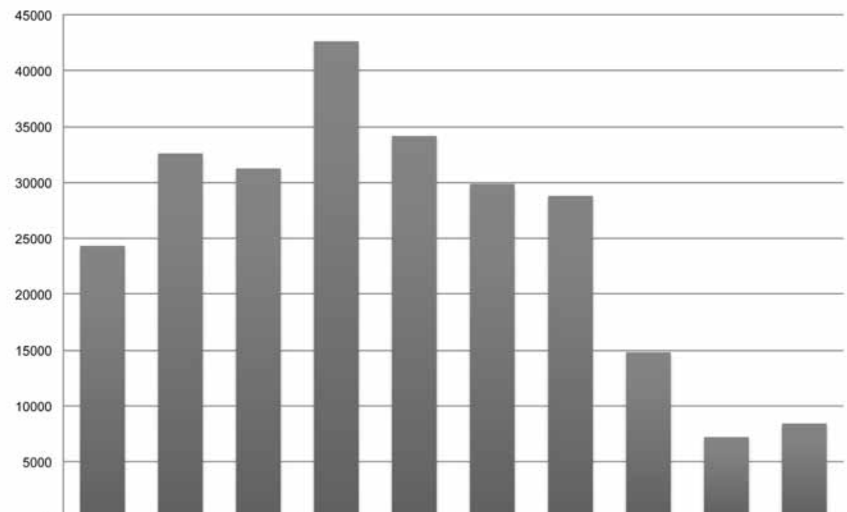


	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Portfolio	204,242	213,656	831,703	38,747	101,926	35,058	256,786	776,710	94,236	1,041,577

> **"... THE CESSION RATE IN CANADA IS IN THE RANGE OF 70 PERCENT COMPARED TO THE U.S. CESSION RATE OF 27.3 PERCENT."**

Retrocession went from $7.2 billion in 2010 to $8.4 billion in 2011. While this 16.7 percent increase is encouraging, the 2011 new business production is still a far cry from what the retro market had recorded in past years. For example, retrocessionaires reported five times the 2011 amount, $43 billion, just six years ago. Like direct writers, reinsurers are retaining more of their business, which leaves less business available for the retros. The graph below illustrates the impact the increasing retentions from both the direct writers and the reinsurers has taken on the retro market. Retrocessionaires are especially sensitive because of the growing concentration of the recurring market. If just one major reinsurer makes a retention change, it can be deeply felt by the retro market. Top U.S. retrocessionaires are, in order of 2011 production, Pacific Life ($4.3 billion), Berkshire Hathaway Group ($2.2 billion) and AXA Equitable ($1.7 billion). These three companies cover 97 percent of the reported U.S. retro market.

Retrocession ($ Millions)



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Retrocession	24318	32614	31249	42625	34159	29879	28812	14817	7226	8433

CANADA

Outside of a large portfolio amount reported from one reinsurer, 2011 life reinsurance production in Canada closely resembled 2010 production.

RECURRING

Recurring new business in Canada experienced little change in 2011. The $154.3 billion reported represents an increase of less than 1 percent. According to LIMRA, 2011 Canadian direct sales by face amount were also on par with 2010 sales. While this suggests no material change to the Canadian cession rate in 2011, it should be noted Canadian reinsurers enjoy a cession rate that is considerably higher than seen in the United States. Based on LIMRA's estimates for 2011 Canadian direct sales and the results of this survey, it is estimated the cession rate in Canada is in the range of 70 percent compared to the U.S. cession rate of 27.3 percent. Another difference from the U.S. market is that little of the reinsurance in Canada is reinsured on a coinsurance basis. In 2011, only 2.5 percent of the Canadian recurring business was reported to be on a coinsurance basis. In comparison, 28 percent of reinsurance was coinsured in the U.S. market.

There was no change in the order of any of the Canadian recurring producers from 2010 to 2011. RGA, Munich and Swiss remain the top three recurring writers, and account for the bulk of the market share. These three companies had a combined market share of 85 percent in 2011. One interesting observation that can be seen in the table below is, while each of the top three reinsurers showed small decreases in recurring production, the next tier of reinsurers (SCOR, Optimum and Aurigen) all reported sizable double-digit increases. Granted, the production level from these companies is considerably lower than the "Big 3," but they appear to be slowly eating away at the top three's market share, which has gone from 94.5 percent in 2009 to 85.7 percent in 2011. It will be interesting to see if this trend continues.

PORTFOLIO AND RETROCESSION

Similar to the U.S. market, Canadian reinsurers reported a large increase in portfolio business and stable retrocession numbers. The increase came primarily from one company, Munich Re reported over $56 billion of individual life portfolio. Aurigen Re was the only other reinsurer reporting portfolio business ($153 million). The 2011 total Canadian portfolio amount of $56.3 billion is considerably larger than the $1.4 billion reported in 2010.

CONTINUED ON PAGE 10

Canada Ordinary Recurring Reinsurance ($CAN Millions)

Company	2010 Assumed Business	2010 Market Share	2011 Assumed Business	2011 Market Share	Change in Production
RGA Re (Canada)	52,623	34.4%	50,349	32.6%	-4.3%
Munich Re (Canada)	48,324	31.6%	48,131	31.2%	-0.4%
Swiss Re	35,208	23.0%	33,762	21.9%	-4.1%
SCOR Global Life (Canada)	7,773	5.1%	10,814	7.0%	39.1%
Optimum Re (Canada)	4,903	3.2%	5,791	3.8%	18.1%
Aurigen	4,201	2.7%	5,465	3.5%	30.1%
TOTALS	153,032	100%	154,312	100.0%	0.8%

Canadian retrocession business stayed steady in 2011. In total, the retro market reported a modest 2 percent increase; going from $1.38 billion in 2010 to $1.41 in 2011. Three reinsurers reported Canadian retrocession business: Berkshire Hathaway, Pacific Life and AXA Equitable. Comparing recurring new business to retrocession new business puts the Canadian retrocession rate at 1 percent. This is about ½ of the U.S. rate.

