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DEVELOPING A STOCHASTIC MORTALITY FRAMEWORK TO SUPPORT THE REINSURANCE MARKET

by Matthew Clark and Chad Runchey

This article is taken from a recent research paper on stochastic decrements released by the Society of Actuaries. The focus of the research was on the techniques that can be applied to perform stochastic analysis on non-market risks, not the specific parameters or distributions used for the risks. The full version of this paper can be found on the SOA Web site at www.soa.org.

As risk management matures in the insurance industry, the universe of risks measured and modeling techniques used to measure them will continue to advance. Likewise, insurance products have evolved to include sophisticated embedded options and guarantees. However, traditional deterministic regulatory, valuation and risk measurement techniques provide a limited view of the risk profile of such products or of the life insurer issuing them. The introduction of stochastic modeling techniques—which to date has focused on market risks, including interest, equity and credit risk—has aided in the quantification of market risks, including low-incidence, high-severity tail events, while the industry has continued to value non-market risks using traditional valuation techniques. Given the advances in recent years in modeling techniques and computing power, there is no reason to be limited to a deterministic approach to valuing non-market risks. Furthermore, the increasing complexity of pending changes to financial reporting and capital requirements will demand more sophisticated analysis.

Specifically, this article will look at the stochastic techniques actuaries can employ to quantify the non-market risks in insurance products, and how stochastic techniques can be used in the evaluation of reinsurance arrangements.

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Developing a Stochastic … from page 1

Background—Modeling Approach

A 20-year level term life insurance product was selected for this analysis to illustrate the quantification techniques for non-market risks. Term life insurance is an example of a product with significant exposure to non-market risks, and with minimal market risk exposure. A mature in-force block of term business was constructed assuming 20 years of sales across a simplified population of male non-smokers (including nine different age/face amount cohorts). For additional modeling assumptions, please refer to the complete research paper on the SOA Web site.

Generating Stochastic Mortality Scenarios

For this article, we will address the non-market risk of mortality. Traditionally, the measurement of non-market risks in life insurance products relied on sensitivity testing, with limited attention to generating a distribution of the economic results.

The introduction of stochastic analysis requires the creation and calibration of a scenario generator. Borrowing from the techniques employed to generate multiple random market risk scenarios, and carefully applying an understanding of the risk composition of mortality risk, stochastic generators can be created to reflect the non-market risks incurred by insurance companies. The parameterization of these generators needs to be performed with consideration for the current and evolving risk profile of the insurer. When selecting parameters for the scenario generator, historical experience must be balanced along with the complete potential risk universe. Historical experience typically understates the extreme tail events that tend to be one of the most important insights provided by stochastic analysis.

The selected distributions and parameters for the analysis that follows in this article should be viewed as illustrative.

To create a mortality scenario generator, it is important to understand the elements inherent in mortality risk. Note that for some insurance products, the risk of longevity (living longer than expected) versus the risk of increased mortality introduces the risk of economic loss for the insurer. Within this article, any references to mortality risk will be to the risk of higher than expected mortality, which is the relevant risk for level term life insurance.
Mortality risk is composed of four primary risk elements, including:

- Underwriting process error (systematic deviations in the underwriting process).
- Volatility around the best estimate.
- Catastrophic events (e.g., pandemic, natural disaster, terrorist attack).
- Trend in mortality (improvement or deterioration).

The generator that was created to support this illustration focused on the first three risks and did not address the trend element, because mortality improvement is not a material risk to term insurance. Table 1 presents the distributions that were used for this analysis. The practitioner should work to set both the distribution and parameters that are reflective of their specific risk exposures.

Table 1
Stochastic Mortality Risk Element Distributions

Stochastic Element	Underlying Distribution	Mean	Standard Deviation
Underwriting factor	Lognormal	1.00	5%
Annual mortality volatility	Lognormal	1.00	5%
	Underlying Distribution	Incident	Probability
Catastrophic shock	Binomial	300%	1 in 100 years event

The stochastic mortality generator produces a matrix of risk factors that are then applied to each of the projection years for each of the scenarios. For this exercise, 10,000 scenarios were generated. Each of the three mortality risk elements mentioned above contributes to the risk factor matrix. The risk associated with underwriting is reflected with a single factor applied across each scenario to reflect the systematic underwriting error that would be reflected in all of the issue years modeled. The volatility and catastrophic elements are reflected as factors generated each projection year for each scenario. The catastrophic events were simulated such, that for each year, either an event occurred or did not. The baseline assumption is that there is no deviation from expected mortality. The table below illustrates how the factors were applied to the base mortality assumption to generate the mortality scenarios.

Table 2
Stochastic Mortality Factor Example

Stochastic Element	Best Estimate	Illustrative Scenario 1	Illustrative Scenario 2
Underwriting factor	1.00	0.99	1.02
Annual mortality volatility	1.00	1.02	1.01
Catastrophic shock	1.00	1.00	3.00
Cumulative mortality factor	1.00	1.01	3.09

When generating a set of risk scenarios, it is important to understand how the risks contribute and interact to produce a cumulative risk profile. An important step in the process is the evaluation of the stochastic results to gain an understanding of the risk profile and the impact that parameterization has on the results. This will enable the company to identify which of the mortality risk elements presents the largest exposure to risks, and, once identified, to target risk management resources and programs at those risk elements. For example, if the company finds out that the risk of poor underwriting has a materially larger impact than that of the other mortality risk elements, it can focus the available resources towards improving the underwriting process.

Insight into the Value of Reinsurance

Stochastic analysis will also enable the company to evaluate various forms of risk management, including reinsurance. Reinsurance is a common tool used by insurance companies to limit their exposure to mortality risk. Integrating reinsurance agreements with a stochastic decrement model provides insight into the net impact reinsurance has on the risk profile of a term insurance port-

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folio. For this analysis we looked at three different types of reinsurance contracts—excess, experience refund and multi-year stop-loss. The following table details the contracts used.

Table 3
Reinsurance Contract Assumptions

Contract	Coverage	Cost
Excess	Caps all claims at $750,000	110% of expected claims
Experience Refund	Claims in excess of 150% of expected claim	150% of expected claims, with refund after 5% margin if claims are less than 150%
Multi-Year Stop-Loss	Cumulative claims over 120%	3% of annual premium

Companies do not purchase reinsurance simply to protect against best-estimate events. Evaluating reinsurance on a deterministic basis limits the cost-benefit analysis associated with the nature of the reinsurance arrangement. Table 4 illustrates this by showing the present value of cash flows for the various reinsurance arrangements under a deterministic scenario, where actual experience is consistent with expectations.

The difference in the net cash flows is a result of the net reinsurance cash flows. The deterministic run without reinsurance results in a present value of future cash flows of ($178 million). As expected, for the deterministic scenario with mortality and lapse events consistent with best estimate assumptions, the net impact of reinsurance is negative, in short, because the reinsurance premiums exceed the reinsurance receivables. Note that the terms of the multi-year stop-loss contract do not result in any reinsurance receivables in this deterministic scenario.

Table 4
Present Value of Future Cash Flows ($ Millions) – Deterministic

	No Reinsurance	Excess Reinsurance	Experience Refund	Multi-Year Stop-Loss
Premium	1,196.4	1,196.4	1,196.4	1,196.4
Death Claims	(1,338.9)	(1,338.9)	(1,338.9)	(1,338.9)
Other Expenses	(35.9)	(35.9)	(35.9)	(35.9)
Gross Cash Flows	(178.4)	(178.4)	(178.4)	(178.4)
Reinsurance Premiums	–	(976.8)	(2,008.6)	(35.9)
Reinsurance Receivables	–	894.8	1,941.7	–
Net Reinsurance Cash Flows	–	(82.0)	(66.9)	(35.9)
Net Cash Flows	(178.4)	(260.4)	(245.3)	(214.3)

Expanding the analysis to include the stochastic mortality scenarios provides a distribution of events that allows a better understanding of the impact that reinsurance has on the overall risk profile. To examine this impact, two scenarios were selected from the population of stochastic scenarios—one at each end of the

distribution. First, a poor mortality scenario was selected. This scenario had an average mortality factor of 123 percent, driven primarily by three catastrophic events over the 30-year horizon.

Table 5
Present Value of Future Cash Flows ($ Millions) – Poor Mortality – Scenario #7629

	No Reinsurance	Excess Reinsurance	Experience Refund	Multi-Year Stop-Loss
Premium	1,134.3	1,134.3	1,134.3	1,134.3
Death Claims	(1,591.5)	(1,591.5)	(1,591.5)	(1,591.5)
Other Expenses	(35.5)	(35.5)	(35.5)	(35.5)
Gross Cash Flows	(492.7)	(492.7)	(492.7)	(492.7)
Reinsurance Premiums	–	(928.4)	(1,914.7)	(34.0)
Reinsurance Receivables	–	1,060.1	2,027.9	89.9
Net Reinsurance Cash Flows	–	131.7	113.2	55.9
Net Cash Flows	(492.7)	(361.0)	(379.5)	(436.8)

In this scenario, the difference between reinsurance premiums and receivables caused the net cash flows with each of the reinsurance arrangements in place to be higher than those without reinsurance arrangements. Also, because mortality experience was worse than expected in this scenario, the benefit of each reinsurance contract outweighed the cost.

