

Reinsurance news

- 1 **Digging Deeper Into The Flaspöhler Survey Data: What Causes Direct Writers To Strongly Recommend A Reinsurer To A Colleague**
By Rick Flaspöhler
- 3 **Chairperson's Corner**
By Scott Meise
- 10 **Modern Models For Longevity Risk**
By S. J. Richards
- 14 **Interview With Sebastien Blondeau, President And COO Of Optimum Re**
By Reinsurance News
- 18 **How To Price Longevity Swaps**
By Kai Kaufhold
- 22 **Accident & Health Reinsurance – “Déjà vu all over again”?**
By Ted Clark
- 26 **Life Reinsurance In The Mexican Market**
By Tim Morant and Ricardo Nava



Digging Deeper Into The Flaspöhler Survey Data: What Causes Direct Writers To Strongly Recommend A Reinsurer To A Colleague

By Rick Flaspöhler

(With special thanks to Nancy Wilde, PhD, for her invaluable work on this analysis.)

Following a trend that began between 2007 and 2009, the proportion of direct writers indicating they are “Very Satisfied” with the reinsurers they use climbed to 55 percent in 2013. This represents the highest level of direct writer satisfaction since 1999, when 59 percent of direct writers indicated they were “Very Satisfied” with the reinsurers they used. The highest level of satisfaction was recorded in 1995, when 67 percent of direct writers responded that they were “Very Satisfied” with their reinsurers.

CONTINUED ON PAGE 5

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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

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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 (richard.jennings@sunlife.com) or David Xia (dxia@mit.edu).

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

Editorial Correction

In the July 2013 issue of *Reinsurance News*, the table "U.S. Ordinary Recurring Reinsurance" shows the change in production for Hannover Life Re to be negative 39.7 percent when it should actually be positive 39.7 percent. *Reinsurance News* regrets the error and any confusion it caused.

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Greetings! I just got back to England this week after a two-week trip to the United States to visit family. Apparently two weeks in the United States is the exact duration of time to undo 11 ½ months of wise eating and exercise. If American bacon tasted like English bacon, I think it would put everyone on a diet. I'd suggest abolishing American bacon, but then ... no, wait, I would never suggest abolishing American bacon. Never.

This year in the Reinsurance Section Council has flown by. A couple of months ago we sent out a survey to section members to find out what you thought were the best ideas with regard to using the section's time and money, and we got some good feedback from members. Below are the most prominent ideas you indicated that you wanted us to support:

- Sponsor general seminars on various topics of interest to our membership (i.e., legislative updates, risk transfer, capital solutions);
- Advanced Reinsurance Topics seminar (similar to boot camp format);
- Sponsor reinsurance forums for various functions (i.e., administration, valuation, contracts) to share best practices/ideas/concerns;
- Consolidated listing of reinsurance resources (i.e., literature request) for use by members and non-members;
- More/major research;
- Sponsor quality outside speakers at industry conferences; and
- More promotion of LEARN (Life Insurance Education and Reinsurance Navigation)—make available as podcast, online course.

As reference:

- LEARN is a program focused on providing reinsurance knowledge to state regulators, with a team of presenters that have assembled educational content going out to state insurance departments and making interactive presentations; and
- The boot camp noted above is a reference to the "Intro to Reinsurance Boot Camp" presentations we put on as tie-ons at the end of the Life & Annuity Symposium and Health Meeting this year.

To me, these responses were very good news, as we have already started doing work on many of the initiatives listed above. Classifying the feedback above into a few groups:

Last year, we had an outside speaker at the Reinsurance breakfast at the annual meeting, and got good feedback from it. We have another scheduled for this year in conjunction with the Product Development section and have high hopes for it. We have been actively looking into outside speakers for some time now and acting when we feel there is a good return on our resources, and will continue to do so in the future. One thing we discovered is that you can engage Chuck D of Public Enemy for \$10k - \$20k, but we haven't gone in that direction yet. If you have any thoughts for someone as a good speaker for future meetings please let us know!



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CONTINUED ON **PAGE 4**

For research, we already are looking into what it would take to put together the consolidated listing of reinsurance resources. We also are actively looking into a few new projects that we hope to get off the ground shortly. Unfortunately, these things take time to frame and fund, but I can assure you that things are moving.

The other initiatives all fall under the continuing education/opportunities for learning banner. This is a logical extension of something that began with LEARN back in 2009. Since then, many dedicated volunteers have put together a lot of content, and we have a good team of presenters available to present that content. Over the past year, we leveraged that talent to put together two separate "Intro to Reinsurance Boot Camp" seminars—one for Life content, and one for Health. We have also started to look at taking that boot camp material out to the members, which would involve presenting to actuarial clubs, or any concentration of actuaries that would justify the travel—the group doesn't have to be in the hundreds in order to warrant an interactive seminar! That way, the opportunities for education will be greater for our members. As the group grows, things like Advanced Reinsurance Topics will be a natural outgrowth of their efforts. My hope is that within a couple of years, we'll have the content to tailor to just about any audience, the ability and willingness to travel to them, and the resources to disperse that content in non-traditional forms (web learning modules, etc.)

We also got some good comments beyond the check-boxes, and rest assured they will not be ignored. Many of the comments supported the points above, but there was other good qualitative feedback that can be incorporated into some of the other initiatives we plan on taking in the future. Also, there were some that indicated they would like to take a more active role in the Council, and this is always appreciated too!

We've also continued the evolution of distributing educational content to regulators and our members, and that has been a large focus of the past year's efforts. Looking forward, I have high hopes for the incoming chair of the council, Audrey Chervansky, and hope to continue contributing my efforts on that front to the extent they are needed as a friend of the council.* I encourage you to keep letting us know what you think we should be doing—even if it is not mentioned above, we take all comments very seriously, and want to deliver value to each of our members. I've had a blast working with the council over the past year, and even though my time on the council is coming to an end, I hope to build on the relationships that have been created and to contribute as I can into the future! ■

*A friend of the council is a section volunteer who supports activities on an ongoing basis.

Still, the ultimate and best measure of a direct writer's level of satisfaction with a reinsurer is how strongly they would feel about recommending that reinsurer to a friend or colleague.

To measure this very meaningful indicator, we use our Client Advocate Score (CAS), an analysis inspired by the net promoter measurement developed by Fred Reichheld. There is an abundance of literature available about the efficacy of this wonderful tool.

The application of CAS in looking at direct writer satisfaction with reinsurers is straightforward: When asked to indicate how likely they would be to recommend a reinsurer to a colleague, an answer of 9 or 10 on a 10-point scale indicates the highest levels of satisfaction with a reinsurer, while answers of 6 or below indicate both lack of satisfaction and a likelihood that a direct writer would caution a colleague against consideration of that reinsurer. Answers of 7 or 8 indicate neutrality.

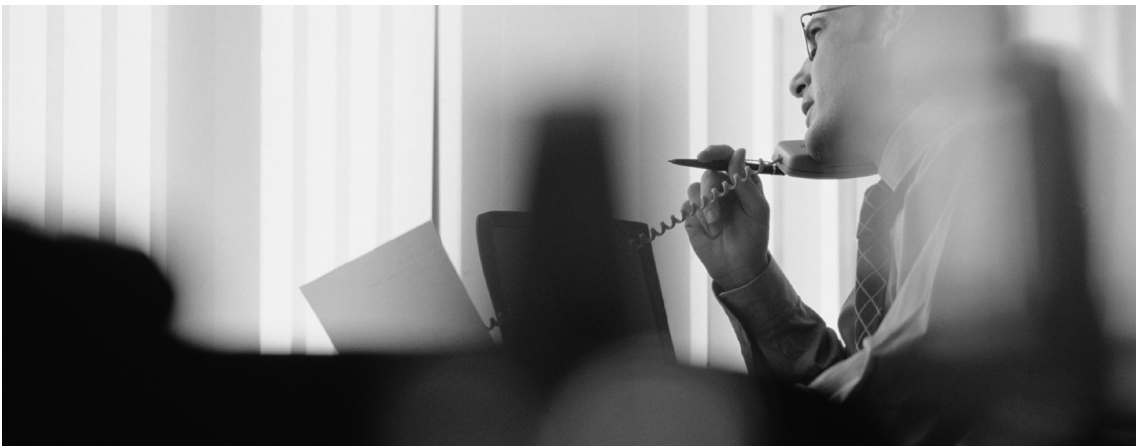
Furthermore, individuals recommending a reinsurer at a level of 9 or 10 are considered advocates and, in practice, do recommend the reinsurer to colleagues, while those recommending a reinsurer at a level of 6 or below are considered detractors and, in practice, do caution colleagues about the reinsurer.