CONCLUSION

The table below provides a summary of the overall results from the survey.

Life Reinsurance New Business Production

	U.S. 2010	U.S. 2011	U.S. Change	Canadian 2010	Canadian 2011	Canadian Change
Ordinary Life						
Recurring	$504,962	$461,173	-8.7%	$153,032	$154,312	0.8%
Portfolio	94,236	1,041,577	1005.3%	1,437	56,270	3815.8%
Retrocession	7,226	8,433	16.7%	1,380	1,405	1.8%
Total Ordinary	**606,424**	**1,511,183**	**149.2%**	**155,849**	**211,987**	**36.0%**

U.S. figures are in $US Millions, Canadian figures are in $CAN Millions

For the United States, the Federal Reserve's recent actions indicate low interest rates will continue through 2013 and most experts are predicting unemployment rates will continue to hover around 8 percent in 2012. The one big unknown is if an improving and, hopefully, less volatile economy will translate to increased life insurance sales. There are already some encouraging signs for U.S. life sales in 2012. MIB recently reported U.S. life insurance activity rose 4.2 percent in the first quarter compared to the same period last year. Interestingly, the older issue ages (age 60 and higher) showed the largest increase. Several industry experts have gone on record saying growth rates for life insurance will be close to the historical level of 2 to 3 percent. Meanwhile, other experts believe—due to low interest rates, high equity market volatility and slow economic growth—life sales may experience a modest downturn. From a product standpoint, WL and UL products are expected to continue to see growth because of the economic environment. Notwithstanding the above, a recent LIMRA survey showed half of U.S. households admit they don't have enough life insurance. For the optimist, this means there is potential for increasing direct sales in 2012.

One path some reinsurers have taken in hopes of maintaining or increasing its reinsurance share is to offer additional services to the direct writers to help profitably grow their business. Examples of such services include providing additional capacity on large cases, underwriting support, biometric support, or product development support. With the amount of data reinsurers have, they are in an excellent position to be able to bring valuable information to the market. While these services bring value, the bottom line is that price remains a key factor in the direct writer's eyes.

So what Beatles song have you chosen to symbolize today's life reinsurance market? There's no doubt life reinsurers are facing challenges to put business on their books, but let's hope they don't have to travel "The Long and Winding Road" before the market shows signs of picking up again.

Complete survey results can be found in the Publications section of the Munich Re website, www.marclife.com.

DISCLAIMER:

Munich Re prepared the survey on behalf of the Society of Actuaries Reinsurance Section as a service to Section members. The contributing companies provide the numbers in response to the survey. These numbers are not audited and Munich Re, the Society of Actuaries and the Reinsurance Section take no responsibility for the accuracy of the figures. ■

ReFocus ReCap 2012—An Evolving Success Story

By Ronnie Klein

When ReFocus was conceived just six short years ago, no one from the two sponsoring organizations—the American Council of Life Insurers and the Society of Actuaries—would have believed that it would blossom into the premier conference for life insurance and reinsurance executives. Not only did the attendance break a record at 397 in 2012, but we had 11 speakers with chairman, CEO and/or president in their titles. To show how balanced the agenda really was, 12 of the speakers work at direct insurers, seven are from reinsurers and 10 reside at consulting firms, banks, brokers, trade organizations or are in the educational arena. In short, ReFocus 2012 was a major success.

The featured event of the meeting was the reunion of Pat Buchanan and Bill Press in a crossfire-type reenactment. Joining Pat and Bill were talk show hosts and political analysts Heidi Harris and Marc Germain. This interactive and controversial session was extremely entertaining and brought back fond memories to anyone older than 50 sitting in the room.

For 2012, the theme of the ReFocus conference was "An Industry at a Critical Crossroads." The general sessions emphasized the pressures placed upon insurers and reinsurers from external parties and events such as external boards of directors, rating agencies, regulators, the economy and natural disasters. Brad Smith ran a very interesting session where four insurance executives shared their views on outside interference including very relevant tips on how to manage external boards of directors. Chris Stroup, the ultimate moderator, countered with four reinsurance executives sharing their views on areas of opportunities for reinsurers including a discussion about direct company needs in a Solvency II environment (should Solvency II ever become enacted).

Longevity played a big part in ReFocus 2012, highlighted by an excellent session run by David Howell of Pacific Life Re in the United Kingdom. During this very well attended break-out session, Dave and Amy Kessler of Prudential U.K. described the basis for the increasing number of longevity transactions occurring—mainly in the United Kingdom—by reinsurers and in the capital markets. This is a topic that will only become more relevant in our industry in years to come.

There were also some very interesting sessions on the economy, IASB standards and Solvency II, all having a major affect on the strategy and structure of every insurer and reinsurer in the world. The final session of the conference was a "must see" review of the incredible number of natural catastrophes that took place in 2011. It seemed like the world was getting hit with a one-in-200-year-event each and every month of the year. Experts from Aon Benfield, Guy Carpenter and RMS tried to make some sense from these disasters and explain if there is a trend or if these events were truly an aberration. For those who left early or were dining in The Verandah (yes, we saw you in there), you definitely missed one of the gems of the conference.

However, the main reason for attending ReFocus is having the opportunity to meet with the senior group of executives that attend the meeting each year. Where else can you rub elbows with insurance company CEOs such as Johnny Johns, Tom Marra and Doc Huffman, or reinsurance company CEOs such as Chris Stroup and Greig Woodring? Add to that the consulting firm bigwigs such as Brad Smith and Mike McLaughlin and you have a networker's heaven. In addition, attendees included a "who's who in reinsurance" with industry icons such as Diane Wallace, Denis Loring and the godfather of the ReFocus conference, Mel Young.