In this next scenario, the mortality experience was better than expected. The average mortality factor used was 97 percent, and no catastrophic events occurred.

Table 6
Present Value of Future Cash Flows ($ Millions) – Good Mortality – Scenario #8801

	No Reinsurance	Excess Reinsurance	Experience Refund	Multi-Year Stop-Loss
Premium	1,226.2	1,226.2	1,226.2	1,226.2
Death Claims	(1,202.1)	(1,202.1)	(1,202.1)	(1,202.1)
Other Expenses	(36.2)	(36.2)	(36.2)	(36.2)
Gross Cash Flows	(12.1)	(12.1)	(12.1)	(12.1)
Reinsurance Premiums	–	(1,000.4)	(2,054.6)	(36.8)
Reinsurance Receivable	–	804.2	1,986.1	–
Net Reinsurance Cash Flows	–	(196.2)	(68.5)	(36.8)
Net Cash Flows	(12.1)	(208.3)	(80.6)	(48.9)

Similar to the deterministic run, the reinsurance contracts result in lower net cash flows than the results without a contract in place. This is once again driven by the differential of the reinsurance premiums to receivables.

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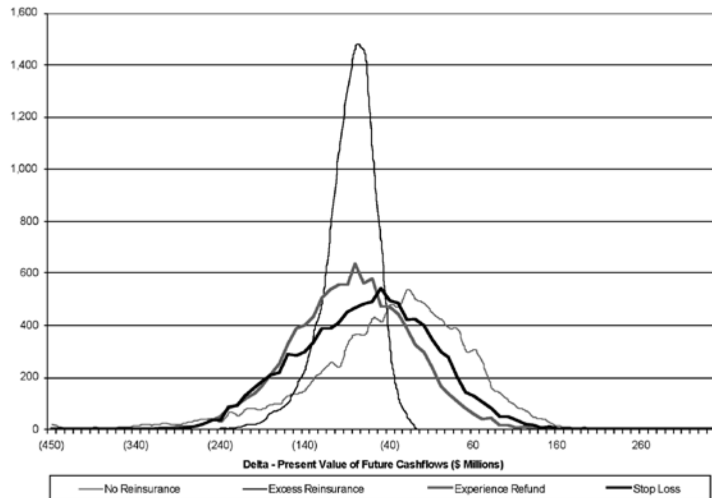
The chart below shows the distribution of a metric called "Delta" for the entire 10,000 scenarios, in which Delta is calculated as the difference in present value of future cash flows relative to the deterministic best-estimate run without reinsurance in place.

Chart 1 – Delta Results for Various Reinsurance Arrangements



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All of the reinsurance agreements reduce the exposure to the tail mortality events, and the structure of each agreement has a different impact on the overall risk profile. Each of the distributions shift to the left relative to the run without reinsurance, reflecting the net reinsurance cash flows as discussed above. The excess reinsurance has the largest impact on the tail events; this comes at a cost, illustrated by the shift in the mean value to the left. The table below presents the results at various points in the distribution.

Table 7
Delta Results – Reinsurance Contract Results ($)

Percentile (or Point)	No Reinsurance	Excess Reinsurance	Experience Refund	Multi-Year Stop-Loss
99%	(345,763,093)	(190,589,904)	(250,137,271)	(244,677,360)
95%	(225,371,960)	(152,140,502)	(205,473,584)	(205,173,089)
90%	(168,636,342)	(133,924,182)	(178,494,502)	(179,002,760)
75%	(95,290,552)	(109,827,409)	(135,803,532)	(126,982,987)
50%	(34,594,325)	(89,302,891)	(88,304,257)	(69,560,000)
25%	17,562,212	(72,617,167)	(42,617,229)	(17,750,003)
10%	59,948,313	(58,095,238)	(2,962,224)	24,165,626
5%	86,418,939	(50,355,793)	21,349,758	50,304,823
1%	134,210,185	(34,366,830)	69,577,543	98,066,727
Average	(46,827,630)	(93,560,270)	(89,909,943)	(73,024,289)
Standard Deviation	96,166,775	31,690,937	68,877,519	77,456,045

The results demonstrate the impact that reinsurance has at both ends of the distribution, and having the full distribution allows for additional insights not available under traditional modeling techniques. Specifically, poor mortality experience is muted when the reinsurance contracts are in place, and the impact of the improved mortality experience is also dampened by the reinsurance premiums. Having the full distribution allows the practitioner to identify the net cash flow crossover point of the reinsurance arrangement, and know the probability of having a positive net cash flow from the reinsurance arrangement. Table 8 provides the crossover points of each of the contracts.

Table 8
Reinsurance Crossover Percentile

Excess Reinsurance	Experience Refund	Multi-Year Stop-Loss
80th	92nd	92nd

The crossover point at the 80th percentile for excess reinsurance means that the present value of future cashflows is higher in 20 percent of the scenarios with the reinsurance contract in place. From the reinsurance company's perspective, in 80 percent of the scenarios they collected more money in premium than they paid out in claims.

Summary

Expanding the use of stochastic modeling techniques to non-market risks like mortality and lapse will provide insurers with a detailed view of risk elements. Insurers will also benefit from integrating non-market and market risks for a more complete picture of their overall risk profile.

The application of stochastic analysis to non-market risks also provides a framework by which companies can evaluate the cost-benefit of risk mitigation techniques like reinsurance. It is useful in comparing various types of reinsurance, and understanding the specific pros and cons of each arrangement. This type of analysis provides both the ceding and assuming company with a framework to fully analyze the net cost and benefits of entering into the agreements. This will help both sides of the reinsurance arrangement gain a better understanding of their revised risk profile. ✺

A.M. BEST U.S. LIFE REINSURANCE – MARKET REVIEW

Consolidation Brings Rational Pricing but Greater Competition

by Stephen Irwin

There has been a period of major change in the reinsurance landscape including the demise of Annuity and Life Re and the elimination of a number of companies with weaker franchises or lack of commitment to the market. As recently as 2000, the life reinsurance market included Lincoln National, American United Life, ING Re, Allianz and Employers Re—all of which either have exited the life reinsurance market or sold their life reinsurance books of business.

ING Re was sold to Scottish Re in 2004. This major acquisition was unique in that Scottish Re was paid (in the form of a negative ceding commission) to take the business. Although Scottish Re continues to assume a very significant volume of business from its in-force book of business, rating downgrades have resulted in a sharp reduction in new business. The transaction was a major event in the U.S. life reinsurance market for two reasons. First, Scottish Re, a relatively new player in the market, was catapulted from a modest market position to the top tier of the industry. The economics of the transaction underscored the underpricing that occurred in the late 1990s and early 2000s. The pricing environment has since rationalized, leading to better returns, but the volume of business ceded to the life reinsurance market has contracted.

While A.M. Best believes that most of the remaining companies will continue to thrive, certain elements of their business models may need to fundamentally change in reaction to an evolving landscape. The remaining players, for the most part, have very strong franchises, are well capitalized and compete head-to-head for a reduced volume of ceded business. Given that four companies now assume three-fifths of all business ceded and hold three-fourths of all life reinsurance in force, A.M. Best believes the major wave of consolidation has run its course.

Cession Rates Continue to Decline

As recently as three years ago, the percentage of new U.S. mortality business ceded was as high as 60 percent. In sharp contrast, the 2007 estimate is only 40 percent.

In the United States, the amount of business ceded has decreased significantly due to a number of factors. The decline may be attributable to direct writers' stronger balance sheets and excess capital, reflecting solid operating results, consolidation and benign credit markets, all of which have enabled the life direct market to fund greater retention levels. There has been a marked shift from coinsurance—with as much as 90 percent of the risk going to reinsurers—to excess of retention, whereby direct writers retain most of the business. Typically this would mean that direct writers are leaving themselves open to increased reserve strain. However, A.M. Best has not seen direct writers' profitability decrease yet. Should margins compress further—given the continued low interest rate environment and credit quality erosion due to the spillover effects from the subprime residential mortgage crisis—direct companies may again rely more heavily on reinsurance for capital strain relief. However, A.M.

Best does not foresee any major increase in the amount of business ceded to life reinsurers over the near term.

Cost is another major factor driving cession rates lower. Traditional life mortality reinsurance is sensitive to price increases. Life reinsurance was viewed as quite inexpensive in the early 2000s. Indeed many organizations viewed reinsurance as an arbitrage opportunity, often citing that the rates were too favorable to pass up. Inexpensive reinsurance translated into sub par returns and prices necessarily rose. In turn, demand from direct writers waned. A.M. Best believes cession rates will stabilize around the 2007 level—the lowest level seen in recent years. After experiencing very strong growth in past years, the life reinsurance market growth rate is expected to decline and should mirror closely the 4- to 5-percent estimated growth trends of direct life insurance writers.

Additional downward pressure may be placed on cession rates when Principle-Based Reserves (PBR) are implemented. Given that the framework is still being developed by the various regulatory working groups, coupled with challenges associated with state-by-state approvals, full implementation is likely to be two to three years away. However, when PBR become a reality, the mandated level of redundant reserves is expected to be reduced for some products. A.M. Best believes that any such change in reserving practices could further depress the amount of business ultimately reinsured.