Direct writers also rated reinsurers (on a scale of 1-9) on 10 important evaluation/selection factors. These factors were medical underwriting capabilities, financial value, financial security, strong client orientation, leading expertise & market knowledge, leading actuarial & product development expertise, timely service, effective training courses & seminars, strong claims handling, and capital management & reserve financing solutions.

THE SAMPLE

The goal of this analysis was to analyze the evaluation/selection factors which were key drivers of CAS and specifically to identify those factors that are critical to whether a reinsurer is rated as an advocate (CAS rating of 9/10) or a detractor (CAS rating of 0-6).

The data for these analyses were restructured such that each supplier for each buyer was treated as a separate case. All of the Flaspöhler direct writer survey data for the years 2013, 2011 and 2009 were considered simultaneously. There were a total of 1,318 direct writer interviews with up to 13 reinsurers rated in each survey, for a grand total of 17,134 cases. However, there was considerable missing data, since direct writers are only asked the CAS questions about reinsurers they use, and the number of points per analysis was substantially lower than this. The sample size for capital management and reserve financing solutions was considerably



CONTINUED ON **PAGE 6**

smaller than for the other factors since this was only instituted in 2013. There were 537 ratings when only the first 10 factors were examined (i.e., excluding capital management & reserve financing solutions).

CORRELATIONS BETWEEN CAS SCORES AND FACTOR SCORES

The CAS raw score had a possible range from 0 to 10 and each factor score had a possible range of 1 to 9. As a preliminary analysis, we examined the correlation coefficients between the CAS raw scores and the factor scores for all available ratings. The sample sizes ranged from 471 (capital management & reserve financing solutions) to 4724 (strong client orientation) responses. There were large, positive, correlations between CAS scores and the factor scores—thus, as each factor score increased, so did the CAS scores. This relationship was particularly large for strong client orientation ($r = .769$), while the lowest correlations (albeit still moderately large) were for financial security ($r = .476$) and capital management and reserve financing solutions ($r = .482$). The remainder of the correlations ranged in magnitudes between .5 and .7.

As the primary goal of these analyses was to determine what drives a direct writer to give a reinsurer an advocate (9, 10) versus detractor (6 or lower) score, these categorizations were used in the analyses in the following sections (rather than CAS raw scores).

ANALYSIS OF SCORE CUT-OFFS USING ROC CURVES

Receiver operating characteristic (ROC) curves provide a useful way to evaluate the performance of classification schemes in which there is one variable with two categories by which subjects are classified. Although these methods are traditionally used in medicine, in this analysis, the classification variable is detractor versus advocate status. The procedure helps one determine at what cut-point (and with what level of accuracy) one can assume that the reinsurer falls in one group versus the other. For each cut-point, two measures of the usefulness of the classification scheme are provided. Sensitivity (Se) is the probability that a positive case (in this scenario, an advocate) is correctly classified. Specificity is the probability that a negative case (in this scenario, a detractor) is correctly classified. 1-specificity is the false positive rate (i.e., meaning that a detractor was falsely classified as an advocate).



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TABLE A

Sensitivity Table

Rating cut-off (Advocate if ≥:)	Medical Underwriting Capabilities		Financial Value		Financial Security		Strong Client Orientation		Leading Expertise & Market Knowledge		Leading Actuarial Product Dev't Expertise		Timely Service		High Quality Risk Management Service		Effective Training Courses & Seminars		Strong Claims Handling Ability		Capital Mgmt & Reserve Financing Solutions	
	Se	1 - Sp	Se	1 - Sp	Se	1 - Sp	Se	1 - Sp	Se	1 - Sp	Se	1 - Sp	Se	1 - Sp	Se	1 - Sp	Se	1 - Sp	Se	1 - Sp	Se	1 - Sp
1.50	.998	.982	.999	.985	1.000	.995	1.000	.964	.999	.992	1.000	.981	1.000	.971	1.000	.983	.992	.915	1.000	.982	.961	.945
2.50	.997	.960	.999	.959	1.000	.982	1.000	.914	.997	.968	1.000	.949	1.000	.934	1.000	.970	.985	.848	1.000	.940	.961	.890
3.50	.995	.916	.998	.895	.997	.952	.997	.837	.996	.901	.995	.890	.998	.881	1.000	.928	.976	.731	1.000	.890	.956	.758
4.50	.992	.833	.989	.815	.995	.909	.995	.751	.994	.821	.991	.799	.996	.799	1.000	.879	.964	.627	.998	.834	.947	.659
5.50	.972	.525	.955	.504	.969	.698	.982	.498	.978	.546	.936	.461	.977	.543	.980	.545	.868	.365	.960	.585	.903	.484
6.50	.953	.341	.896	.307	.920	.526	.959	.281	.940	.340	.879	.277	.949	.365	.931	.328	.818	.251	.929	.455	.854	.319
7.50	.837	.136	.717	.111	.781	.304	.852	.080	.802	.122	.664	.089	.835	.130	.766	.124	.665	.109	.802	.232	.684	.099
8.50	.479	.038	.314	.024	.414	.131	.522	.010	.435	.029	.315	.017	.427	.031	.389	.025	.373	.037	.428	.057	.369	.022

Table A lists the sensitivity and 1-specificity values for every possible cut-off. The sensitivity value is the proportion of advocates with rating score results greater than the cut-off. The 1-specificity value is the proportion of detractors with scores greater than the cut-off. The challenge in each case is choosing a cut-off value that properly balances the needs of sensitivity and specificity.

For example, for medical underwriting capabilities, a cut off of 7.50 (scores greater than 7.5, i.e., scores of 8 or 9) had a sensitivity value of .837 and a specificity of .136. This means that using the criterion that scores of 8 or 9 are classified as advocate, 83.7 percent of advocates would be correctly classified and 13.6 percent of detractors would be incorrectly classified as advocates. This summary assists one in relating how the factor scores and CAS classifications interact. On some factors, one can see that there is relatively good separation of groups at a certain score point. The medical underwriting capabilities cut-off of 7.5 reported in this example has a high balance of sensitivity and specificity. For other factors, there is not as clear a separation between the CAS classifications at any score level. To illustrate, if one wanted a score with a sensitivity value of at least 90 percent on financial security, this would equate to a score of 6.5 or above; in other words at least 90 percent of the sample of advocates (92.0 percent, in fact) obtained financial security scores of 7, 8 or 9. However, 52.6 percent of detractors also obtained financial security scores of 7, 8 or 9. So, determining whether one is an advocate or a detractor based on financial security scores would not provide a very accurate classification.

CONSIDERATION OF FACTORS AS A GROUP METHODS

Logistic regression was used to determine which factor ratings were significant predictors of advocate versus detractor status, when all the factors were considered together. These results will differ from the analysis of the factors individually, due to high inter-correlations amongst the factors. The regression analyses clarify which factors are uniquely predictive of the CAS category. Stepwise procedures were used in an effort to elucidate the most important variables to model. Both forward and backward stepwise methods were used.

CAS levels were coded as detractor = 1, and advocate = 2; thus, the odds-ratios indicate the odds of being in the advocate group, divided by the odds of being in the detractor group. An odds ratio of 1 indicates that the odds of being in the advocate group is equal to the odds of being in the other detractor group, when the value of the predictor increases by one unit (e.g., a change of 6 to 7 on the factor). In other words, the odds are equivalent and there is no relationship between the predictor and the outcome. Odds-ratios significantly greater than one indicate greater odds of being the advocate group in comparison to the detractor group with an increase in the predictor.

RESULTS

Using forward and backward stepwise methodologies, three factors were entered into the prediction of CAS advocate versus detractor ratings. These were strong

CONTINUED ON **PAGE 8**

TABLE B

Note. N = 1798; all "Advocate" suppliers with a rating score on at least one factor are included.