Your ReFocus Planning Committee is not resting on its laurels, however. We have received your feedback and we are committed to making next year's event better and a bit different. Many people commented that the sessions were too long and we will take immediate action on this. For 2013, you will see shorter sessions with a few longer breaks for networking. In particular, we are discussing a longer lunch break followed by an exciting afternoon general session to get you back to the meeting rooms.

While the planning committee is still content with the Las Vegas location, please keep an eye out for a possible change in hotel for 2013. There will also be a modification in the programming committee that should bring some new ideas and a fresh perspective to the meeting. Also on the list were comments about the theme and the desire for a few more controversial and leading-edge sessions. The planning committee is fully

CONTINUED ON **PAGE 15**

Ronald (Ronnie) Klein is head of Life Reinsurance with Zurich Insurance Company Ltd., in Zurich, Switzerland. Ronnie can be reached at ronald.klein@zurich.com.

committed to taking all of these comments into account as we plan for the 2013 meeting. Our goal is to make next year's ReFocus Conference the best ever!

Your ReFocus programming committee hopes to see you in 2013 (dates and venue to be announced shortly) as this global gathering of senior life insurance and reinsurance executives once again meets in Las Vegas in early March. Since word-of-mouth is the conference's greatest recruiting tool, we hope that you will spread the word to your colleagues. Please be part of ReFocus 2013! ■

Interview with Paul Rutledge, **President & CEO SCOR Global Life Americas**

By Paul E. Rutledge

Reinsurance News: For our readers who may not be familiar with SCOR Global Life Americas (SGLA), could you please describe your role within the company and within the SCOR group?
Rutledge: SCOR Global Life Americas is the combination of business that Transamerica Re had in North and South America with SCOR's existing business in these regions. This increases our presence in the United States, Canada and most of Latin America. I serve as president and CEO of SCOR's life reinsurance operations in this part of the world, a role which involves setting overall policy, governance and strategy within the framework of the SCOR group. I also sit on the SCOR Executive Committee, which sets policy and oversight for the SCOR group.

Reinsurance News: We understand that you are a fellow of the Society of Actuaries. Nowadays, it has become less common to see actuaries appointed to the position of president at insurance companies. Why do you believe this is? What would you recommend for actuaries who want to pursue greater leadership opportunities in their companies?
Rutledge: I'm not sure how true this is, generally. I would say that a diverse background has always been advantageous for actuaries, and as complexity increases in our business it has become a necessity. I know on the reinsurance side, which I view as having a more technical business model, we face a far more complex environment than in the past. It's the same on the retail side. We all deal with enormous complexity with respect to regulations, legal issues, governance, economics, capital markets and on and on. The insurance business today lends itself to people with diverse backgrounds and a range of knowledge and experiences. My recommendation to actuaries is to broaden your interests and explore non-technical pursuits, on the legal and regulatory side, for example. I also encourage actuaries to continue to keep current with their knowledge and skills because so much of what we do involves complex and dynamic factors that are in a constant state of flux.

Reinsurance News: Could you tell us about your own career path? What are the key moments of your career that you remember most?
Rutledge: I started as an actuary in a fairly traditional debit company, and was fortunate to be there when they formed a holding company. So at an early stage in my career I moved to a holding company environment where I gained exposure to a broad view of the life insurance business. I worked with investments, tax planning, cash flow planning. I got involved in board issues, capital markets and spin-offs' activities. This experience really added dimension to what until then had been a largely technical career path.

Paul E. Rutledge III, FSA, MAAA, is president and CEO of SCOR Global Life Americas in Charlotte, N.C. Paul can be reached at prutledge@scor.com.

My next role was president of a much larger company, Life of Virginia, which participated in every form of distribution to be had. I was lucky to work with a very professional group of individuals and I learned a great deal from them as we continued to build the business. Then, after 25 years on the retail side, I jumped over to the dark side—reinsurance. But the incentive was personal as much as professional. Relocating my family was a key consideration. When the reinsurance opportunity came up in Charlotte, I have to admit that the location was as good as the opportunity.

Reinsurance News: When AEGON announced the sale of Transamerica Re before finding a buyer, what kind of difficulties did the announcement cause to your day-to-day operations?
Rutledge: Human capital and knowledge is the essence of our business so putting in place a retention plan was the first point of order. The second priority was to wall off as much as possible those individuals with client facing responsibilities. We made certain that our client teams remained focused on client needs and were not sidetracked by the work associated with the sale of the business.

This was not our first experience with an acquisition; within a year of my joining Transamerica the company was acquired by AEGON, so we had prior experience in dealing with this situation. When going through a sale, you always need to communicate as much as possible about the process. This is critical because ambiguity is not your friend! People tend to construe the worst possible outcome when ambiguity is left unattended so we made every effort to address this both during and after the sale process.

Reinsurance News: As Transamerica Re continues its transformation into SGLA, could you talk about

CONTINUED ON **PAGE 14**

some of the changes that your organization is going through?
Rutledge: Organizationally we have to understand a different approach to the business. SCOR is a professional reinsurance organization that has been in existence for some time. Transamerica Re was a division within a large retail organization. The parental perspective on various issues and the approaches to management and communication are somewhat different. Also, we were a fairly small segment within AEGON whereas with SCOR we represent a bigger share of the business so, as a result, our day-to-day decisions have greater impact on the parent organization and affiliates than in the past. Aside from the technical integration of systems and the transition to a new governance process, communication is the critical component of a successful transition.

Reinsurance News: Unlike Transamerica Re, which operated as a division of Transamerica, SGLA has legal entity responsibilities. What new activities does this introduce to the organization?
Rutledge: As Transamerica Re a lot of the governance issues—both in the United States and Europe—were taken care of at the corporate level. As SGLA, we have to deal with these issues directly. We spend more time working with the board of directors, state regulators and group staff directors in dealing with capital management issues, corporate cash flows, impact of EU governance on our business, etc. So there is a greater allocation of time to governance, policy setting and capital management than before.