Limited Growth Causes Reinsurers to Branch Out into Riskier Lines

As the U.S. life reinsurance market contracts, higher-risk avenues for revenue and growth are becoming more appealing. Product lines that reinsurers had stayed away from—such as variable annuities with secondary guarantees and long-term care—are now being offered or are under consideration. These lines have been underserved for several years as most reinsurers that underwrote these risks exited the market due to poor experience. Such product lines diverge from traditional mortality dynamics. For variable annuities with living benefits, mortality risks are intertwined with long-term financial market performance. With long-term care, longevity risks are coupled with health risks. A.M. Best's view on this trend is cautious as reinsurers have less experience in a number of these product lines that carry more risk.

REINSURERS REMAIN FOCUSED ON GROWING TRADITIONAL LIFE BUSINESS BUT ARE EXPECTED TO ENTER PREVIOUSLY AVOIDED LINES AND MARKETS. AS THEY DO THIS, THEY POTENTIALLY ADD TO THEIR RISK METRICS, AND CREATE FURTHER UNCERTAINTY ABOUT THE LONG-TERM PERFORMANCE OF THE U.S. LIFE REINSURANCE BUSINESS.

These competitive pressures, along with the shareholder or parent company expectations of continued favorable growth rates, also have fuelled expansion overseas. A prime example is RGA, a traditional U.S. and Canada mortality player that generates about one-fourth of its earnings outside of North America. Insurance in developing markets tends to be higher margin, although increased competition will likely reduce this somewhat. Some markets, however, have higher cession rates and are actively seeking reinsurance expertise in product development and other areas. While reinsurers may welcome these opportunities in developing markets, data is less robust and assumptions for mortality, morbidity and lapses may be more difficult to come by. Regulatory limits on ownership structure may also present challenges. Still, it appears that greater growth opportunities exist overseas, and that the reinsurance trends in international expansion should track with those of direct writers.

Reinsurance/Capital Markets Converge

Reinsurers not only provide mortality protection, but continue to offer direct writers capital manage-

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ment solutions. Although pure mortality cover is still the mainstay of most life reinsurers, capital management solutions are an important business line for many reinsurers. Unfortunately, capital management solutions are no longer within the sole domain of the insurance community and now include an increasing number of financial institutions who provide cost-effective alternatives to reinsurance. The convergence of the capital markets with reinsurance solutions picked up substantial momentum in recent years with the need to fund the so-called XXX redundant reserves (related to funding reserves required under Regulation XXX for level premium term products). And as life reinsurers function as an aggregator of redundant reserves on behalf of their clients, the life reinsurance industry itself has employed capital market solutions.

The largest insurance companies have the scale to avail themselves of capital market solutions directly and thus often cut out the reinsurance middleman. However, smaller companies seeking statutory reserve relief still rely primarily on life reinsurers. A.M. Best believes the market solutions available to smaller organizations will remain limited, thus providing reinsurers a continued source of XXX-type financing business.

Worries over Subprime's Effects on XXX Funding

The balance sheets of the major highly rated life reinsurers remain strong. However, reinsurers have not been immune from the impact of the subprime contagion as Scottish Re and Swiss Re recently made headlines about losses related to their exposure to subprime assets. The spillover effects from the subprime crisis has negatively impacted overall liquidity in the marketplace, including the Dutch auction market, which was used as one method of funding XXX reserves. Even if the disruption is temporary, failed auctions result in higher costs that ultimately translate into lower earnings. The contagion impact may also impact direct writers and reinsurers currently working with the capital markets for XXX reserve funding.

Regulatory Changes May Be On the Horizon

The National Association of Insurance Commissioners (NAIC) has been studying the issue of collateral requirements on a national basis for some time. At the winter 2007 National Association of Insurance Commissioners meeting, commissioners from 22 jurisdictions approved a framework Reinsurance Regulatory Modernization Proposal. The proposal reviews issues related to cross-border transactions including a potential reduction in collateral levels for non-U.S. reinsurers. The framework focuses on three main areas: a new department within the NAIC to determine which non-U.S. jurisdictions are entitled to enter into mutual recognition agreements; a single state regulator for U.S. reinsurers to adopt uniform minimum standards; and a single state regulator for non-U.S. reinsurers to allow access to the U.S. market through port of entry jurisdiction.

Earlier this year, a reinsurance task force had recommended creating a new Reinsurance Evaluation Office (REO) which would help set collateral requirements for all reinsurers. The amount of collateral required would depend on the rating each carrier received from the REO. In October 2007, the New York Insurance Department announced plans to change long standing collateral requirements for foreign reinsurers. Under current rules in the state, any reinsurance company not authorized or accredited to operate in New York must post collateral equal to 100 percent of its share of policyholder claims. Under the proposed rules, which if adopted would take effect for new contracts in July 1, 2008, reinsurers with the highest credit rating from any two rating agencies (including A.M. Best) would have to post zero collateral. A sliding scale is employed down to reinsurers with "bbb"—any reinsurers below this rating would still have to post full collateral. A.M. Best believes that new opportunities may exist for global carriers, but this will add to competition in the United States. However, the pace of progress on this issue remains slow.

Reinsurers Need Effective ERM

In light of greater risks in product designs, softening credit market markets, continued low interest rates and recent market problems stemming from sub-prime mortgages, A.M. Best believes enterprise risk management (ERM) needs to be a key component of companies' culture, accountability and ability to understand, measure and manage risks on an enterprise-wide basis. This is especially important for large global players that need to understand risks being assumed not only in the United States, but in the numerous countries in which they operate. All organizations—especially insurers participating in global reinsurance—must develop and constantly refine an ERM framework, as strong ERM is integral to the success of complex global life players. Most major domestic life reinsurers have large international parent companies and A.M. Best looks for an integrated ERM process. Companies, who in A.M. Best's opinion lack a strong ERM process, are expected to come under increased rating pressure as weak controls ultimately may result in entering businesses and product lines that are not well understood or that underperform.

Conclusion

A.M. Best's outlook for the U.S. life reinsurance market segment is stable. Some recent trends in the industry, however, lead us to be vigilant about the industry's future performance. Reasons for caution include: the significant reduction in cession rates, the high concentration among a few companies, competition between these players and from the capital markets, and increasingly complex regulatory and product challenges. Balancing these factors are the industry's strong capitalization, generally tighter treaty terms, stricter underwriting and rational pricing. In addition, reinsurers are looking outside of North America where certain markets, such as Asia, offer greater growth opportunities.

Our stable view follows a period of major changes in the marketplace. Reinsurers remain focused on growing traditional life business but are expected to enter previously avoided lines and markets. As they do this, they potentially add to their risk metrics, and create further uncertainty about the long-term performance of the U.S. life reinsurance business. ✹

CHAIRPERSON'S CORNER

by Gaetano Geretto

As we endure another few more weeks of winter, our attention will soon turn to spring and the myriad of initiatives which the SOA and the Reinsurance Section have developed to further your efforts to pursue your Continuing Professional Development (CPD) activities regarding life reinsurance.

I hope you will all be joining us for the upcoming second annual life reinsurance conference, ReFocus, in Lake Las Vegas on March 2-4. Our ReFocus co-chairs, Craig Baldwin of Transamerica Re and Mel Young of RGA have led a strong organizing committee. Under their leadership, the committee has crafted a solid program of sessions, with senior and expert speakers, in addition to a series of networking activities to further your reinsurance education.

Over the past few months, our research team headed by JJ Carroll of Swiss Re has finalized a milestone stage of our multiple decrement project using stochastic modeling. In this edition, you will be able to learn the preliminary findings of the team's work. We also intend to share these findings with you in more interactive media. Be on the lookout for an upcoming webcast and a session at the June Spring meeting on this subject.

Similarly, work continues on the Treaty Project and the team has moved onto the next stage of development. The team has been broken down into sub-teams to address the more particular parts of the project that require more work. Specifically, those parts are automatic reinsurance, reinsured risk amount, premium accounting, errors and omissions, arbitration, and duration of agreement. If you'd like to join a sub-team, please feel free to contact David Addison of RGA *(daddison@rgare.com)* who has succeeded Tim Ruark in this activity and is coordinating the Treaty Project on behalf of our Council.

Another initiative that David is leading is our effort to reach out to more constituents outside of our regular membership, specifically those involved in insurance regulation and those involved in the rating agency community reviewing the life insurance and life reinsurance sector. Stay tuned as we will be commenting more on these developments over the coming months.