Table 1. Percent of "Advocates" receiving the number of factor rating scores or less

		Number of Ratings Obtained AT OR LESS THAN Each Level											
		zero	one	two	three	four	five	six	seven	eight	nine	ten	eleven
Distribution of Rating Scores (%)	1	99.1	.8		.1								
	2	98.7	1.1	.1	.1								
	3	97.4	2.3	.1	.2		.1						
	4	95.3	4.1	.3	.2		.1						
	5	81.9	13.4	3.2	1.1	.2	.1	.1	.1				
	6	70.5	18.6	5.2	3.0	1.7	.6	.3	.1	.1			
	7	41.4	23.2	13.8	8.7	6.0	2.6	2.4	1.1	.4	.3	.2	
	8	10.7	11.8	12.7	13.8	13.1	11.1	9.8	6.7	4.6	2.4	1.8	.5
	9		2.2	2.6	6.1	10.5	13.6	13.2	13.3	13.0	11.3	10.7	3.4

client orientation first, then financial security, and finally medical underwriting capabilities. However, cross-validation of the model with only those three predictors entered (which was conducted on the sample of 1,513 cases with scores on these factors) revealed that financial security did not enter the model. Thus, when all factors and their inter-correlations are considered, the results are suggestive of strong client orientation and medical underwriting capabilities being the most important predictors in differentiating between advocate and detractor rated suppliers. In the larger sample, the logistic equation explained between 57 percent to 77 percent of the variance in CAS ratings (as indicated by Cox & Snell and Nagelkerke R square values). The logistic equation was as follows:

$$\log\left(\frac{p(Advocate)}{1-p(Advocate)}\right) = -15.018 + 0.612Medical\ Underwriting + 1.530Strong\ Client\ Orientation$$

This equates to an odds ratio of 1.844 for medical underwriting (95 percent CI = 1.585 to 2.145), and an odds ratio of 4.617 for strong client orientation (95 percent CI = 3.806 to 5.601).

Therefore, there was an approximate 80 percent increased odds of being in the advocate group compared to the detractor group with each one-point increase in the medical underwriting score. There was an approximate 360 percent increase in the odds of being in the advocate group compared to the odds

of being in the detractor group, with each successive one-point increase in the strong client orientation score. Using this logistic model, 90.6 percent of the 1,513 cases were correctly classified.

NUMBER OF POSITIVE RATINGS AND ADVOCATE STATUS

The goal of this section was to look across factors and examine the distribution of the number of ratings that advocates obtained. Thus, the particular factors were not important to this analysis, but rather how many rating scores of 1, 2, 3 and so on were obtained by the group. The group consisted of 1,798 advocate rated reinsurers with at least one factor rating.

For these analyses, we tabulated the number of ratings obtained at each level or less.

For example, 95.3 percent of advocate rated reinsurers had zero ratings of 4 or less (i.e., no ratings of 4, 3, 2, or 1). It can also be seen that 81.9 percent of advocate rated reinsurers did not have any scores of 5 or less, and 70.5 percent of advocate reinsurers did not receive any scores of 6 or less.

SUMMARY OF FINDINGS

An abundance of useful information was found as a result of the full analyses of the data, but the most useful findings were these:

1. It is important for reinsurers to avoid weakness on any factor. Only 4.7 percent of reinsurers receiving



any rating of 4 or less, on any factor, managed to earn an advocate rating (9,10). Furthermore, only 5 percent of reinsurers receiving two or more 6 ratings, on any factors, earned an advocate rating.

2. Strong client orientation and medical underwriting capabilities are more important than other factors to earning an advocate rating from direct writers. Ninety-five percent of reinsurers receiving advocate scores also earned a rating of 7 or higher on these two factors.
3. While financial security might be important to direct writers in whether to consider a reinsurer, it is not a good predictor of whether a direct writer will recommend a reinsurer. More than 30 percent of reinsurers receiving a detractor rating received a financial security rating of 8 or 9.

In conclusion, while upward trends in overall direct writer satisfaction appears to be a positive development for the reinsurance industry, analysis and exploration of the data is ongoing in order to help reinsurers best meet the evolving needs of direct writers. ■

If you would like to receive the complete 18-page analysis of the data, please email Rick Flaspöhler (rflaspoehler@frsurveys.com). Rick will be happy to send you a PDF file of the complete findings.

MODERN MODELS FOR LONGEVITY RISK

By S. J. Richards

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ABSTRACT

Effective risk management of a portfolio demands accurate and succinct models which explain the main risk factors. The importance of this has risen sharply in a low-interest-rate environment. We look at the various risk factors which can be found in two different portfolios in two different countries, and find a degree of commonality.

However, we also find that different portfolios have different characteristics available for modelling and risk management, and that portfolio-specific analysis is critical.

WHY CARE ABOUT LONGEVITY RISK?

“By providing financial protection against the major 18th- and 19th-century risk of dying too soon, life insurance became the biggest financial industry of that century. ... Providing financial protection against the new risk of not dying soon enough may well become the next century’s major and most profitable financial industry.”

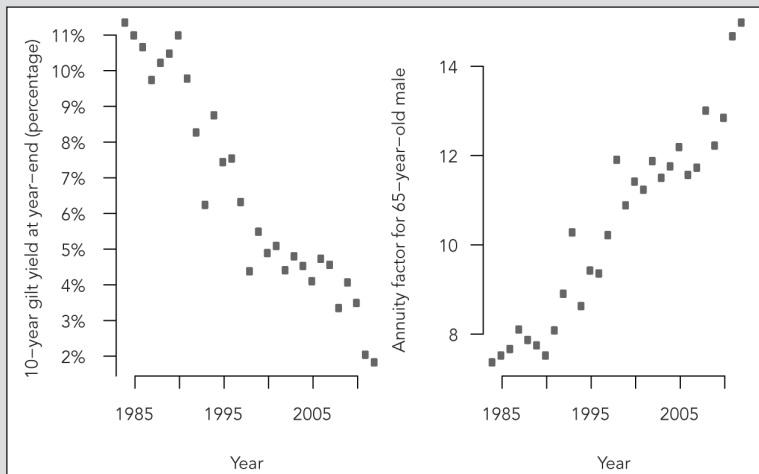
Drucker (1999)

In the July 2013 issue of *Reinsurance News*, Gavin Jones described recent developments in the market for reinsuring longevity risk in company pension plans in the United Kingdom. This market is growing in the United States as well, with well-known recent buy-out deals including General Motors and Verizon. Annuities and pension-plan restructuring are now a large part of modern life-insurance business. They have also become a lot more expensive, as shown in Figure 1.

The size of recent deals is one reason to care about longevity risk, and increased reserves due to low interest rates is another. However, a subtler point is that those increased reserves have also become a lot more sensitive to longevity assumptions. Figure 2 illustrates this. At first glance the right-hand panels of Figures 1 and 2 look near-identical. Upon closer inspection, however, you can see in Figure 2 that the sensitivity of reserves to a longevity shock has more than doubled to around 8 percent. This is highly material in the context of pricing bulk-annuity transactions, as a pricing margin is typically of the order of 5 percent. Clearly, the accurate assess-

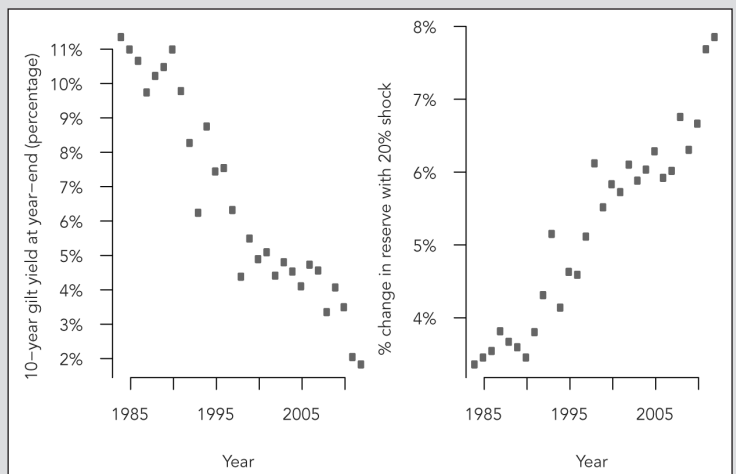
Modern Models for Longevity Risk

Figure 1: U.K. Government bond yields (left) and the corresponding cost of a level annuity to a male aged 65 (right).



Note: End-year yields from British Government Stock (10-year nominal par yield, series IUAMNPY from Bank of England) and own calculations for an immediate annuity at age 65 using S1PA (males) and same yields.

Figure 2: U.K. Government bond yields (left) and the corresponding change in reserve from a 20% mortality shock (right).



Note: End-year yields from British Government Stock (10-year nominal par yield, series IUAMNPY from Bank of England) and own calculations for an immediate annuity at age 65 using S1PA (males) and same yields.