Reinsurance News: Should your clients expect any changes as you transition to SCOR?
Rutledge: We have taken care to make the transition as painless as possible for our clients, who have been very supportive throughout this process. They have had to make some procedural adjustments and there will be a few more changes as we complete the transition. By the end of 2012 we expect the integration to be largely complete. And when all is said and done, I believe SGLA represents a net plus for our clients. SCOR is committed to our market and I think clients will benefit from an enhanced value proposition as we leverage our combined resources and expertise.

Reinsurance News: The U.S. life reinsurance market is still shrinking year after year. New life sales and cession rates are still falling. How is SGLA adapting to this difficult environment?
Rutledge: We have had our value added business model in place for a number of years as a means of differentiation and to secure business outside the more commodity-like environment of the traditional life reinsurance market. We continue to invest in technology driven underwriting solutions and other non-traditional offerings in the United States, Latin America and Canada. So, fundamentally, the shift in the traditional life reinsurance market has not brought about big changes for us. We are focused on growing the percent of new business from our value added segment. An essential element of this strategy is to form tight partnerships with our client companies who invest in these capabilities with us. This has enabled us to secure ongoing relationships and a more strategic alliance, if you will, with our customers. We both are invested in the solution, which drives value for them and for SCOR.

Reinsurance News: Do you believe that U.S. reinsurers need to change how they add value to direct insurers in order to increase cession rates?
Rutledge: U.S. reinsurers over time have been agile in adapting their business model to changing circumstances in the retail market. Because of the nature of the business, reinsurers are able to respond quickly to market conditions. By contrast, retail insurers have constituencies—policyholders, agents, regulators, etc.—that tend to reduce speed with which they can change the business model. Generally reinsurers don't face these same hurdles and are able to modify solution sets more quickly than the retail market can.

Right now the industry is going through an unprecedented time of change in terms of state and federal regulation, tax law, EU regulation and accounting practices. It's hard to determine how things will shake out five to 10 years from now for the retail financial services industry. But whatever the path forward looks like, reinsurers have to respond accordingly. We generally see change as an opportunity.

> **"IT'S HARD TO DETERMINE HOW THINGS WILL SHAKE OUT FIVE TO 10 YEARS FROM NOW FOR THE RETAIL FINANCIAL SERVICES INDUSTRY. BUT WHATEVER THE PATH FORWARD LOOKS LIKE, REINSURERS HAVE TO RESPOND ACCORDINGLY."**

Reinsurance News: With SGLA retaining control of SCOR's Latin American business, do you have a renewed emphasis on growing overseas?
Rutledge: We have always had an emphasis on international growth given the level of maturity of the U.S. market. Cession rates in the United States are decreasing and growth of the U.S. retail market has been slow for the last decade. Since we no longer are looking at Europe and Asia-Pacific—this TARe business has been integrated into other SCOR operations—we have a sharper focus on growth in Latin America and Canada than we've had in the past. We see a lot of opportunity to build on the track records of both SCOR and TARe in Latin America. We are combining best practices from both organizations into a larger, synergistic organization.

Reinsurance News: What would you say are the major differences between the North American and Latin American reinsurance markets?
Rutledge: Generally, Canada and the U.S. markets are somewhat similar, though the Canadian direct market is more concentrated than the United States. With Latin America there are a number of different markets. Major Latin American countries have distinct products, regulations, and economic environments. As a reinsurer you must treat these countries as completely different markets with regard to business planning, products and solutions. The combination of ex-Transamerica and SCOR businesses in Latin America gives us better critical mass to give these markets the attention they need.

Reinsurance News: What are your priorities now? What are your plans for the future?
Rutledge: A top priority right now is to complete the integration of the business and to assure that we have the skills and capital to remain a market leader in life reinsurance. From a business standpoint, our on going priority is to continue to grow by providing the products and services that our clients need in these dynamic and challenging times. We tend to grow incrementally off of our core knowledge and skills base, so we don't see any big jumps into new areas of risk. The more attentive we are to our clients' emerging needs and the environmental changes driving these needs the more opportunities we will have for growth—for the company and our people. And we will be keeping the integration in the background as we do this. ■

New Medical Markers in **Life Underwriting**

By Allen Klein and Karen Rudolph

Allen M. Klein is consulting actuary with Milliman in Chicago, Ill. Al can be reached at al.klein@milliman.com.

Karen K. Rudolph is principal and consulting actuary with Milliman in Chicago, Ill. Karen can be reached at Karen.rudolph@milliman.com.

Actuaries involved in the reinsurance markets can be very knowledgeable about cutting edge underwriting practices. To get a sense of where underwriting practices are going in the future, the Society of Actuaries (SOA) partnered with the Association of Home Office Underwriters (AHOU) and the Canadian Institute of Underwriters to conduct research focused on new medical tests and markers that may have significance and relevance to the life insurance markets. Specifically, within the SOA, the Reinsurance Section initiated and led the project with co-sponsorship from the Committee on Life Insurance Research and the Product Development Section. This article will give you an overview of the research work and some of the discoveries. For a complete understanding of the research, you can find the report posted on the SOA website (www.SOA.org) under Research/ Completed Research Projects.

As the researchers, we first had to establish criteria for the markers of interest. In this context the words "marker" and "test" both refer to a specific assessment of an individual's health status, usually analyzed by way of a laboratory analysis of blood, urine or other specimen. The criteria we used to establish whether a marker was to be included in the research was twofold: (i) the marker had to be currently available (i.e., analysis of the marker available through the medical laboratories), but not yet widely used by the life insurance industry as part of their routine age and amount requirements; and (ii) it had to be applicable to life insurance underwriting. The first objective was to discover the larger list of potential markers. This was accomplished through interviews with a representative from each of the three major laboratories. These individuals made a significant contribution to this work product and we are grateful for their time and patience. Using the established criteria together with input from the laboratory representatives, we winnowed the larger list down to 11 markers for study. More than half of these are designed to pinpoint cardiovascular problems or conditions that precede cardiovascular conditions.