We have a long list of interesting sessions slated for the Spring Health meeting in Los Angeles on May 28-30. Our Health representative on Council, Michael Frank of Aquarius Capital, has coordinated two sessions: "The Actuary as Dealmaker" and "Updates and New Developments in Health Reinsurance." These sessions will help you to be kept abreast of topical issues in Health Reinsurance. For more information, contact Mike at *Michael.Frank@AquariusCapital.com.*

For the Spring Life Meeting in Quebec City on June 16-18, Patrick Stafford of Swiss Re has developed sessions on a variety of subjects including captives, upcoming regulatory changes, and as noted above, stochastic modeling. For more information, contact Patrick at *Patrick_Stafford@swissre.com.*

Planning is underway for the Annual Meeting in Orlando on October 19-22. Should you wish to be involved, please approach our Annual Meeting Coordinator, Steve Habegger of Swiss Re. *(Steve_Habegger@swissre.com)*

These and other sessions are under the stewardship of Tim Ruark of Ruark Advisors, our Continuing Education coordinator on Council. If you'd like to learn more or if you'd like to be part of a panel or a continuing education initiative, please contact Tim at *tim@ruarkonline.com.*

Our Communications and Publications group meets monthly to develop and review content for our various Newsletters. In addition to this edition, we plan to have a summer edition and a fall edition of the newsletter. If you'd like to take part or want to contribute an article, please feel free to contact Bob Diefenbacher of Manulife Re at Bob_Diefenbacher@manulife.com or Richard Jennings, our Newsletter Editor, at *Richard_Jennings@manulife.com.*

When you have a few moments please browse the SOA Web site and click on the reinsurance tab to learn more about our 2008 initiatives. If you have any questions or want to volunteer to serve as a Friend of Council, please don't hesitate to contact me at *gaetano.geretto@pelecanusadvisory.com.*

Finally, and most importantly, following up what I mentioned earlier in this column, in this edition, you'll learn more about ReFocus. See the future first and join us at ReFocus. I'll look forward to seeing you there! ✺

Gaetano Geretto

THE OPENING OF THE BRAZILIAN REINSURANCE MARKET: ALL ROADS LEAD TO RIO DE JANEIRO

by Maria Silvia Bastos Marques

The Brazilian Reinsurance Institute (Instituto de Resseguros do Brasil SA—IRB) was founded in 1939 and is jointly owned by the Insurance Companies that are licensed to do business in Brazil (non-voting shares) and by the Government of Brazil (voting shares). For more than 70 years all Reinsurance business has been transacted via the IRB. All of this is about to change. January 2008 marked the start date of the transition to an open market.

A milestone of this process was the sanctioning of the Complementary Law N° 126 (dated 15/01/07) that regulates the reinsurance market. This effectively opens the reinsurance market to competition and has renewed and heightened interest of both foreign reinsurers and local financial groups.

In order to ensure that the resulting legislation is best suited for the Brazilian market, the Supervisor of Insurance (SUSEP) invited comments relating to the proposed regulation until 16th of November 2007.

The proposed legislation is an excellent start, but significant work still needs to be done to refine the final document in order to attract key players and facilitate a competitive market. After this phase is over, the next decision will be regarding in which Brazilian city should a reinsurer establish its headquarters, with the main options being Rio de Janeiro or São Paulo. The decision is fundamental since it is likely that a reinsurer's Brazilian office may develop into being its regional center for Latin America.

Government authorities in both cities and states have been actively trying to draw the attention of those reinsurers that are presently in the process of assessing local conditions. Already based in Rio de Janeiro are 84 percent of the Reinsurance Brokers (there are currently 28) and 50 percent of the Reinsurers' representative offices. Therefore it would certainly appear that all roads lead to Rio de Janeiro.

The IRB's headquarters have been in Rio de Janeiro since its creation in 1930, hence Rio de Janeiro has the history, experience and tradition. Other Industry bodies that are based in Rio de Janeiro include:

- SUSEP (Insurance regulators);
- Fenaseg's headquarters (Federação Nacional das Empresas Seguradoras—National Federation of Insurance Companies);
- ANS' headquarters (Agência Nacional de Saúde—

National Health Agency that regulates Health Industry);

- CVM's headquarters (Comissão de Valores Mobiliários—Securities and Exchange Commission);
- Fenacor's headquarters (Federação Nacional dos Corretores de Seguros—National Federation of Insurance Brokers); and
- ABER's headquarters (Associação Brasileira de Resseguradores—Brazilian Association of Reinsures).

These organizations comprise all of the regulatory, supervisory and industry representatives of both the insurance and reinsurance sectors.

Rio de Janeiro, because of its long-standing tradition in insurance and reinsurance, has Brazil's largest and most experienced pool of qualified insurance professionals. This source of talent has been nurtured by the industry's traditional and influential educational institutions. These include:

- Funenseg (Escola Nacional de Seguros—National Insurance School);
- UFRJ (Federal University of Rio de Janeiro) which is the oldest and most respected Insurance faculty; for over 50 years offering undergraduate courses in actuarial science;
- PUC—IAPUC faculty (Instituto de Administração de Riscos Financeiros e Atuariais—Financial and Actuarial Risks Management Institute), with the first Masters Degree in actuarial science in Latin America; and
- IBA's headquarters (Instituto Brasileiro de Atuária—Brazilian Actuarial Institute),

The State of Rio de Janeiro is also a principal market for reinsurers both in terms of premium from ceding companies and large industrial risks. According to the IRB, 50 percent of ceded premiums of large industrial risks originate in Rio de Janeiro. The reason is simple – many large companies and industrial plants are located here, including: Petrobras, Eletrobras, Nuclebras, Vale do Rio Doce, shipbuilding industry, steel mills, telecommunications companies, etc. Major new investments include Companhia Siderúrgica do Atlântico and the Petrochemical conglomerate (COMPERJ).

RIO DE JANEIRO, BECAUSE OF ITS LONG-STANDING TRADITION IN INSURANCE AND REINSURANCE, HAS BRAZIL'S LARGEST AND MOST EXPERIENCED POOL OF QUALIFIED INSURANCE PROFESSIONALS.

An unexplored and as-yet untapped risk market is the country's largest pension funds. The largest ones, such as Previ and Petros, are based in Rio de Janeiro. Such companies would greatly benefit from risk transfer solutions to offset their embedded life risks; such solutions are not currently available in Brazil.

We believe that the final decision should not be swayed by short-term offers of incentives or subsidies. Rather there needs to be a deep analysis and understanding of economic rationality and decentralization of activities. In conclusion, based on these facts and data, we certainly believe that Rio de Janeiro is by far the best option for reinsurers to establish their headquarters. ✺

Dr. Maria Silvia Bastos Marques is the CEO and President of Icatu Hartford Seguros and Vice President of The Rio de Janeiro Business Association. She can be contacted at *Presidencia@icatuhartford.com.br*

OPPORTUNITIES IN THE NEWLY OPENED BRAZILIAN REINSURANCE MARKET

by Rodolfo Wehrhahn

Editor's note: *Since Dr. Marques' article on the Brazilian reinsurance market dealt primarily with P&C reinsurance, here is an accompanying article by Rodolfo Wehrhahn, Managing Director, Latin America, Transamerica reinsurance to comment on the prospects for life reinsurance in this new market.*

The opening of the reinsurance market in Brazil is the foremost event of the last two decades in the Latin American insurance and reinsurance arena. Work on this effort actually started about 10 years ago. It gained a great deal of momentum in the past two years, and we will finally see the market open to the reinsurance community by the end of April.

Brazilian authorities and regulators are to be commended for allowing comments on the regulations from the international insurance and reinsurance communities after the law was passed. Through our participation in the ACLI, we had an opportunity to point out the differences in the life and P&C markets. Originally, the capital requirement was set at US $5 million for both, but by clarifying the differences in the two types of business, the capital requirement for life reinsurers was reduced to US $1 million.

Some parties think that the market is being opened rather timidly. There will be three reinsurance entities—Local, Admitted and Eventual—with only the Locals having access to 100 percent of a company's ceded reinsurance. Admitted and Eventual will only have access to 40 percent, with the remaining business being placed with a Local entity. The practicality of this action will play out when the market opens and parties actually begin to deal with this and related issues such as confidentiality, competition, etc. Some observers have noted that the current size of the Brazilian life reinsurance market, about US $60 million in premiums, does not warrant it being fractured in this manner.

Participation in this market will require a long term commitment and a portfolio of solutions that address the changing needs of Brazilian life insurance companies. We at Transamerica Reinsurance look forward to continuing to help the market grow as we have been doing for more than six years.✺

Rodolfo Wehrhahn is Managing Director, Latin America Transamerica Reinsurance, a Division of Transamerica Occidental Life Insurance Company. He can be contacted at *Rodolfo.Wehrhahn@transamerica.com*

March 2 - 4,

Ritz Carlton, Las Vegas

ReFocus2008

SEE THE FUTURE FIRST

A Global Gathering of Senior Life Insurance and Reinsurance Executives

You are personally invited to join other senior level professionals at ReFocus 2008: See the Future First, a distinct industry conference focused solely on reinsurance. ReFocus 2008, specifically targeting life, health and annuity reinsurance, brings together top industry professionals to examine current issues, envision the future and explore strategies for success.

Interact with the who's who of industry leaders as they deliver a comprehensive view of the reinsurance world. This is the reinsurance event of the year, offering you the opportunity to gain a competitive advantage and to learn creative solutions to both global and domestic challenges.

What: ReFocus 2008: See the Future First

Who: Senior-level professionals with a vested interest in the future of the reinsurance industry.

Where: The Ritz-Carlton, Lake Las Vegas Resort
Las Vegas, Nev.

When: March 2–4, 2008

Special Event: Insurance Legends Golf Classic. A tournament to support the Actuarial Foundation's youth education initiatives

Who Should Attend?

Chief executive officers, chief financial officers, chief risk officers, chief actuaries, chief underwriters, senior-level professionals responsible for reinsurance in their companies and senior management from companies that supply services to the reinsurance sector, investment bankers, rating agency staff and regulators.