Modern Models for Longevity Risk

Table 1: Financial impact of mortality rating factors in a U.K. annuity portfolio. Source: Richards and Jones (2004, page 39)

Factor	Step change	Reserve	Change
Base case	-	13.39	
Gender	Female→male	12.14	-9.3%
Lifestyle	Top→bottom	10.94	-9.9%
Duration	Short→long	9.88	-9.7%
Pension size	Large→small	9.36	-5.2%
Region	South→North	8.90	-4.9%
Overall			-33.6%

Table 2: Financial impact of mortality rating factors in a multi-employer pension plan in Germany. Source: Richards et al. (2013, Appendix 1)

Factor	Step change	Reserve	Change
Base case	-	16.114	
Gender	Female→male	14.529	-9.8%
Health	Normal→ill	12.974	-10.7%
Pension size	Large→small	11.717	-9.7%
Region	B→P	11.025	-5.9%
Sector type	Private→public	10.599	-3.9%
Overall			-34.2%

ment of longevity risk is far more crucial to the profitability of such business than it was in the mid-1980s.

In a low-interest environment, therefore, longevity risk plays a much bigger role than it used to. This has consequences for how actuaries perform their mortality analysis. Errors in longevity estimation have a bigger impact than they used to, so past approximations and methods may no longer be good enough. Actuaries therefore need greater sophistication in their analysis and rating of longevity risk.

PORTFOLIO-SPECIFIC ANALYSIS

Historically, actuaries analysed mortality as follows: (i) lives were grouped, (ii) a few risk factors were considered, such as age, gender and policy size, and (iii) mortality rates (qx) were compared against an industry table. In the past this was adequate, especially when interest rates were higher. However, there are a number of problems with this approach. Firstly, individuals are not all alike and have different combinations of risk factors. A mortality model for grouped data usually means that not all risk factors are being investigated, and thus that not all information is being properly extracted. Finally, portfolio mortality experience can have a very different shape from an industry table.

MODERN MODELS FOR LONGEVITY RISK

One solution to this is to construct a model using your portfolio's own experience data. You can then investigate as many risk factors as the data supports. The modern "gold standard" for this kind of analysis is a set of techniques borrowed from medical statisticians: survival models.

In our first example, a U.K. insurer found six risk factors for longevity in its annuity portfolio: age, gender, lifestyle, duration since annuity purchase, pension size

and region (Richards and Jones, 2004). The importance of these risk factors for annuity reserves is demonstrated in Table 1. We start with a base case—a female of high income, high socio-economic status living in the south of the United Kingdom—and we make step-wise changes for one risk factor at a time until we reach a male of low income, low socio-economic status living in the north of the United Kingdom. Table 1 shows that each step-wise change is material relative to the typical annuity pricing margin of around 5 percent.

The phrase "lifestyle" in Table 1 refers to using so-called geodemographic profiles based on an annuitant's address or postcode. This is subtly different from a simple geographic interpretation of address, hence the term geodemographic. To illustrate this, consider two lawyers each living in the north and south of the country. They do not share a geographical region, but they are nevertheless more likely to share an education level, income and lifestyle than either would share with, say, a manual labourer living in the same city. This kind of profiling and its use in mortality modelling is described in Richards (2008), who performed a similar analysis to Table 1 for a different U.K. annuity portfolio.

Portfolios will vary as to the information they have available for modelling and analysis. These differences will be driven by industry practice and country. For example, in a recent case study Richards et al. (2013) found eight risk factors for longevity amongst pensioners in a multi-employer pension plan in Germany: age, gender, ill-health v. normal retirements, pension size, first life v. surviving spouse, sector type, region and portfolio-specific effects. Several of the risk factors are obviously shared with the previous U.K. example, but differences in available information meant that

CONTINUED ON PAGE 12

"LOW INTEREST RATES MEAN THAT ACTUARIES NEED TO SHARPEN THEIR MORTALITY MODELLING."

no equivalent risk factor to lifestyle was available. However, instead the German data had a reliable indicator of health status at retirement, as well as information on the sector in which each pensioner's employer operated. Table 2 shows that a similar scale of step-wise differences in reserve factors was found compared to Table 1.

We see in Tables 1 and 2 that each portfolio is unique in terms of the information it has available for assessing risk factors. The German data in Table 2 also contained a particular illustration of why portfolio-specific analysis is so important. One of the employers was a large and wealthy German city with a notably high standard of living. Even after allowing for the seven other risk factors in the mortality model, this city's pension plan had mortality around 10 percent lighter than expected. The impact of this was an extra 2 percent to 2 1/2 percent on reserves over and above what the other risk factors would have indicated. Although there were only around 11,000 surviving pensioners in the city's pension plan, the use of modern survival models enabled a formal statistical test of the significance of their lighter mortality. With a p-value of 0.0001, there was little doubt that the lower mortality was real and not a chance fluctuation.

CONCLUSIONS

Low interest rates mean that actuaries need to sharpen their mortality modelling. Each portfolio's liabilities are unique, so it is important to begin with the experience data of that portfolio. We find that survival models for individual lives make best use of all of the available information, thus allowing greater insights into the risk factors which drive the liabilities. Models should be fitted using the risk factors based on existing business practices and the data available. This way, the greatest possible insights can be gained when restructuring pension plans or designing longevity reinsurance. ■

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Interview With Sebastien Blondeau, President And COO Of Optimum Re

By Sebastien Blondeau



Sebastien Blondeau, FSA, MAAA, is president and COO of Optimum Re Insurance Company in Dallas, Texas. Sebastien can be reached at sebastien.blondeau@optimumre.com.

Thank you, Mr. Blondeau, for taking the time to speak with us. For our readers who may be unfamiliar with your company, could you begin by telling us about yourself and what you do at Optimum Re?

I'm president and chief operating officer (COO) at Optimum Re Insurance Company (ORIC), the U.S. reinsurance subsidiary of the Optimum Group. In 2012, we celebrated the 25th anniversary of our operations in the United States, which we are quite proud of.

Could you tell us about your career path? What are some of the highlights of your career that you remember most?

I joined ORIC in 1998 as an actuarial analyst with just a few exams, limited knowledge and with the intent of spending a couple of years in the United States. Fifteen years later, I'm the president, have two beautiful daughters and intend to stay in the United States for a while. I hope this can help other younger actuaries realize it's all possible.

It's not without hard work though. I remember when I was in charge of the pricing department, I was always trying to find ways to have a proposal that would bring the most to our client and still meet our profitability requirements. It sometimes required being quite creative.

I would also like to take this opportunity to thank three people that most contributed to my progression: Gord Gibbins who has helped ORIC develop the large company market and continues to challenge my ideas every day; Serge Goulet who has been my boss and my friend since we both joined ORIC in 1998 and who's now president of our Canadian reinsurance company; and Mario Georgiev who was president of ORIC until passing away in 2011 and who I will always remember.

How would you describe the biggest challenges for actuaries to transition from traditional actuarial roles to organizational management roles? How were you able to make this transition?

The biggest challenge is to go from a purely technical role to a business and people role. For many actuaries, this is not an easy transition. I remember when I joined our valuation department at the beginning of my career; I could work a whole day with my headphones on and without saying a word to anyone. I'm more of an entrepreneur than a technician so that role didn't suit me that well. I liked the business aspects of the pricing department and moved into that role shortly after. The next challenge is coaching and motivating the teams of professionals I now manage. I try every day to put myself in their shoes and understand their perspective. I have the advantage of having done some of that work before so at least I can relate.

Optimum Re has grown considerably in the last two decades. How has the company changed in this time, and how have these changes affected you?

You're correct that ORIC has changed considerably over the last 25 years. We are now better known, have more expertise, more clients and more business. However, one thing has always remained: we are building long-term relationships. We are not here for short-term benefits.

We are now recognized as a top service reinsurer (per the latest Flaspöhler survey) and that is providing us great opportunities. We focus on innovation and remain committed to our partnership approach. I simply continue to build from the solid foundations established by my predecessors.

Do you foresee your company continuing to grow organically, through acquisition, or a balance of both?



A balance of both. Although most of our efforts are focused on organic growth, we are also on the lookout for potential acquisitions. The current environment presents significant challenges for some companies but can generate excellent opportunities for a company like ours.

In the past, Optimum Re has seen much growth by acquiring small to mid-sized insurers as clients. Why has your company increased its scope to larger insurers? How will this change Optimum Re?

With the continued consolidation in the reinsurance world, we felt concentration of risk might be an issue for some insurers. We particularly saw a need for new capacity in the large company market. The decline in overall satisfaction of insurers toward their reinsurers in the mid 2000's also opened up some doors for a company like ours focused on client services. With the right people and vision, we were able to capitalize on many large company opportunities while maintaining our support to our small and mid-sized clients.

Optimum Re seems to emphasize its understanding of smaller markets and its ability to customize products for those markets. This seems to be beneficial for smaller regional insurers, but how will you leverage this expertise when pursuing relationships with larger national insurers?