The 11 markers chosen were:

Apolipoprotein 1 and B (Apo 1 and B)
Complete blood count (CBC)/red cell distribution width (RDW)
Cystatin C
Hemoglobin
Hemoglobin A1c
Microalbumin
Amino-terminal pro B-type natriuretic peptide (NT-proBNP)
Oxidized low density lipoprotein (oxidized LDL)
Phospholipase A2 (Lp-PLA2)
Tumor necrosis factor-alpha (TNF-alpha)
Troponins I and T

The research report provides a background and description of each of these 11 markers. A large part of the research was committed to performing a cost-benefit analysis on each marker. The cost side included consideration for hard costs such as the charge levied by the laboratories to perform the analysis as well as the softer costs such as the time necessary to train the underwriter in evaluating the marker and its implications and the time for the underwriter to analyze the results from the marker. The benefit side of the analysis involved an evaluation of each marker's ability to predict the additional all-cause mortality not found from other testing. We sourced relevant medical studies available through Internet searches. Medical studies were gathered, reviewed and compared. Ideally, we used two relevant medical studies for each marker, but this wasn't always a possibility. To determine the benefit portion of the cost/benefit analysis, the mortality savings due to the introduction of the test was estimated using a consistent process for each marker. The process included the following steps:

1. Finding a relevant medical study. As discussed above, we endeavored to find two relevant studies providing all-cause mortality results on healthy lives and, ideally, not authored by the contributing laboratories. We always found at least one non-laboratory study to use, although the level of data provided between studies varied considerably.

2. Assume a normal distribution for the marker readings in the study. It was not always the case that the medical study we referenced presented the study results in terms of expected mean and standard deviation. For those studies that did not, we worked to develop these statistics from the data presented in the medical study. We then used

"OUR RESEARCH CONCLUDED THAT MANY OF THESE NEXT GENERATION MARKERS ARE COST EFFECTIVE, ESPECIALLY AT THE OLDER AGES EVEN FOR FACE AMOUNTS WELL BELOW $100,000."

the mean and standard deviation to determine the average substandard reading for the marker. We did this by assuming a normal distribution of marker readings and choosing the "worst" 5 percent of the distribution of these readings. The worst 5 percent of the distribution was considered to represent the substandard mortality portion of the population, a reasonable assumption that is based on industry averages. Once the 5 percent tail, or 95th percentile point was identified, we found the marker reading associated with the 97.5 percentile. We considered this point estimate to be the average of the substandard population.

3. The complement to the 5 percent tail area under the curve would be the remaining, or non-substandard, population of risks. We found the average reading for the non-substandard population using a simple formula. The X term in the formula below represents the average reading for the non-substandard population.

   95% ×X +5% ×*Average Substandard Reading= Mean Reading for the population*

4. Using hazard ratios from the medical study and the marker readings for substandard and non-substandard derived in steps 2 and 3 above, we determined the excess mortality between the two groups. Dividing the substandard hazard ratio by the non-substandard hazard ratio quantified the initial amount of extra mortality that could be expected from risks associated with the substandard reading when these values were given. Modifications were made in performing this step to accommodate the data as presented by each medical study.

5. The extra mortality factor from step 4 was used against an assumed table of standard mortality rates to derive the mortality savings. This involved more detail than provided here.

The report is designed such that the reader can focus on any one marker and follow its cost/benefit analysis independently of the other covered markers.

Our research concluded that many of these next generation markers are cost effective, especially at the older

Marker	Primary purpose	Ages recommended by labs for testing	Average substandard reading	Average non-substandard reading	Net mortality savings (based on male age 70 and $100,000 face amount)	Cost for marker	Face amount to near $5,000 where benefit > cost (for male age 70)
Apo 1 and B	Cardio	40+	1.57 (ratio)	0.97 (ratio)	$ 33.70	$ 21	$65,000
Red cell distribution width	All cause	60+	15.42%	14.48%	193.44	17	10,000
Cystatin C	Kidney	55+	2.16 mg/L	1.07 mg/L	272.29	19	10,000
Hemoglobin	Anemia, more	65+	6.94 g/dL	11.21 g/dL	558.76	20	5,000
Hemoglobin A1c	Glucose	35+	7.41%	5.41%	151.95	19	15,000
Microalbumin	Kidney	35+	-	-	148.80	23	20,000
NT-proBNP	Cardio	60+	237.23 pg/ml	64.20 pg/ml	407.64	37	10,000
Oxidized LDL	Cardio	45+ (males), 55+ (females)	2.77 mg/dl	1.24 mg/dl	104.65	27	30,000
Phospholipase A2	Cardio	45+	1219 μmol/min/L	796 μmol/min/L	45.77	25	55,000
TNF-alpha	Immune system	50+	6.71 pg/ml	3.96 mg/ml	199.09	11	10,000
Troponin I and troponin T	Cardio	55+ (males), 65+ (females)	- μg/L	- μg/L	I: 114.13 T: 186.54	31	I: 30,000 T: 20,000

CONTINUED ON **PAGE 18**

ages even for face amounts well below $100,000. The table below summarizes critical findings of the research work. We encourage you to download a copy of the article for a more comprehensive review.

An Excel workbook was also made available as part of the research project to allow the reader to experiment with their own company assumptions. This tool could also be used for other cost/benefit analysis. We believe this is another of the many benefits of this research project.