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ReFocus2008

SEE THE FUTURE FIRST

. . March 2–4, Ritz Carlton, Las Vegas

Agenda

Sunday, March 2, 2008

4:00 pm - 5:30 pm	Registration
12:00 pm - 5:30 pm	Insurance Legends Golf Classic
5:30 pm - 7:00 pm	Welcome Reception (Sponsored by Milliman)
7:00 pm	Dinner on your own

Monday, March 3, 2008

7:00 am - 5:00 pm	Registration
7:00 am - 8:00 am	Breakfast (Sponsored by Ernst & Young)
8:15 am - 10:00 am	General Session: Reinsurance CEO Panel
10:00 am - 10:30 am	Refreshment Break (Sponsored by Wilton Re)
10:30 am - 12:00 pm	Concurrent Sessions A
12:00 pm - 1:45 pm	"The Legends" Awards Luncheon (Sponsored by Munich Re)
2:00 pm - 3:30 pm	Concurrent Sessions B
3:30 pm - 4:00 pm	Refreshment Break (Sponsored by Wilton Re)
4:00 pm - 5:15 pm	Discussion Groups
5:30 pm - 7:00 pm	Reception (Sponsored by London Life)
7:00 pm	Dinner on your own

Tuesday, March 4, 2008

7:30 am - 5:00 pm	Registration
7:00 am - 8:00 am	Breakfast (Sponsored by Deloitte & Touche)
8:15 am - 9:45 am	General Session: Direct Company CEO Panel
9:45 am - 10:30 am	Refreshment Break (Sponsored by Dewey LeBoeuf)
10:30 am - 12:00 pm	General Session: All's Fair: Love, War, and Politics (Sponsored by Hannover Life Re)
12:00 pm - 1:30 pm	Luncheon (Sponsored by Swiss Re)
2:00 pm - 3:30 pm	General Session: Annuity CEO Panel
3:30 pm - 3:45 pm	Refreshment Break (Sponsored by Scottish Re)
3:45 pm - 5:15 pm	Concurrent Sessions C
5:30 pm - 6:30 pm	Reception (Sponsored by RGA)

ReFocus2008

SEE THE FUTURE FIRST

A Global Gathering of Senior Life Insurance and Reinsurance Executives

Insurance Legends Golf Classic

To benefit the Actuarial Foundation and honor those who have made significant contributions to the industry.

Where: Royal Links
When: Sunday, March 2nd
Tee-Off 12:30 p.m.
Prizes: $25,000 Hole-In-One
Win a Driver - Longest Drive
$150 Club House Gift Certificates - for the Winning Foursome

Participation in the Insurance Legends' Golf Classic will benefit The Actuarial Foundation's youth education initiatives.

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TITANS OF REINSURANCE: JOE KOLODNEY

by Richard Jennings

Until his retirement at the end of 2006, Joe Kolodney was Managing Director of the Life Reinsurance Practice Group of Aon Re. He also served as global life reinsurance product group leader of Aon Re Global. Joe has 37 years of extensive national and international experience in reinsurance and insurance. He has held senior management positions at the General Reassurance Corporation, the life reinsurance subsidiary of Gen Re Corporation, and served on both the executive and the operations committee at Gen Re. His last assignment with Gen Re Corporation was as president and chief operating officer of Fairfield Life Insurance Company, a wholly-owned subsidiary. Subsequently Joe joined the Presidential Life Insurance Company of New York as president and chief operating officer. Prior to his retirement, Joe traveled extensively both domestically and internationally to support the life and annuity reinsurance activities of Aon Re Global. Joe is a charter member of the International Insurance Society and has been a speaker and panelist on international insurance issues and other topical subjects at SOA meetings, the English Institute of Actuaries, and the Scottish Faculty of Actuaries.

Tell us a little bit about your background.

I'm a native of Connecticut. Born in New Britain, I've lived in Connecticut all my life except for the four years that I was in the U.S. Air Force. I attended a private school, Avon Old Farms, and from there went on to George Washington University, the first of six colleges and universities I attended, finally graduating from Central Connecticut State University, where I majored in Modern European History and minored in Political Science. Twenty-five years later when I was asked by Avon whether I had achieved the goals and objectives I had set for myself while at Avon, I responded that "for those of my classmates who were able to articulate and achieve their goals and objectives, I had nothing but admiration because my life has been strictly fortuitous."

How did you get into the insurance/reinsurance business?

When my wife was expecting our first child, I needed to get a job, and was interviewed by the Hartford National Bank for a position as a securities analyst in their trust department. At the same time I interviewed with the Phoenix Mutual Life Insurance Company. The tipping point was that the person at Hartford National was a banker, not a human resources type (after all this was 1965/66), and he was telling me all about the positives of working there, and that, "When you retire at age 65, you would have a great pension." I was 25-years-old and what it sounded like to me was that he was handing me a 40-year sentence at the Hartford National Bank. At Phoenix Mutual they were setting up a small group life and health operation and were putting together a group of young guys like me, and they asked if I would like to join them in underwriting. This launched me in my insurance career.

A couple of years later I was approached by a recruiter who asked if I would be interested in talking to a small reinsurer down in southern Connecticut, which turned out to be General Reassurance Corporation, the original Gen Re. I went down for an interview (1969) and met with the players there. They

had a small operation, and told me that they liked me and were impressed; so they asked me to join them and see what happens. This was the start of my reinsurance career.

Who were some of the mentors or special people you worked with?

"Well most of them are dead, unfortunately. The then president of Gen Re Life, Bob Shepler, who came over from North American Re, Bob Mooney, executive vice president of Marketing and Dr. Don Haskins, executive vice president and chief medical director were the most influential people on my career. I was with Gen Re for 16 1/2 years from April 1st, 1969. When I started there I said it was no 'April Fool's' joke.

"They didn't know what they wanted to do with me so they rotated me around through underwriting and administration and finally put me into 'marketing.' I got to know life reinsurance pretty well. It was a sophisticated product, using sophisticated concepts, dealing with a knowledgeable consumer (the ceding companies) and I guess I was able to deliver the results."

Modestly, Joe admits, "in the day," that he probably sold more life reinsurance than any other person in the business. One of the largest transactions he put together was a quota-share deal for three direct carriers and one of the largest brokerage general agencies in the United States. This was the inception of agent-owned life reinsurance (1972) and was a substantial transaction that lasted a number of years.

Joe speaks Spanish fairly fluently and "second gear" French, and says he used to visit Quebec and Paris fairly often. When Gen Re opened up an office in Mexico City, they gave him the authority to oversight that office, and then Gen Re had an acquisition where they retained a Spanish presence in the life reinsurance market in Europe. So he went to Spain, and would travel around to various parts of Europe, expanding the GenRe Life's presence on the continent and bulding a European retrocessional network—and ultimately, was put in charge of all of General Re Life's retrocession arrangements.

MODESTLY, JOE ADMITS, "IN THE DAY," THAT HE PROBABLY SOLD MORE LIFE REINSURANCE THAN ANY OTHER PERSON IN THE BUSINESS.

"I've had kind of an eclectic career. Dr. Haskins used to refer to me as the vacuum filler. If I saw something that needed doing and nobody was doing it, then I would end up doing it. I figured, 'why not?' If they didn't want me to do it, they would tell me, 'don't do it!'"

Joe had a big impact on the retrocession business. Here's how he got two large retrocession companies into the business.

I negotiated the first transaction between General Re and Manulife Re, who entered the retro business in 1978 working with Zane Stait-Gardner. Concurrently, I also did a transaction with Irwin T. Vanderhoof who put the Equitable Life Assurance Society into the retro business with General Re being their first retrocessional client. When Equity Funding Life happened, the board of the parent company, General Reinsurance Corporation, wanted to know who our retrocessionaires were. We were able to tell them that they were 'AAA' and they were pretty happy with that. I worked with my good friend Monica Hainer at Manulife Re when she was just a 25-year-old actuary. Now she is president and chief executive officer of London Reinsurance Group, including London Life Re and Canada Life Reinsurance. She and I developed a good relationship, and, with no denigration to the role that Equitable Life played, I felt that Monica was really very sharp, and so when we negotiated our retrocession arrangements, and issues came up, I would talk with her and often I accepted her advices. That was quite fun and I enjoyed that a lot.

I was basically in charge of General Re's international life reinsurance business, such that it was; in charge of placing the retrocessions; managed what

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Richard Jennings, FLMI, ACS, is senior market research consultant with Manulife Reinsurance in Toronto, Canada. He can be reached at *richard_jennings@manulife.com.*

they called the "special accounts" to which I referred earlier. In the early 1970s, where we placed a lot of reinsurance of direct companies, there was a product called Section 79 retired life reserves that generated tens of millions of dollars of reinsurance premium through the "Special Accounts" production source. Ultimately I got pushed up to my level of incompetence. I was on the Executive Committee and the company's Operations Committee.

I was asked to reactivate a dormant subsidiary, Fairfield Life, as its president and COO. General Re wanted me to put that back in the market and use the infrastructure we'd built, to be the data processor/administrator for small- to medium-sized companies who were intimidated by EDP entry costs. I spent about 2 1/2 years getting the company into the direct business in interest sensitive products; for example, universal life.

During that time, I was approached by Herb Kurz who was the founder, chairman and CEO of a company in Nyack, New York, called Presidential Life Insurance Company. He recruited me to come on board as president and chief operating officer. I was there for about 4 1/4 years.