Being a reinsurer to smaller companies requires us to act as an expert in many aspects. For examples, we share our own underwriting manual with our clients, provide claims adjudication reviews and training, bring product

ideas and actuarial expertise and provide reinsurance administration services. Our service oriented approach requires a real commitment to the market, but we feel it provides a great alternative to what is offered by other low cost new entrant reinsurers.

Further, to serve the smaller company market we had to build a strong individual cession administration system to be able to handle the business from a large number of sources. This system allows us to do individual premium verification and provides us with significant information for the management of our business for the benefit of our clients; small or large. Particularly, it allows us to track risks on policies across different plans and clients to monitor client retention and risk accumulation. It proved to be particularly useful in large case management and adds to our clients risk management tool box.

With the North American life reinsurance market facing declining cession rates, does Optimum Re see Critical Illness ("CI") as a growing line of business?

Since most of the reduction has been from quota-share coinsurance and we haven't been in that market, we see individual Life YRT reinsurance as being our primary source of growth. CI remains an ancillary line of business, but the expertise we built for that market over the years will allow us to capitalize once the individual CI market emerges. This expertise is also helpful for other living benefit riders currently being added to individual life products.

What are some of the specialized risks for CI products that traditional life reinsurers may not expect?

CONTINUED ON PAGE 16

“I TRY EVERY DAY TO PUT MYSELF IN THEIR SHOES AND UNDERSTAND THEIR PERSPECTIVE. I HAVE THE ADVANTAGE OF HAVING DONE SOME OF THAT WORK BEFORE SO AT LEAST I CAN RELATE.”

CI is a completely different world. The development of incidence rates and definitions as well as sales, underwriting and claim adjudication requires specialized expertise.

Optimum Re has operated in North America and France for quite some time, but does the company have plans to expand to other countries to pursue new avenues of growth?

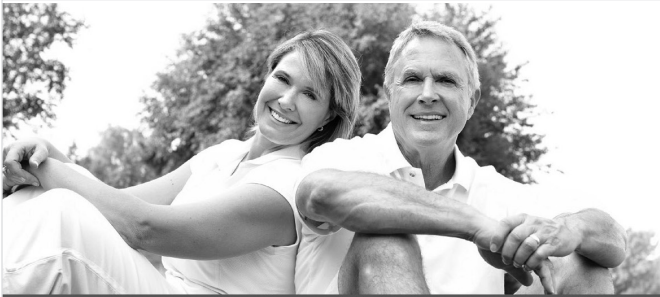
Our U.S. and Canadian reinsurance operations are solid and continue to expand. We are currently developing reinsurance business in Mexico as we see a need for specialized expertise in that market. We still see most of our opportunities for growth in North America, the largest life reinsurance market in the world. However, if a good opportunity arises for an acquisition in a new market, we would definitely consider it.

If so, how do you plan to leverage your existing capabilities to enter these markets? What are the risks that you foresee?

We would use the best resources available, them being from our existing operations (United States, Canadian or European) or from a new acquisition. The main risk for me is to become familiar with the regulatory aspects of a new jurisdiction. That expertise would likely need to be acquired.

What are your priorities now? What are your plans for the future?

Our priority remains on delivering excellent services to our clients and continue to build on our customer intimacy model. We believe in client advocacy and hope that our strong client orientation will provide additional opportunities to support companies we are not doing business with already. ■



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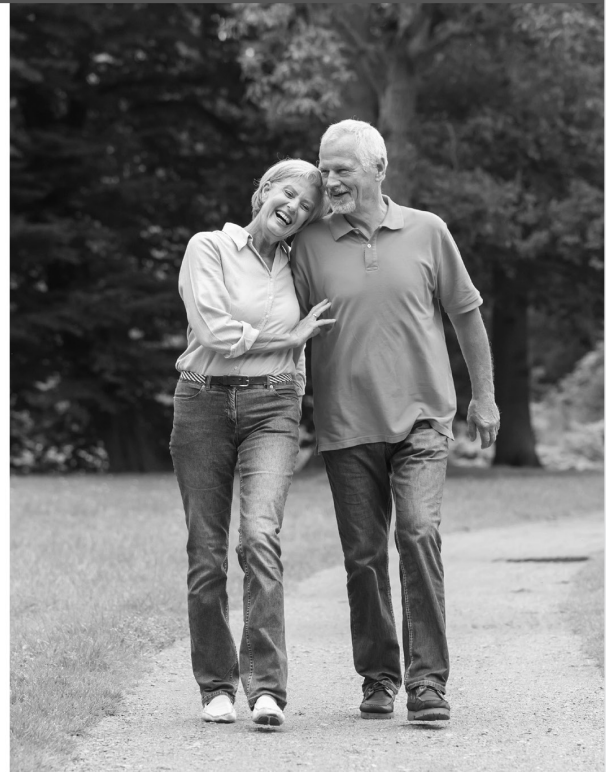
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HOW TO PRICE LONGEVITY SWAPS

By Kai Kaufhold



Kai Kaufhold is managing director, Ad Res Advanced Reinsurance Services GmbH in Hürth, Germany. Kai can be reached at kai.kaufhold@adreservices.com.

Longevity risk and pension plan de-risking has been an important topic in the United Kingdom for many years. In 2012, pension plan de-risking reached the United States on a large scale with Prudential Insurance Company of America transacting two of the largest pension buy-out deals in history, totalling US\$36.5 billion of pension liabilities.

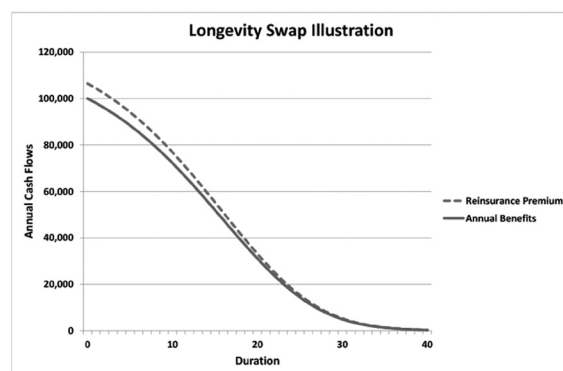
There are generally three ways for pension plans to reduce longevity risk in their portfolios:

- Pension buy-out, which transfers the entire risk to an insurance company;
- Pension buy-in, in which the pension plan retains the relationship with its pensioners, but purchases insurance from an insurance company to cover asset risk and demographic risks; and
- Longevity swap, which transfers only the risk of pensioners living longer than expected from the pension plan to an insurer.

Reinsurers have been providing capacity for longevity risk in the U.K. risk market from around 2001, but since 2008 with little appetite for asset risk. Consequently, they developed the longevity swap, which has become an important risk transfer alternative and has been used to transfer a total of GB£19.17 billion (US\$30.4 billion) in pension liabilities since 2009.¹

Longevity swap reinsurance is a deceptively simple structure, in which a reinsurer takes on the responsibility to pay the amount of actual benefits on a specific portfolio of pensioners (or annuitants) in return for fixed reinsurance premiums. The reinsurance premiums follow the pattern of the expected pension benefits (or annuities), and reflect the reinsurer's view of future survivorship in the portfolio plus a margin for taking on the risk. (See Figure 1, above)

Figure 1: Illustration of a longevity swap with annual pension benefits of \$100,000. The chart below shows the expected annual benefits as the solid line, and the reinsurance premiums as the dashed line.



From a practitioner's view, a longevity swap requires the following main pricing assumptions:

- Current Mortality: experience analysis of the portfolio, to identify risk factors and quantify their impact;
- Mortality Trend: choose a model, which reflects your best estimate of future mortality for the portfolio;
- Reinsurer's Margin: calculate the economic capital at outset and for each future period to determine the necessary margin for taking on the risk.

MORTALITY EXPERIENCE ANALYSIS

As mentioned by Gavin Jones in an article² in the July 2013 issue of *Reinsurance News*, the analysis of mortality risk is "at the core of the reinsurance skill set." We are used to carrying out these analyses with due care. For example, one of the things reinsurers always look at is the difference between lives-based and amounts-based mortality experience. An unusually large lives-to-amounts differential is an indicator of heterogeneity within the portfolio, which calls for a detailed portfolio-specific mortality analysis, because the portfolio likely consists of different socio-economic groups with varying mortality experience. The chart in Figure 2 (pg.19) shows an example of how mortality can vary by socio-economic class. Male pension-

ers in the United Kingdom aged 65 have a mortality differential of close to 250 percent between those with the highest pensions and the lowest pensions.