Reinsurers and direct companies know how important their relationship is. Likewise, the relationship between actuaries and underwriters is also important. In this project, the Project Oversight Group consisted of actuaries, underwriters and medical directors. All were valuable in making this a successful research project. We believe this demonstrates how powerful the combined work of actuaries and underwriters can be and we encourage more joint discipline projects in the future. ■

The Future of Underwriting—**Catching Waves**

By Tim Jehnichen

This article originally appeared in The Actuary U.K. magazine, April 2012. *http://www.theactuary.com/archive/2012/04/*

This article examines the trends in life insurance underwriting and how actuaries need to work closely with underwriters to develop accurate, forward looking best estimates.

During the last two decades the life insurance industry has undergone multiple waves of changes, each with their own influence on distribution and underwriting. As a result, relationships between life insurance and reinsurance underwriting departments have altered. More recently, however, we have witnessed a shift in the relationship between underwriters and actuaries.

WAVE ONE – CONSOLIDATION OF THE MARKET

Back in the 20th century, reinsurance underwriters provided insurers with technical support, capacity for case referrals and access to medical advisers. the end of the century, the consolidation of the life assurance industry was underway. In recent years this accelerated, making the first wave of underwriting changes visible. Why? Improved risk management and, in particular, risk audits highlighted any shortcomings in underwriting practices. Shortcomings were quickly addressed through training. Further, consolidation meant that protection offices now possessed large underwriting teams of highly trained, experienced underwriters with access to a number of medical advisers. As a result, reinsurers increased authority limits and saw fewer referrals. In response to anti-discriminatory laws, reinsurers used their extra resource to provide insurers with sophisticated online manuals which were, and still are, constantly updated with reliable, evidence-based ratings derived from medical literature and scientific interpretation. Consequently, reinsurers are called upon for complex and factorial cases and provide capacity to place jumbo risks.

With the move away from underwriting in the traditional sense, more time was available to challenge risk assessment and inevitably risk selection.

WAVE TWO - THE ROLE OF TECHNOLOGY IN UNDERWRITING

The use of technology in underwriting assessment is nothing new. Underwriting has been the perennial target of attempts to drive efficiency improvements in the process and naturally, technology has often provided the platform to facilitate this. Whilst the introduction of workflow and imaging systems, electronic applications, tele-underwriting and online underwriting manuals have all played their part, it is the use of increasingly sophisticated Electronic Underwriting Rules (EUR) systems that has really revolutionized underwriting.

Without doubt, simply embedding an EUR system will not transform an insurer's underwriting process. It is the underwriting philosophy adopted that will ultimately determine results. It is this, more than any other single factor accounts for Straight Through Processing (STP) rates in the United Kingdom ranging from 20 percent to 80+ percent (based on Munich Re market research).

STP definitions are not always the same, but usually refer to an engine making all the decisions, which means no human underwriting at all and therefore no medical evidence requests either.

Disentangling EUR from legacy systems also plays a major role. The confidence to do this only arises from the knowledge that the rules are identifying all relevant risks and making the right decisions, which in turn only comes from regular and detailed data analysis.

The industry has become increasingly adept at establishing a cycle of EUR analysis that feeds rule refinement, with the consequence that average STP rates are increasing year on year. Provided the right expertise is drawn upon (and that means consultation not only with underwriters, but also claims specialists, engine software experts, actuaries, business analysts and others) there is no reason to suspect that these advances have, or will come at the expense of Actual Expected results. The onward and upward march of electronic underwrit-

CONTINUED ON **PAGE 20**

Tim Jehnichen is responsible for product and pricing development at Munich Re. Tim can be contacted at TJehnichen@munichre.com.

ing does raise a series of questions though; where will underwriting automation ultimately take us? Is 100 percent STP with full underwriting (i.e., no compromise in cost) attainable? Is it even desirable? It is questions such as these that we intend to explore in 2012.

WAVE THREE - PREDICTIVE UNDERWRITING

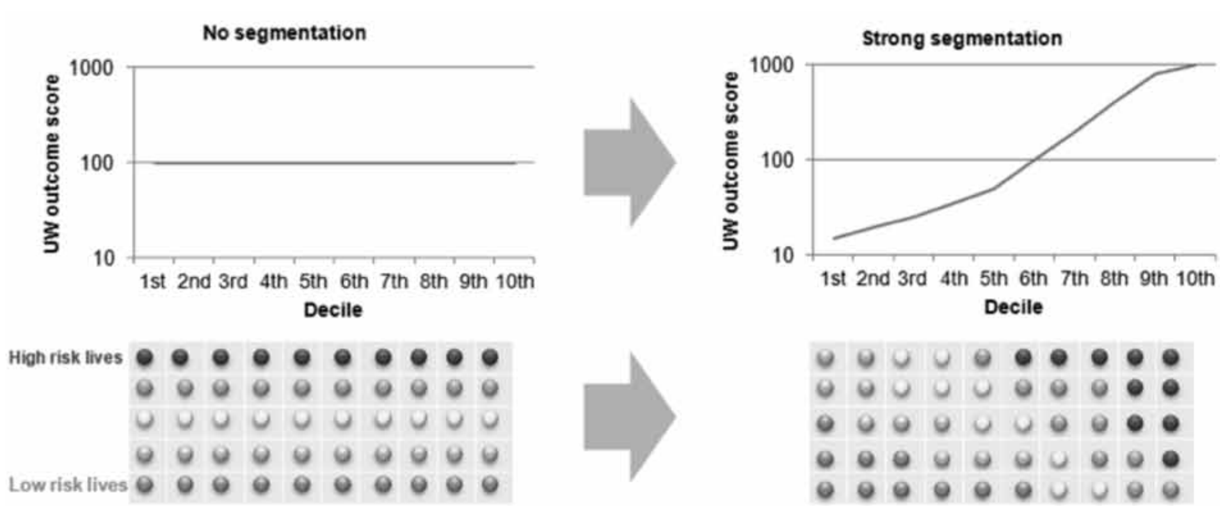
Having previously been something of a niche interest, predictive underwriting has certainly become a hot topic over the last 18 months.