I then started this life reinsurance broking operation in 1989 with the old Alexander & Alexander wholly-owned non-life treaty operation called Thomas A. Green & Company. Tom Green, who I had known at General Re non-life when he was there as senior vice president of treaty marketing, and I talked about Green getting into the life reinsurance broking business. He said, "sounds like a good idea, why don't you do it for me," and so that's when I started this phase of my professional career, from 1989 to the end of 2006 when I retired. My first actuary was Kin K.Gee who left after one year and was succeeded by Jerry Kopel (who hasn't retired yet!) who made an important contribution with his actuarial ability to help get deals done by using his expertise with his ceding company and life reinsurance peers. In 1997, A&A (and Thomas A. Green [then known as Alexander Re]) was acquired by Aon Corporation.

What are you doing now?

At my retirement, Aon decided that they would like to continue using me and we came to an agreement that I would be available to them as an exclusive consultant (on a reduced work load). So that's what I'm doing right now as a "senior advisor." I have no managerial responsibilities. I monitor the activity of both the domestic and the U.K. offices, contributing opinion and guiding decision making. I don't make final decisions, all I can do is make recommendations and brainstorm some ideas. At the request of A&A's reinsurance broking arm in London, Alexander Howden Group, I got us into the U.K. market back in 1993 and that has turned out very well. Life reinsurance is a funny old game because you don't see very many entities out there that can represent themselves as brokers in a knowledgeable way, but as a result of our investment in people and services, Aon has done business with companies both in the United States and the United Kingdom and in Holland and Italy as well.

How does it feel to have gone through this career and not been an actuary?

I was frustrated. I think that actuarial blood must run through my veins, because I had a cousin, George Kolodney, who started a company in New York called Postal Life Insurance Company, which was subsequently acquired by Bankers Security Life. I always got on well with the actuaries. When I started in the life reinsurance marketing area for General Reassurance, the entry route for reinsurers was through the underwriting department. There wasn't much of a dynamism of product development. This was before computers could change rates and values in the twink of an eye. This was before the development of all the reinsurance structures that responded well to tax code advantages, e.g. modco 820. When the term wars started back in the middle/late 1970s, there was a tremendous amount of quota share reinsurance to help ceding companies withstand the capital strain brought on by both acquisition expenses and reserve requirements. Financing the whole complexity of the life

reinsurance business changed dramatically. We played in the term wars, not as agressively as some, maybe more aggressively than others.

Then we got into surplus relief financial reinsurance, and I can't help but think that for years the non-life people both at General Re and at Thomas A. Green, now Aon, were talking about their ability to do these finite reinsurance deals.

Having grown up under the NAIC regulatory environment and looking at what they were doing, I said that this would never fly in a life reinsurance context. Life deals were all constructed as legitimate risk transfer because the whole thing was that once the reinsurer was on the hook, it couldn't get off of it. If the block that they reinsured for surplus relief was ever to turn sour, you just had to eat it because, there was no way, without violating NAIC guidelines, to send it back to the ceding carrier. So these deals were a very good underwriting exercise because you wanted to be very sure that you weren't committing the reinsurer to an unprofitable business. People say, "Well, that's no risk." On the contrary. There is no reason why a reinsurer should have to take any more risk than the companies who wrote the business originally. As long as the liabilities are fixed and can't be tampered with, there is bona fide reinsurance.

What are some of the challenges you overcame, anything that stood out?

General Re Life, which in the late 1960's was a small company but had a great name. We would sell the name and the provenance even though we were initially a small company, and we did that pretty successfully.

Another was when I started the life reinsurance broking business for now Aon Re Global. There wasn't really any institutional broking entity committed to the life reinsurance business in 1989. There would be guys who were sole proprietors and would pick up a phone and talk to company A and reinsurer B, and say, "you guys get together and send me a brokerage check." We actually staffed to demonstrate the significant "added value" we could bring to both cedant and reinsurer. Because of the experience and the extent of the more than 16 years with General Re Life, I knew what reinsurers were interested in, and what kinds of information they had to get, and found it interesting that the majority of the companies we did business with, once they made a decision to work with us, pretty much gave us what we felt we needed to get the reinsurer comfortable that they can proceed intelligently and do the best job they can. That was probably the single biggest challenge in the sense that we were starting from scratch. One of my deals, which pioneered surplus relief reinsurance in the UK in 1993 was with Cologne Re Germany, and we worked on it with my good friend Alex Cowley, then with Cologne, who was living in Germany at the time. Even today he said he was astounded at the fact that a reinsurance intermediary located 3,500 miles away in the United States could work with a U.K. ceding company and a German reinsurer to put together the kind of deal we did.

IF YOU HAD A MOTTO, WHAT WOULD IT BE?
"DOING THE RIGHT THING, AND DOING IT IN THE RIGHT WAY."

What's your fondest memory?

Two things. First, the 16-plus years with the "original" General Re Life, not to denigrate what came after and what I'm doing now. That and "growing up" in the life reinsurance business with General Re colleagues like Mel Young, Herman Schmit, Ozzie Scofield, Craig Baldwin, Jerry Kopel, Charlie Frydenborg and Larry Roy all of whom worked together as probably the most dynamic life reinsurance production group in the industry. Second, making the Aon Re Global Accident, Health & Life operation the only real professional institutional life reinsurance broker that's out there. We have international exposure to all the major life reinsurers anywhere we need to go.

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Titans of Reinsurance series … from page 23

Where do you see the life reinsurance business five years from now?

I am just going to "bluesky" this and say that there are emerging markets which the international life reinsurers are also pursuing. You have to differentiate between an emerging market and a mature market. The mature markets for life reinsurance in my opinion are North America and the United Kingdom. There is not a lot of reinsurance used in continental Europe. However, there may be some interesting changes—and challenges—with the advent of Solvency II. There is also a chance to develop the protection market which is not something currently emphasised on the continent. There is not the huge protection market that has developed over the years in the United States and the United Kingdom. They also have different products with different risk profiles. A lot of them are investment dependent.

The biggest potential emerging markets are in China and India. The middle class population of India is about 320 million people which is bigger than the size of the United States population. So I think if I were 20-25 years younger, I would seriously entertain moving out "East" to develop what is a burgeoning and emerging market. You have to be fairly conservative in your approach because the regulatory environment there is perhaps not as rigourous as it is in England or North America, but definitely that is where I think the future of the life reinsurance industry is going to migrate to.

What advice would you give people entering or coming up through the life reinsurance business?

First, they have to be happy at their work. Secondly, they need to like to confront a challenge. If they are being hired, that means that the employer feels there's work for them to do. Beyond that, I think, you don't want to spend your whole career resenting the fact that you are in that career. I was fortunate through a confluence of circumstances that fortuitiously allowed me to get involved on the ground floor with General Re Life and the tremendous quality of its people. That gave me a platform to expand my knowledge base.

For those people coming up through the business and who are interested in knowing life reinsurance, they have to feel comfortable with the concept and have to be good "people persons" and make a commitment to work for satisfaction. I've always inculcated in the people with whom I work that you've got to be professional, maintain your integrity, and don't succumb to pressure. If somebody needs an answer today the answer is "no." The whole ethic on reinsurance that I developed was based on the 16-plus years I spent with the General Re Life company. We were very scrupulous about our great name and the kind of client with whom we did business.

How is your health and what are you looking forward to?

I still get a good night's sleep. I still have an appetite for hard work. There seems to be a need for informed people who are available to do arbitrations. I have the latitude to get involved in that area of the business if called on.

One of the pros and cons of this business, is I used to do a lot of travelling. About 10 years ago American Airlines gave me a permanent gold card because I had flown over a million miles with them. Now I have three grandchildren with whom I have been spending a bit more time, a boy 11, and two girls 8 and 2. I am a part-time golfer, although some people might dispute that, with a 14 handicap—the number of clubs in the bag!

If you had a motto, what would it be?

"Doing the right thing, and doing it in the right way." ✷

AN INTRODUCTION TO THE FINANCIAL REINSURANCE MARKETPLACE

By Jeff Burt

In the shadows of the P&C legalities going on right now in Connecticut, I suppose you could look at the timing of this discussion (OK, monologue) as either very good or very bad. Nonetheless, non-traditional reinsurance, financial reinsurance (or whatever you want to call it these days) is alive and well. Albeit not necessarily in the same form you may have come to know in the past. Surplus relief makes up only a small portion of the market, not because of stigmas, rules, risk transfer or any other technical reason. Instead, the industry as a whole has done pretty well over the last few years and finds itself with balance sheets lopsided with capital by recent standards. So, why then, you ask, are so many interested in new "financially-focused" reinsurance transactions and what form are they taking? Fair question, and although I won't pretend to understand or appreciate all the needs in the marketplace, I will attempt to shed some light on at least a few of them that are setting the stage for the next generation of financial reinsurance.

Motivations Behind Non-Traditional Reinsurance

I admit the following couple thoughts are not exactly enlightening and frankly should be obvious to all in our industry, but bear with me and hopefully I will make a point that underlies both the direction and reason for the positive trend in financial reinsurance over the past few years. Our industry is OLD. Sure, I guess I could be kind and say "mature" or "developed," but I think "old" is accurate for two reasons. First, insurance, and reinsurance for that matter, have been around for a long time and some of the best and the brightest have spent many years developing the market(s). As such, new "advancements" are often few and far between. That being said, whether it is considered "buiding a better mousetrap" or not, the reinsurance industry can point to multiple examples over the years of providing solutions to direct issuer concerns. Second, in addition to being mature and developed, suggesting that the direct market has not seen many new product ideas in the last few years may be the understatement of this young 2008. So, in light of a challenging marketplace for growth and innovation combined with balance sheets ready to take on new growth and production, it is not surprising to me the direct market is looking for some assistance.