Figure 2: Socio-economic Mortality Differentials. Data collected by the CMIB on self-administered pension schemes in the United Kingdom between 2001 and 2008. Mortality of males by pension size amount band based on simple log-linear graduation for comparison (own calculations).



In life reinsurance pricing, we are used to creating bespoke mortality assumptions for each transaction and to paying close attention to the slope of the table. We are also used to differentiating mortality very accurately by risk class. For longevity swaps it is even more important to model the run-down of the portfolio as accurately as possible, because—unlike YRT reinsurance—the future premium payments are fixed at outset and the transaction typically has a very long duration (see Figure 1, pg. 18).

Groups with different mortality must be projected separately, even if the portfolio’s experience data does not include sufficient information to differentiate the mortality assumptions. For instance, it may be possible that the experience data does not deliver statistically credible results for pension-amount differentials. In such instances, it is necessary to rate the mortality of the projected portfolio based on additional external data.³ The alternative, using an average mortality rate, may give

reasonable results for the initial years. However, over time the subgroups with higher mortality become less important as their weight naturally decreases faster than the weight of subgroups with lighter mortality. Thus, the required reinsurance premium would be underestimated.

MORTALITY TREND

To properly project the survivorship of a group of pensioners or annuitants, we require assumptions about future mortality trends. Again, life reinsurers are used to estimating mortality improvement rates for insured lives. However, for longevity risk, it is important that we do not underestimate mortality improvements. This task should not be taken lightly, as generations of actuaries before us have repeatedly got it wrong.

Over the past decade, actuarial and demographic research has developed a variety of models for future mortality. Unfortunately, there is little consensus among researchers as to which model is best suited, or even as to how to pick the right model. There are those, who argue that the increase in life expectancy, which we have seen in the last few decades, cannot persist, because cardio-vascular health has been improved as far as possible, and because other causes of death are more difficult to tackle, with new phenomena like obesity and antibiotics-resistant infections also gaining importance. The opposing school of thought argues that improvements in health have historically persisted beyond the expectations of contemporaneous experts. Therefore, we should project the most recent trends of high mortality improvements forward with statistical methods.

For the purpose of analyzing longevity risk in the context of longevity swaps, it would be prudent to project the recent high level of mortality improvements into the future. It is also important to determine, whether the mortality improvement rates are only age-dependent, or whether they also vary by year of birth cohort. Analysis of U.S. population data shows that there is a moderate cohort effect present in America.

CONTINUED ON PAGE 20

Typically, we derive mortality improvement assumptions from general population data, because portfolio-specific data or industry data do not cover a long enough history or include enough deaths to obtain statistically credible results. The potential mistake which we make by doing so is often referred to as Longevity Basis Risk. Research is ongoing to quantify the impact of longevity basis risk, but the reinsurance pricing actuary will already need to make some allowance for it in her pricing assumptions today.

In addition to model risk and longevity basis risk outlined above, the reinsurer has to deal with a difficulty described in the literature as model robustness. This term refers to the sensitivity of a projection model to the choice of the historical dataset, to which the model is calibrated. This again is a choice that the pricing actuary has to make, and which will affect her opinion on the future survivorship of the portfolio. Each of the three components of longevity trend risk has an impact on both the best-estimate liabilities and their uncertainty.

MARGIN FOR RISK

The margin charged by a reinsurer on a longevity swap includes both the reinsurer's own expenses and the cost of having to hold capital against longevity risk. Setting a margin for expenses is a straightforward exercise, while the cost of capital merits some more detailed discussion. Generally speaking, there are many methods of calculating the required profit margin. For example, one can view the required economic capital as an upfront investment, which pays down gradually as liabilities expire and capital is released. The cost of capital is then equal to the margin which achieves a target internal rate of return on this investment. For the sake of comparison, however, it makes sense to consider the method by which insurers and reinsurers in Europe have to calculate the "exit value" of a portfolio of risks, or in other words the theoretical price at which the risk would change hands.

1. Calculate the capital required at outset and at each point in time in the future;





2. The cost of capital in each period is equal to a percentage of the respective capital, i.e., Cost-of-Capital factor x Required Capital;
3. The present value of the cost of capital as defined above is called Risk Margin; and
4. The exit value mentioned before is equal to the sum of the risk margin plus the present value of best-estimate liabilities.

The profit margin for a reinsurance transaction, over and above best estimate liabilities and expenses, is then set such that the present value of future profits equals the above risk margin. Within the European Solvency II framework for regulatory capital, the supervisor has fixed the cost-of-capital factor at 6 percent. While all reinsurers will have their own internal profit targets and also their own economic capital models and ability to diversify longevity risk, one way of comparing these differences would be to find the equivalent cost-of-capital factors under a standard risk-based capital model.

CONCLUSION

Longevity swap reinsurance should be a standard pricing exercise for professional life reinsurers. However, there are a number of pitfalls along the way which we have highlighted in this article:

- A. Portfolio-specific mortality is crucial.
- B. Different risk classes must be projected separately, in order to avoid underpricing.
- C. Mortality improvement trends come with considerable model uncertainty, longevity basis risk and lack of robustness, all of which have to be priced for in the risk margin.

Life reinsurers are well suited to take on longevity risk, because they have the required skill set, and because they are likely to require the least amount of additional capital to cover longevity risk. Nevertheless, their capacity to take on this risk is finite. Possibly, longevity swaps will be a tool with which the insurance market will be able to transfer this risk into the capital markets. However, one of the thresholds to overcome before we will be able to accomplish that is to better understand and quantify longevity basis risk. ■

If you are interested in longevity risk and related implications and applications, you should consider signing up for the Living to 100 Symposium V which will take place Jan. 8-10, 2014 in Orlando, Fla. For details see: <http://livingto100.soa.org/>

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- ¹ Lane Clark & Peacock LLP: LCP Pension Buy-outs, Buy-ins and Longevity Swaps 2013, available at www.lcp.co.uk
- ² Gavin Jones: Longevity Risk and Reinsurance, in Reinsurance News July 2013, Issue 76.
- ³ Either by utilizing commercial profiling databases such as Mosaic or Acorn or by making use of industry data.

Accident & Health Reinsurance— "Déjà vu all over again"?

By Ted Clark



Ted Clark is president, Prism Information Management Group Inc. and vice president, Marketing, Reinsurance Management Associates Inc. in Toronto, Can. Ted can be reached at tclark@rmacan.com.

As I sat contemplating this article, I could not help but look out of my office window and reminisce about the Accident & Health (A&H) market in the mid- to late-1990s. Toronto, Canada was an international reinsurance hub that arguably rivaled any in the world for A&H reinsurance. Major companies on University Avenue, Bloor Street and Bay Street all wrote A&H reinsurance using dedicated staff which protected risks that were worldwide in scope. In addition to direct writers, there were external managing general underwriters (MGUs) developing business from Toronto on behalf of groups of companies (A&H reinsurance pools) and also on behalf of specific international reinsurers. Brokers and other advisors made regular visits to the city from London, Europe, the United States and even the Far East. Lloyds' and the London market, the United States and Europe were also important players in the A&H reinsurance market, but without doubt Toronto was a key center of excellence and capacity.

I can see some of the corporate offices of these Canadian reinsurers from my window, but today there are only two MGUs operating in Toronto and actively underwriting in the A&H reinsurance market. Only one of these underwrites on behalf of a Canadian company, and this is the Canadian branch of a U.S. entity. So what happened in the last 15 to 20 years and where are

we now? To answer this question it is helpful to look at some of the historical factors that affected the market during this period and then compare this to our current situation. In my mind the top five characteristics of the A&H reinsurance market in the mid-1990s were as follows:

1. Too much capacity: The Accident business tends to be cyclical in nature with cycles tied to key events in the world or to supply and demand in the market itself. Profits had been good in the late 1980s and early 1990s, and this attracted more and more reinsurers into the market. A number of reinsurance MGUs also emerged as employees with an entrepreneurial spirit left reinsurers to form their own companies, often with the backing of their former employers. All these entities were competing for the same business;
2. Intense downward pressure on pricing: As competition increased, prices dropped, especially on catastrophe programs where pricing was based upon payback period or rate online which are approaches adopted from Property and Casualty (P&C) pricing and will be familiar to many. The payback approach seeks to calculate how many years of premium it would take to reimburse one full loss. Therefore if the limit of coverage is \$1,000,000 and the annual premium is