It is of the predictive modelling that, for example, marketing firms use to calculate an individual's "propensity to buy." By attaching as much data as you can to previous protection applications you can use this data (the "explanatory variables") to explain the pattern in underwriting outcomes (the "response variable"). You can then use these explanatory variables to predict the underwriting outcomes of a new set of target lives. Predictive underwriting uses the value of the data available, whether this is from in-house sources, commercially bought or even publicly available. Here, we are using a risk-based response variable such as underwriting outcomes, whereas marketing firms may use as a response variable to predict propensity to buy.

This diagram shows how predictive underwriting moves you from the left hand picture, where each decile of targeted lives is the same, to the right hand picture, where the first decile is significantly better than the last. This means that you understand your risk profile better (in terms of their underwriting outcomes).

The concept of using data to predict underwriting outcomes is not new—one of the earliest examples of implementation in the United Kingdom is from the early 21st century. The drivers of accelerated interest in predictive underwriting in the United Kingdom are diverse, but most are related to the fact that consumers are increasingly disengaged with life insurance and simplifying underwriting for healthy prospects is an effective way of engaging with consumers and increasing sales. Secondly, the changing distribution landscape is driving solutions like predictive underwriting. With the looming implementation of the Retail Distribution Review (RDR), many term assurance providers are looking to increase their sales made directly to consumers. This channel creates opportunities for genuine process innovation, since an insurer has more control over who enters the underwriting process: you can see them before they see you.

Most U.K. implementations of predictive underwriting to date have resulted in very simplified underwriting processes for the few lives who met the criteria to be selected. This may also be combined with limiting the cover offered and controlling who enters the process in order to prevent or reduce substantially higher pricing. The aim of many term assurance providers is to increase



> "THE APPLICATIONS OF PREDICTIVE UNDERWRITING OUTCOMES ARE VAST, ESPECIALLY IN THE DIRECT-TO-CONSUMER CHANNEL. THIS TECHNIQUE WILL EVENTUALLY BE CONSIDERED "BUSINESS AS USUAL" IN OUR INDUSTRY."

sales made directly to consumers. Simplified products and predictive underwriting are a way to do this.

The scope of predictive underwriting is much broader than simply identifying those lives that require reduced or no underwriting. Other ways of using predictive underwriting include: segmenting underwriting processes according to their predicted outcome; designing bespoke question sets to meet a minimum acceptance rate criterion; combining with "propensity to buy" modelling to identify the lives for whom a simplified underwriting process would significantly increase rates.

The applications of predictive underwriting outcomes are vast, especially in the direct-to-consumer channel. This technique will eventually be considered "business as usual" in our industry, as it is a natural and obvious extension of traditional marketing campaign predictions into the realm of risk outcomes.

WAVE FOUR – WHAT NEXT?

To recap, market consolidation helped to create large professional underwriting teams at the primary insurance offices. Technology has changed the way in which evidence is collected and has helped gather more (and more consistent) data. This data analysis, together with available external data sources, has driven the rise of predictive underwriting.

In the next couple of years we will see a new wave of regulatory measures coming into effect. The RDR will certainly influence the distribution landscape and cause life insurance companies to rethink their strategies. The Gender Directive will certainly impact prices and therefore competition. As demonstrated by the last wave, underwriting will move even closer to actuarial science in future.

In a competitive market, reinsurers need to understand the underwriting and distribution philosophy of insurers in order to price correctly, therefore actuarial and underwriting teams are already being brought closer together in order to support this development adequately. Reinsurers must be aware of the ratio of standard to rated policies and its potential price implications. They need to follow the primary offices' disclosure management policies closely, in order to be able to judge the level of risk. Ideally, reinsurers are able to execute this with such precision that they can implement forward looking pricing. This is quantifying the price impact of intended changes in the insurer's underwriting practices.

Without doubt, we have seen a shift in recent years of how underwriting and actuarial disciplines work together. Going forward, the signs indicate that this will not only continue but in fact increase as we look at smarter ways to select and segment risks. ■

Variable Annuity Mortality Reinsurance

By Timothy Paris

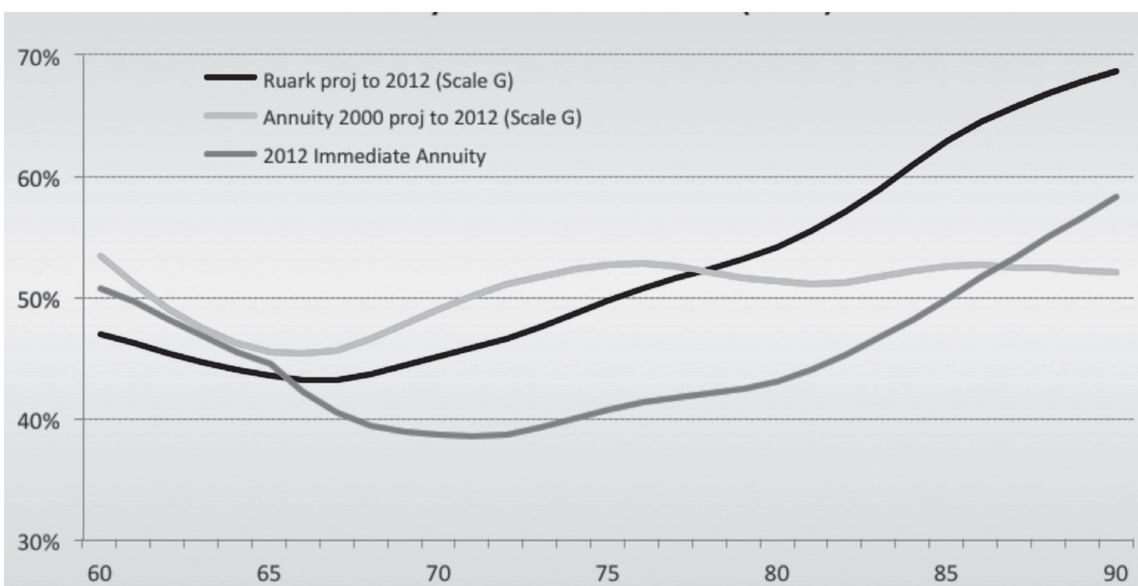
Timothy Paris, FSA, MAAA, is vice president with Ruark Insurance Advisors in Simsbury, Conn. Tim can be reached at timothyparis@ruarkonline.com.