Let's be frank. There is no textbook one can read on this subject, much like there is no textbook one can follow as to how to make money in the equity markets—and I would speculate for much the same reasons. For example, if you have an investment strategy which you think works, are you going to tell the world about your secret? You may tell a few friends, but will to look ride that horse as long as possible. Sure there are the tried and true approaches which have stood the test of time, as well as the rules of thumb and guidelines to follow which are known to many. I would suggest that those familiar with this line would propose that non-traditional reinsurance, or whatever we decide to call it, is much more art than science. I think that some might take offense to this statement or read more into than is intended. Certainly, actuarial science is exactly that, science, right? If so, where is the exam covering non-traditional reinsurance? Where is the exam covering optimal risk/return trade-offs for life and health insurers? Last I checked, there wasn't one and really this is all I mean by the comment. Setting risk/return tradeoffs in our industry is very much art over science.

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If we agree there is a demand, and we agree the product is more art than science, where is the supply and what does this product look like? For the most part, the products sold in the marketplace have not changed: YRT, coinsurance, ModCo, partCo, funds withheld coinsurance and any combination thereof. The only reason for the different names, as much as I can surmise, is to confuse the accountants and add job security. At the end of the day, all the structures are meant to transfer the risks (or at least can) of the insurer to the reinsurer, or any other entity taking secondary market insurance risk, including: capital markets, banks, special purpose vehicles, captive reinsurers, side cars or securitizations. As best I can tell, if we simply used the term reinsurance and did not specify what type (e.g., YRT, Co) it would be much simpler for all to follow.

… WHAT IS THE DIFFERENCE BETWEEN FINANCIAL REINSURANCE AND SECURITIZATIONS? OUTSIDE OF WHO HOLDS THE RISK AND PROVIDES THE CAPITAL, I WOULD SUGGEST THERE ISN'T A DIFFERENCE.

If the type of reinsurance is not the key to identifying non-traditional reinsurance, what is? How do we get a sense of the marketplace? The key to this market is to understand a round peg is not meant to fit into a square hole. Perhaps not the most profound sentence you'll read all year, but I think it summarizes the market well. In other words, the financial needs of a direct writer are rarely so simple and straightforward that the best answer for them is a traditional excess or quota-share YRT or a straight sale of the business through indemnity coinsurance with a ceding commission, your "round pegs." Many times, the best answer or at least a better answer lies somewhere in the middle, the "square hole." This assertion leads us to a fairly clean definition of non-traditional reinsurance, "… any reinsurance that is not straight YRT or coinsurance, e.g., traditional reinsurance." My high school English teacher would likely deduct points for using the word in the definition, but you get my point.

If you follow the trail of logic so far (I give you credit, it is admittedly suspect) then the question at hand, "understanding the landscape of the financial reinsurance marketplace," is simple, but still difficult to answer. The question then is: "how many non-vanilla YRT or non-coinsurance agreements are being written out there? The answer is, plenty. Pretty much every capital markets transaction, every embedded value securitization, every surplus-relief agreement, and every new-business financing agreement has some non-vanilla component attached. Why you ask? Because all of these agreements have at least one thing in common, they were designed to be somewhere in the middle of the risk/return spectrum and not at one end or the other. What about risk transfer you ask? The practical implication of this is that rather than risk transfer being the goal, appropriate risk sharing becomes the goal. Let me be very clear, ALL of the agreements I am referring to satisfy statutory risk transfer according to the NAIC. Otherwise, they are generally useless to both parties in that a simple loan would suffice as that is how they would be treated in such a situation. Developing an alignment of interest is paramount to the success of most transactions and certainly to the transactions to which I have been referring. There are many techniques used to both share risk and create an alignment of interest, not the least of which is the use of experience refunds. The appropriateness of experience refunds, or ERs, have been questioned by some recently. I will avoid getting distracted too much here with a discussion of ERs, but at the risk of exaggeration suggest that this principle and concept underlies all insurance structures and is paramount to the long-term success of the industry. They can be found everywhere from participating whole life contracts, to reinsurance to TPA agreements. They do not impair statutory risk transfer and are an excellent tool in aligning the interests of all parties.

The Round Peg in the Square Hole

Hopefully by now, if you are still reading this, you are starting to appreciate the goals of this marketplace and the needs it serves. But the question likely still remains, how do these transactions work? What makes them different? What are the challenges? Why are they often associated with risk transfer discussions? How do you fit the round peg in the square hole?

All fair questions and very difficult ones to summarize in one article. Perhaps a popular question which can be answered and gets to the heart of the matter is this: what is the difference between financial reinsurance and securitizations? Outside of who holds the risk and provides the capital, I would suggest there isn't a difference. When it comes to the nature of the underlying transactions and not who is executing them (reinsurer vs. investment bank), the moving parts of the agreements are very much the same. At the end of the day, at the heart of the agreement is a reinsurance transaction and for that matter, most often a coinsurance transaction. The names differ because the counterparties differ, reinsurance goes to reinsurers and "securitizations" go to investment banks.

That being said, I would guess most of you reading this have seen a schematic of a standard XXX transaction. If not, go to the SOA Web site and pull up any recent securitization presentation from a recent annual or spring life meeting. The schematics do a decent job painting a picture of the cash flows of a coinsurance transaction. The only addition in these diagrams is often a third party which provides the funding as opposed to the reinsurer itself.

The difficult question many ask when first being introduced to reinsurance agreements which try and fit the "square hole" is, how do they work? And, what does it look like on my balance sheet. Unfortunately, I can't provide a very straightforward answer to that. As you might expect, with many things actuarial, the answer is: "it depends." I don't say this to be facetious. The fact of the matter is, by definition, every square hole is different. It is a function of the client's underlying goals of a transaction. For instance, perhaps a client feels their in-force block is forced to carry excess reserves and excess capital. This is a fairly common and fairly easy problem to deal with, reinsure the business to another party willing and/or able to hold lower reserves and/or capital. However, the cost and structure of such a solution will depend in large part as to how much the ceding company wants to pay and how much risk they are willing to keep. An easy answer is to sell the whole block and look for a maximum one-time up front ceding commission. This is common and generally very straightforward. However, suppose the block is not material, or is unstable, volatile or otherwise difficult to predict. Furthermore, suppose the seller is not able to find a buyer willing to pay what he/she thinks it is worth. An easy answer would be to not pay as much up front and instead provide dividends or experience refunds over the life of the agreement if the business exceeds agreed upon expectations.

The more challenging questions arise when it is not so clear that reserves and capital are in fact excessive by some measure. Or, equally difficult is when all the risks in a contract cannot be easily passed to the counterparty as with the setting of non-guaranteed elements in a ULSG or AXXX contract. Much more thought and design must go into structuring an agreement which can be mutually agreeable to both parties, yet still serve the ceding company's needs. The same can hold true for reinsuring the risk(s) of a product where there is not a large secondary market, as with longevity-based products.

Client's needs are generally complex and rarely vanilla. As such, writing agreements that understand and support those needs while aligning the interests of both parties and creating a win-win in the end is rarely easy.

Appreciating a company's risk tolerance and return requirements, as well as understanding the client's products and challenges, are requirements in any reinsurance agreement, but take on even greater importance with financial reinsurance. Challenges to the stability of the marketplace will continue in the future, including: principles-based reserves, reserve credit for alien reinsurers, capitial markets and securitizations, among others. While a more detailed discussion of these "threats" to the marketplace might certainly be informative, it requires much more detail than I am prepared to indulge here. I would note only that the marketplace focusing on client needs and support may change in its look and feel but will survive so long as insurers have the desire to modify and manage their risk return profile. ✷

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BUSINESS DECISIONS—REINSURER VERSUS DIRECT COMPANY PERSPECTIVES

by Gordon Gibbins

In May of 2006 the Life Insurance Mortality and Underwriting Survey Committee of the SOA surveyed both reinsurers and direct companies about their practices with respect to making business decisions in the underwriting process. The results of the separate surveys were published by the SOA (Reinsurer survey-January 07 and Direct Company survey-March 07) and are available on the SOA Web site. Further a presentation on some aspects of the results was done as part of session 61 at the 2007 annual SOA meeting. For the most part this presentation analyzed the results differently than how they were presented in the published reports, using practical examples of business decisions to provide focus for the presentation.

The purpose of this article is to highlight the comparison of the results of the two surveys as outlined in detail in Appendix 2 of the Direct Company Survey. Familiarity with the surveys and their definitions is assumed. Please refer to the SOA Web site if you are not familiar with these reports before proceeding.

The major difference between Definition 1 and Definition 2 is that Definition 2 provides for some underwriting judgment.

The main points of interest are listed below:

Definition
Direct writer respondents were more likely to choose the more restrictive definition (Definition 1) than reinsurers (59 percent versus 43 percent for preferred risk underwriting and 33 percent versus 0 percent for substandard classification). The comparison may be even more pronounced for preferred risk classification as 33 percent of the direct writers do not use "stretch" criteria and hence some may have chosen Definition 2 but are underwriting similarly to direct companies with "stretch" criteria who chose Definition 1.