\$50,000, then the payback period is 20 years in that it would take 20 years at \$50,000 per year to pay for one full loss of \$1,000,000 (Note: this approach does not take account of interest or other factors). The rate online is the inverse of this and would be 5 percent. During the 1990s, on some higher layers the pricing went to 1,000+ year paybacks indicating that reinsurers thought the likelihood of a claim at this level to be one every thousand years. This pricing is fine until that one year ...;

3. Relaxation of terms and provisions: Business could be written with fewer exclusions because of the competition in the marketplace. An example of this was the renewal of contracts written on a losses occurring during (LOD) basis the previous year to risks attaching during (RAD) the period basis in the renewal year—for no additional premium. LOD reinsurance treaties protect the reinsured against claims that occur within a pre-specified period—usually Jan. 1 to Dec. 31 regardless of when the original business was written. Therefore a claim that occurred in March of 1995, for example, could flow from a policy that was written in 1994 and also a different policy from 1995. RAD reinsurance treaties, on the other hand, protect the reinsured against claims that occur on policies written in that specified period, regardless of when the claim takes place. Therefore a claim could occur several years after the expiration of the coverage. Because the tail on RAD policies is greater than treaties on a LOD basis, RAD treaties typically cost more than LOD treaties. Capacity was such that in transition years there was often a roll-in of LOD claims

on historical policies plus full coverage of RAD for future claims—again for no additional premium;

4. Internal pressure to grow top line: During the same time that competition was driving down premium and relaxing terms, there was internal management pressure on reinsurers to write additional premium and take advantage of favorable historical returns. As a result, a number of creative ways had to be developed to increase A&H premiums. P&C reinsurers had suffered tough losses in the late 1980s and were pulling out of, or reducing their writings in many market segments. As a result, new “lines” of business were explored and this led to the proliferation of “carve-outs” in aviation, marine and workers’ compensation reinsurance products. The “carve-outs” were triggered by accidents and in theory excluded the employers’ liability portion of traditional form following P&C policies and contained other exclusions and sunsets on claim liability, but often led to disputes on coverage at claim time. In addition, if the P&C reinsurers were having trouble making money for the full policies, many carve-out reinsurers fared little better;

5. Retro Market: The cheap cost of reinsurance and in particular London Market Excess of Loss reinsurance (LMX) led to an active retro market as reinsurers found that it was often cost effective to cede large portions of their risk. Retro business also provided a source of additional premium income, but this was artificial and broad coverage definitions made it difficult for reinsurers to control exactly what was being underwritten. This also led to aggregations of expo-

CONTINUED ON **PAGE 24**

"... THE MARKET REMAINED SOFT UNTIL THE MORNING OF SEPT. 11, 2001 WHEN THE WORLD, AND THE A&H REINSURANCE MARKET, WAS CHANGED FOREVER."

sure and to contrived spirals whereby reinsurers protected each other in tight formations and passed claims to higher level retros. In some cases retention was only \$5,000 per loss with the excess amounts up to tens or hundreds of millions reinsured.

As you can imagine, these developments were not generally positive for reinsurers and by 1997/8 it was clear that the issues above were manifest and that profits were becoming hard to come by. Some companies began to pare back their writings, exclude more exposures and even exit certain lines. However, in spite of the tightening of terms and the slight correction in the late 1990s, the market remained soft until the morning of Sept. 11, 2001 when the world, and the A&H reinsurance market, was changed forever. As a result of tremendous losses stemming from 9/11, more reinsurers pulled out of the business entirely and the overcapacity of the previous 10 years evaporated overnight. For those few that remained in the market, and for the small number of new entrants in 2002, prices shot up and were often many times higher than had been in place earlier in 2001. Furthermore, restrictions on terms were put in place and new exclusions for claims caused by terrorism, and a few years later NCB (Nuclear, Chemical & Biological) became commonplace or were only covered with high load factors. Profits returned and for the next five to eight years this was again an exciting and profitable business. Since then there have been corrections as the market responded to events as they occurred, such as the March 2011 earthquake in Japan that led to a new round of exclusions and/or loads on Nuclear Radioactivity, but capacity again increased.

So where are we today and is this "Déjà vu all over again"? The answer is decidedly mixed. There has recently been an influx of reinsurers into the A&H reinsurance market, attracted by strong and steady profits and tighter terms. Some reinsurers are entering the market for the first time, whereas others are re-entering with a new approach. Simultaneously there has been continued merger and acquisition activity which has increased company retention, and consequently reduced demand for A&H reinsurance and many other

lines. This has led to overcapacity in the marketplace and put downward pressure on pricing, with some programs currently being written below the historical burn rate for claims. In other situations there is oversubscribing of capacity and renewal shares have been reduced. Companies seeking reinsurance have also been able to obtain more favorable terms and exclusions on occasions, but there is not a general relaxation taking place and in some cases there have been additional terms and exclusions being inserted into contracts recently such as for pandemic exposure. Growth in premium and profits remains a priority, and new products and features are being explored, but in a more cautious and calculated way. The retro market of the 1990s has not yet re-surfaced in the same manner and many reinsurers have been reluctant to enter into retro arrangements. Some specifically exclude this business. As in earlier periods, it is a difficult time to be in A&H reinsurance and it requires careful risk selection, a lack of natural or man-made disasters, and a bit of luck, to make this a profitable line of business. ■

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Life Reinsurance In The Mexican Market

By Tim Morant and Ricardo Nava



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Mexico, the second most populous country in Latin America,¹ has long been a hub of Latin America's Insurance markets, due to its size, business-friendly environment and regulatory sophistication.²

Approximately 100 insurance companies currently operate in Mexico, more than half of which are subsidiaries of foreign entities. The insurance market has experienced significant growth over the last 20 years.³

Notwithstanding the recent growth, the market continues to have tremendous potential.⁴ One indication of this is that the Mexican insurance market contributes less than 2 percent to the country's adjusted⁵ gross domestic product, whereas the U.S. insurance market contributes around 12 percent to adjusted gross domestic product. The OECD average is a little less than 9 percent annually.⁶ The Mexican Insurance Commissioner estimates that the country's insurance penetration will double by 2030.⁷

LIFE INSURANCE MARKET

Mexico's life insurance market contained 21 life insurers and 33 multiline insurers. The overall market has been growing strongly since 2005, primarily due to the growth of life insurance products with both protection and savings components.⁸

The life insurance market is dominated by five companies: Metlife, Banamex, Grupo Nacional Provincial, BBVA Bancomer and Monterrey New York Life—four of which are multinationals. This can be seen in the following graphic depicting the history of Mexico's most recent five-year life insurance premium.⁹

If we look closer at these top multinationals and domestic insurers, we can see how concentrated the life business is: out of US\$9.2 billion of life premium written in 2012, 64 percent was written by the top five multinationals and 18 percent by the top five domestic insurers.

Interestingly, two of Mexico's five largest life insurers, BBVA Bancomer and Banamex, are bancassurers. Although agents are the largest distribution channel for insurance products, bancassurance, especially in life insurance market, has been gaining ground over the last several years.¹⁰

Pure mortality protection is the dominant product in the Mexican life insurance sector.¹¹ The main additional benefits include accidental death & dismemberment, total & permanent disability (lump sum), waiver of premium and critical illness. There is not a strong penetration of disability income or long-term care products.

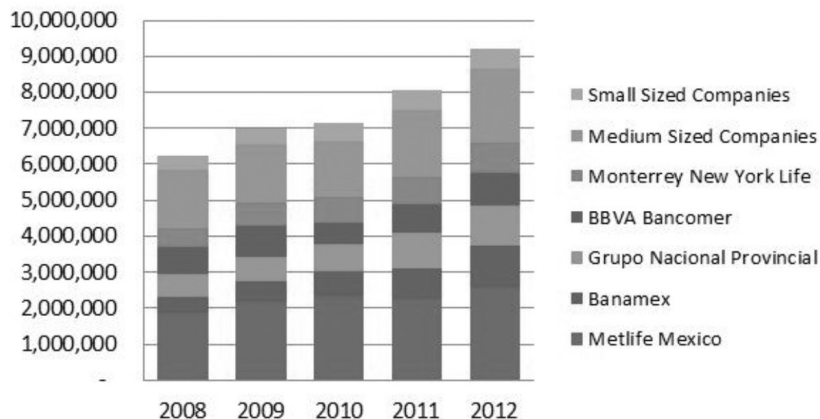
Microinsurance is another area seeing increases: by 2010, according to a March 2012 report on Mexico from the International Monetary Fund, 3.3 million Mexican citizens were reached by microinsurance with an insured amount of 65 billion pesos.¹² However, there is still a great need for a greater variety of life and health products for middle- to low-income buyers.