One of the primary objectives of variable annuity companies is to grow and protect their asset-based revenue stream. The provision of popular complex guarantee features to policyholders poses a major challenge to this objective, as is evident from the dramatic changes in market leadership and even market participation for many companies over the last few years. While variable annuity companies have implemented sophisticated hedging programs in an effort to mitigate the investment risks associated with these guarantees, the variability of policyholder mortality and behavior results in a moving target for hedging programs and exposes companies to losses that can overwhelm the asset-based revenues. Fortunately, this risk can be mitigated with appropriately structured reinsurance that complements the hedging program.

In order to use this type of reinsurance effectively, an accurate understanding of the level, shape, and variations of variable annuity mortality is vital. However, based on experience over the last decade, standard annuity mortality tables often fail to capture the dynamics of variable annuity mortality. To fill this void, the Ruark Mortality Table was developed, based on an industry experience study of 13 variable annuity companies with 2.5 million exposure years and 49,000 reported deaths. The following graph illustrates how the Ruark Mortality Table differs from some standard annuity mortality tables for selected male ages.

Regardless of the mortality table used, modifiers are often necessary to reflect important variations such as product type and policy size. For example, relative to the Ruark Mortality Table, mortality can vary as much as 20 percent depending on the type of guarantee features on the policy; rich death benefits tend to invite higher mortality, and rich living benefits tend to invite lower mortality, both of which suggest a selection effect on the part of the variable annuity buyer and their financial . Moreover, these effects are magnified as much as 20 percent for larger policies.

Mortality as % of 1994 MGDB (Male)



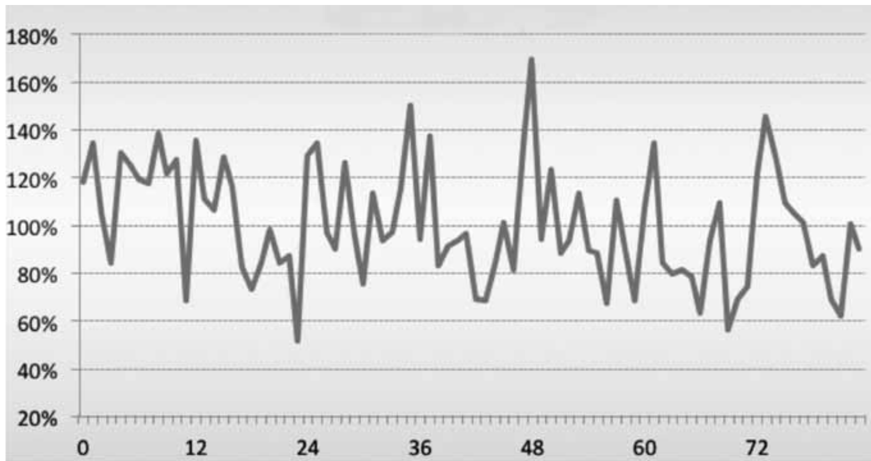
With a clear understanding of the appropriate mortality basis, including any modifiers for specific product types and cohorts, a reinsurance program can be developed to mitigate the mortality risk. Let's consider an example. The following graph illustrates 84 months of mortality results for a representative variable annuity block.

Results are shown as a percentage of the Ruark Mortality Table; 100 percent of the Ruark Mortality Table corresponds to the aggregate results of the industry experience study. The monthly results shown range from a low of 51 percent to a high of 169 percent, with an average of 100 percent.

A variable annuity company attempting to hedge the death benefit guarantee would typically purchase a portfolio of financial derivatives intended to fund the guarantees based on an assumed average mortality level, such as 100 percent of the table. However, from month to month, there would be wide fluctuations between the expected payments at 100 percent of the table and the actual payments that range from 51 to 169 percent, representing either hedging or unhedgeable insurance losses. The financial impact of this mismatch would vary depending on the composition of the block, but can be as much as $5 million in a single month for a $10 billion variable annuity block. This is undesirable financial noise relative to the asset-based revenue stream, warranting executives' attention and explanation.

How can this mortality noise be quieted? Quite simply—with a mortality swap. This is a modern name for a classic mortality reinsurance structure often used for life insurance: the reinsurer pays the net amount at risk on death claims in exchange for a series of reinsurance premiums equal to the net amount at risk times a tabular mortality rate. An appropriate choice of mortality table, such as the Ruark Mortality Table in the example above, will mitigate noise between the premium basis and the actual death claims.

Monthly Mortality
(% of Ruark Mortality Table)



Other structural considerations are also important, such as the length of the reinsurance term, the extent to which the premium basis is guaranteed for the term, and the quota share. While specifics may vary, this type of reinsurance is generally available for terms as long as 10 years on a fully guaranteed premium basis with high quota shares.

With the variable annuity company's tabular mortality locked-in during the reinsurance term, its hedging program would be recalibrated to fund the guarantees based on mortality equal to the reinsurance premiums. This simple and ready solution would allow the hedging program to operate effectively without risk of mismatch due to mortality fluctuations, which would help the variable annuity company protect its asset-based revenue stream. ■

SOCIETY OF ACTUARIES

Reinsurance
Section

475 N. Martingale Road, Suite 600
Schaumburg, Illinois 60173
p: 847.706.3500 f: 847.706.3599
w: www.soa.org

Reinsurance news