Business Decisions on Preferred
Fifty-nine percent of direct companies indicated that they allow business decisions on preferred whereas only 45 percent of reinsurers allow it (See the reports for additional detail).

Business Decisions on Standard/Substandard
Sixty-three percent of direct companies allow business decision on standard/substandard classification whereas 73 percent of reinsurers do.

Tracking Business Decisions
For direct companies that allow business decisions, 36 percent track on preferred classification and 25 percent on substandard classification. However 50 percent of reinsurers said they require periodic documentation from clients.

Prevalence of Business Decisions
When asked what their percentage of cases involved business decisions, over 50 percent of direct writers reported less than 1 percent, 83 percent less than 3 percent and none reported more than 5 percent. The reinsurers' perspective (based on recent audits) was somewhat different with 45 percent indicating less than 3 percent and 91 percent less than 5 percent.

Handling of Business Decisions in Treaties
Fifty-seven percent of reinsurers indicated they insist on the treatment of business decisions be documented in their treaties. However, only 16 percent of direct writers indicated it was included with another 23 percent saying they were in negotiation with their reinsurers.

Reinsurer Adverse Actions from Business Decisions
Thirty percent of direct writers reported adverse actions on business decision cases by reinsurers which seems high compared to the incidence inferred from the Reinsurer survey.

The most common adverse action stated by direct companies was "to give a warning that a future claim may not be paid" whereas that stated by reinsurers was "decline to pay a claim or reduce the amount paid." This reason was only third most common (29 percent) in the direct survey.

Automatic Binding of Business Decisions
One-third of reinsurers indicated they allow direct companies to bind them automatically on business decision cases whereas two-thirds require the ceding company to pay the real rate or discuss the case in advance. For direct companies, only 24 percent indicated they usually pay the true rate. In addition, nearly 33 percent indicated they always discuss the case in advance, but 11 percent indicated they never discuss the case in advance. Further, of the direct respondents that did not consult with the reinsurer, 44 percent indicated they usually cede automatically to the pool without paying the true assessed rate.

Note: Given so few (four of 12) reinsurers allow themselves to be bound automatically on business decision cases, but a greater percentage (11 of 45) of direct companies indicated they usually cede automatically to their pools without discussing the case beforehand or paying the true assessed rate, one has to wonder if there is not a disconnect in the understanding of the parties.

In reviewing all of the above analysis, one must of course remember that the information only represents the answers of a limited number of ceding companies and most reinsurers in May of 2006. The answers today could be different. Nevertheless, both sides to a reinsurance treaty should clearly understand the other's perspective. ✹

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VA REINSURANCE—A VIBRANT MARKET

by Ken Mungan

It has been exciting to see the significant growth and activity in the Variable Annuities (VA) reinsurance market in 2007. As we begin 2008, the outlook for the market is very strong. In this article, we will review the history of the VA reinsurance market, the characteristics of deals being done today, the use of hedging in VA reinsurance, and trends that will influence future deals. Given the demographic trend of Baby Boomers entering retirement, there is no doubt that demand for reinsurance to support innovative variable annuities will increase.

The VA reinsurance market was very active during the bull market of the 1990s. During that period, it was common to transfer Guaranteed Minimum Death Benefit risk to reinsurers. Reinsurance premiums were set based on "real-world" stochastic analysis which assumed a 9- to 11-percent growth rate for the stock market. During the 1990s, hedging techniques had not been widely applied to reduce market risk associated with VA guarantees. Understandably, the performance of unhedged GMDB reinsurance business was poor during the bear market of 2000 to 2002.

The bear market caused a wide-spread shut-down of the VA reinsurance market. As a consequence of the bear market, direct writers implemented capital markets hedging techniques. The use of derivatives to reduce the risk associated with VA guarantees is standard practice in the variable annuity industry today.

Major reinsurers took a cautious approach to re-entering the VA reinsurance market. After monitoring the performance of hedging techniques for several years and carefully evaluating innovations in product design, established reinsurers came back to market in 2007. Today, reinsurers who are active in the market include:

- Munich Re
- RGA
- Swiss Re
- Union Hamilton (Wachovia)
- White Mountains

In addition to these established reinsurers, several investment banks have reinsurance subsidiaries that have completed transactions.

Transactions have been completed covering all types of VA guarantees: GMABs, GMDBs, GMIBs, and GMWBs. Transactions have included risk transfer covering base with riders and rider-only deals.

It is important to note that the VA reinsurance market is a global market. Reinsurers are active in North America, Asia and Europe. By building up a diversified book of business on a global basis, reinsurers can partially mitigate policyholder behavior risks and achieve a significant economy of scale.

The U.S. and Japanese markets are the most active. However, variable annuities are rapidly growing in other markets. The availability of reinsurance is helping to fuel this trend.

All VA reinsurers, as far as we are aware, employ capital markets hedging techniques. Techniques used are consistent with the techniques which have been used by direct writers since the bear market at the start of the decade. VA guarantees are treated as financial options. Option pricing techniques are used to value the guarantees and to estimate the market sensitivity to major equity indices, segments

of the swap curve, exchange rates, etc. A portfolio of financial derivatives is typically managed with the goal of maintaining a market neutral position.

These hedging techniques provide partial mitigation of the capital markets exposure. As such, a disciplined process of P&L measurement and performance attribution analysis is used to monitor and evaluate results. Industry best practices have developed for this process over the course of this decade, and VA reinsurers have taken care to apply these practices in their business.

In addition to applying option pricing techniques to management of capital markets risk, VA reinsurers apply these techniques to management of policyholder behavior risks. Lapse, withdrawal, and annuitization rates are not known with certainty. Structural elements in the underlying product design are commonly used to limit the financial impact associated with behavior risk. Increasingly, direct writers are reaching out to reinsurers during the product design process. By collaborating with reinsurers during the design phase, direct writers improve their chances of achieving a successful reinsurance transaction.

As the VA reinsurance market has developed, some direct writers have required reinsurers to adopt specific strategies to mitigate reinsurer credit risk. One technique that has been employed is the use of a benefit trust account to collateralize the fair value of the reinsured guarantees. Typically, premiums would be paid into the trust account; capital markets hedges would reside in the account, and there would be a periodic settlement process which governs the release of profits from the account. The settlement process uses an option pricing technique with objectively determined parameters to establish the settlement value for each guarantee. Typically, assets in the account in excess of the aggregate settlement value may be released as profit to the reinsurer. To the extent there is a shortfall, the reinsurer may be required to make a cash infusion to the account.

The VA reinsurance market is in a state of rapid development, and this process will likely continue. In particular, there has been significant activity in development of stand-alone guarantees on 401(k) and IRA accounts. As this market develops, reinsurance will be a critical component.

THE VA REINSURANCE MARKET IS IN A STATE OF RAPID DEVELOPMENT, AND THIS PROCESS WILL LIKELY CONTINUE.

In addition, there is a rapid pace of innovation in the retail VA market. Lifetime GMWBs are attracting significant interest in the market. For these innovative products, a successful reinsurance transaction provides an independent validation of the product design in addition to risk mitigation.

It has been exciting to participate in the development of the VA reinsurance market. Given demographic trends and the pressing need for compelling retirement security products, we expect the rapid pace of development to continue. ✺

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CANADIAN REINSURANCE CONFERENCE

by Mike DeKoning

Each year reinsurance professionals gather in Toronto for the Canadian Reinsurance Conference (CRC). In 2008 the CRC will be held for the 52nd time in Toronto on Thursday, April 3rd.

First held in 1956, the conference grew out of a meeting of Toronto insurance company representatives to discuss reinsurance matters of mutual interest. At that time, companies were involved in reciprocal risk-sharing arrangements in order to facilitate placement of large face amount policies. Since then the meeting has grown to be an all-day series of seminars on topical subjects, and an important networking opportunity for insurance and reinsurance professionals from across Canada, North America and Europe. Last year, more than 600 delegates attended the meeting.

The theme for the 2008 CRC is **"REinvention"**—a fitting description for the industry we are in! The constant evolution we are seeing within the industry has impacts for everyone.

This year the conference agenda includes two high-level Industry panels. Eight distinguished executives from the top Reinsurance and Insurance companies tackle the hot topics impacting the industry today.

In addition to this panel, the day's agenda includes three breakout sessions, allowing attendees to select from a list of nine different topics, covering a wide range of industry issues, including:

- Underwriting at Claims Time;
- Longevity; and
- Challenges in Group Claims Adjudication.

Presenters will draw from their experience and share views on the "REinvention" of the industry, in an interactive setting designed to promote learning and an open exchange of views.

Lloyd Milani, Vice President Group and Strategic Planning at Munich Re Canada is the Chair for this year's conference. "I am looking forward to welcoming everyone to a very informative session this year." Along with Lloyd Milani, this year's Executive Committee includes Past-Chair Mike DeKoning, President & CEO Munich American Reassurance Company; Incoming Chair, Brian Louth, Senior Vice President, RGA Canada; Past Treasurer Debbie Rankin, Assistant Vice President of Global Projects, Sun Life Financial; Treasurer Ruth Cossar, Vice President, Contracts and Wording Management, Swiss Re; Secretary Cathy Shum Adams, Vice President, Individual Development, Optimum Re; and Event Manager, Laura Gutsch, CMG Marketing.

For more information on the Canadian Reinsurance Conference, please visit their Web site at *http://www.crconline.ca/*. ✷

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