Another area of recent growth is the annuity market. Mexico's pension system for private sector employees, expanded in 2007 to incorporate state workers, which is driving significant growth.¹³

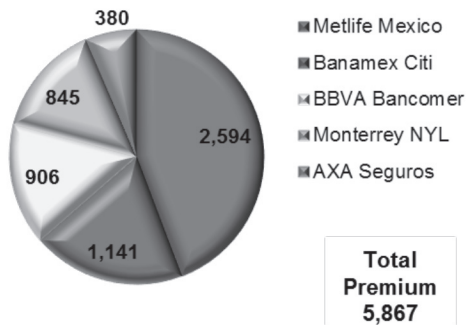
LIFE REINSURANCE MARKET

The Mexican reinsurance market is the largest by premium in Latin America¹⁴ with the majority of reinsurance premium being ceded to foreign reinsurance companies. Currently, there is only one domestic reinsurer

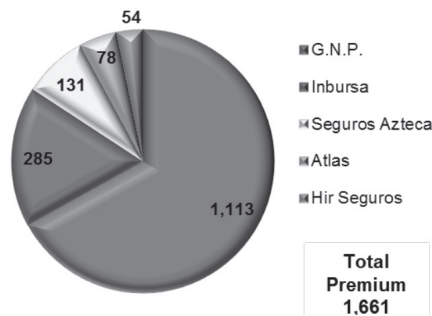
5 Year Premium History



Life Premium Written by Multinationals
As of 2012 (US Dollars in Million)



Life Premium Written by Domestic Cos.
As of 2012 (US Dollars in Million)



in Mexico providing life reinsurance¹⁵ and given that many of the multinational reinsurers have offices in Mexico, life reinsurance brokers are not as common as in some other countries in the region; e.g., Colombia.

To operate as a reinsurer in Mexico, a company must be licensed by the SHCP (Mexico's finance ministry) and the CNSF (Mexico's insurance regulator). Foreign reinsurers must show sufficient solvency and stability to assume reinsurance via a minimum financial strength rating from a recognized rating agency and by being authorized by their country's regulations to practice reinsurance.

The proportion of life premium ceded is currently quite small: of the \$9.2 billion of direct insurance premium in 2012, only \$592 million was ceded life premium.¹⁶ One explanation is that, unlike the United States and Canada, Mexico's current valuation laws do not grant reserve credit for ceded reinsurance. Hence, coinsurance and other capital-efficient reinsurance transactions are not common. Often, life reinsurance contracts are structured as excess of retention deals on a risk premium basis. It is common to see four to five reinsurers providing protection under the same terms in a treaty; usually, with experience refunds.

The majority of life reinsurance treaties have automatic recapture at the end of the annual term. For the cedant, it has two advantages: one, administration is simplified, as all in-force business is reinsured under the same terms; and two, rates can be negotiated every year. However, the cedant has no guarantee that the risks will be reinsured in the future, or if so at what terms.

This increases the cedent's exposure in the case of a risk such as a pandemic event.

NEW PRINCIPLES-BASED SOLVENCY REQUIREMENTS

In April 2013, Mexico passed a federal law—the first in Latin America—mandating industry-wide implementation of principles-based solvency requirements. The law does not detail the specific actuarial model(s) to be used, but instead, grants Mexico's insurance commissioner the authority to approve the specific model(s).¹⁷

In June, the commissioner published a draft guidance note loosely based on European Solvency II guidelines. The guidance note is currently under industry review. The intent is to consider and/or incorporate industry feedback, build a standard model and have everything ready for market-wide implementation by April 2015.

FUTURE IMPACT OF PRINCIPLES-BASED FRAMEWORK

In a recent survey of LATAMIR (Latin American Insurance Review) readers, 81.9 percent said they believe Solvency II-type standards would impact the Latin American insurance industry in a moderate to significant way.¹⁸

How significant that impact, and in what manner, will be determined by the final solvency model adopted. The availability and utilization of capital solutions could be one area to provide a significant positive impact on the market, including the potential financial solutions offered by reinsurance.

CONTINUED ON **PAGE 28**

If the new law were to include favorable treatment of reinsurance by including reserve credit for ceded risks, companies would be able to use reinsurance to reduce strain, release inefficient capital and ultimately bring innovation to the marketplace.¹⁹ In the end, the ultimate beneficiary of these improvements would be the consumer, with more options and better products.

SUMMARY

The Mexican insurance market remains at the forefront of the region, with significant growth expected for the foreseeable future. The implementation of a principles-based solvency framework could allow for increased collaboration between direct writers and reinsurers to optimize capital and introduce innovations that will improve market penetration and ultimately provide better products for the policyholders.

In addition, investments in technology that will allow for improved analysis of proprietary data with the aim of understanding retained risks and their correlation could give insurers a competitive advantage with internal models, especially in a principles-based world. ■

References

- ¹ http://ais.paho.org/chi/brochures/2012/BI_2012_ENG.pdf and <https://www.cia.gov/library/publications/the-world-factbook/geos/mx.html>. Mexico's population of more than 116 million has a relatively low median age—27.7 years—and a life expectancy at birth of approximately 77 years. 40.7 percent of the population is between the ages of 25 and 54 years old. In 2010, 42.4 percent of households were estimated to be in the middle class and 55.1 percent were estimated to be in the lower class.
- ² <http://www.imf.org/external/pubs/ft/scr/2012/cr1267.pdf> pg 10 and http://www.ambest.com/bestweek/marketreports/BWUS_MexicoSpotlight.pdf.
- ³ <http://www.imf.org/external/pubs/ft/scr/2012/cr1267.pdf> pg 14 Four-fold growth between 1990 and 2010.
- ⁴ <http://www.towerswatson.com/en/Insights/Newsletters/Global/Emphasis/2012/brazil-mexico-and-argentina-what-will-new-insurance-market-entrants-see>.
- ⁵ Adjusted GDP: "The import penetration rate shows to what degree domestic demand D is satisfied by imports M. It is calculated as M/D, where the domestic demand is the GDP minus exports plus imports i.e. [D = GDP-X+M]" [http://stats.oecd.org/oecdstat_metadata/ShowMetadata.ashx?Dataset=CSP6&Coords=\[SUB\].\[IMPPENET\]&Lang=en](http://stats.oecd.org/oecdstat_metadata/ShowMetadata.ashx?Dataset=CSP6&Coords=[SUB].[IMPPENET]&Lang=en).

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- ¹⁰ <http://www.imf.org/external/pubs/ft/scr/2012/cr1267.pdf> pgs 25-26.
- ¹¹ <http://www.imf.org/external/pubs/ft/scr/2012/cr1267.pdf> pg 8.
- ¹² <http://www.imf.org/external/pubs/ft/scr/2012/cr1267.pdf> pg 9.
- ¹³ <http://www.imf.org/external/pubs/ft/scr/2012/cr1267.pdf> pg 21.
- ¹⁴ http://www.fundacionmapfre.org/fundacion/es_es/imagenes/El-mercado-asegurador-latinoamericano-2010-2011_tcm164-3766.pdf pg 103, it is also true that the Mexican life reinsurance market cedes more premium than any other Latin American Country (see pgs. 109-122).
- ¹⁵ <http://www.imf.org/external/pubs/ft/scr/2012/cr1267.pdf> pg 24.
- ¹⁶ http://www.fundacionmapfre.org/fundacion/es_es/imagenes/El-mercado-asegurador-latinoamericano-2010-2011_tcm164-3766.pdf pg 103.
- ¹⁷ http://www.cnsf.gob.mx/Normativa/Leyes%20y%20Reglamentos/DECRETO%20Ley%20de%20Instituciones%20de%20Seguros%20y%20de%20Fianzas_04abr2013.pdf. The current plan is for the commissioner to propose a standard model. The option also exists that a company can request approval to use an internal model.
- ¹⁸ LATAMIR Insurance Review, May 2013, page 5. Also see www.insurancelatam.com. Although this article pursues the idea that changes can come in the form of capital motivated transactions that benefit the market, these changes also have other significant impacts on the insurance companies (e.g. financial reporting, systems, internal controls, etc.).
- ¹⁹ <http://www.iisonline.org/forum/market-trends/reinsurance-as-a-capital-management-tool/> and "Reinsurance and Financial Stability", International Association of Insurance Supervisors (IAIS), July 19, 2012.



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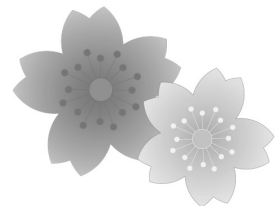
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