

Data-enabled decisions

Reinsurers making greater use of software to better quantify risks and premiums

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Technological innovation in the reinsurance marketplace is helping reinsurers better gauge ceding insurers' financial strength, risks they face and prices paid for reinsurance while allowing cedents to make more informed decisions about the reinsurance they buy and the risk they retain.

For example, the executives of Erie Insurance Group "sleep better because they get more and better information about the risk they are managing," said Charles Longua, vp and corporate financial adviser of the Erie, Pa.-based insurer, a regional property/casualty company with about \$3.8 billion of gross written premium in 2007.

Speaking generally, he said his company chooses to use software based on a stochastic model to analyze qualitative data using probability theory that "quantifies risk in dollars and cents" for 12,000 possible outcomes, he said.

Erie executives then look at the best, worst and median outcomes to determine the level of risk the company should assume. Sometimes, the company decides that the most cost-effective way to balance risk and premium is to structure its reinsurance program to retain the lowest and highest layers of risk and reinsure the middle layer, said Mr. Longua.

Advances in computing capability have given reinsurers and ceding insurers many software products and programs from which to choose when making reinsurance-related decisions.

Overall, there has been an explosion in the amount and type of data used in modeling and making decisions, especially by primary insurers that want to protect financial results, said Peter Marotta, enterprise data administrator and principal with the Insurance Services Office Inc. in Jersey City, N.J.

Primary insurers must be able to provide sufficient "granularity," or specificity, in the data about their insured risks or they will face higher prices for reinsurance, Mr. Marotta said.

In terms of property/casualty risks, "I see a constantly improving set of data," he said. Reinsurers and insurers are requiring more detail about concentrations of risk and the structure of buildings since the Sept. 11, 2001, terrorist attacks and the 2005 hurricane season.

Subsequent improvements in building codes also are being reported in the data, which historically has been based on fire codes, sources said.

Overall, reinsurers have somewhat lagged primary insurers in using data to quantify exposures, but are catching up and seeking more data about claims-related activity, Mr. Marotta said.

Cat modeling

Using data for catastrophe modeling is important for both primary insurers and reinsurers, sources say.

"Natural catastrophe models combine historical disaster information with current demographic, building—age, type and usage—scientific and financial data to determine the potential cost of catastrophes for a specific geographic area," according to an analysis by the New York-based Insurance Information Institute. "The models use vast databases of information to simulate the physical characteristics of thousands of potential catastrophes and project their effects on both residential and commercial property."

Risk Management Solutions Inc., a Newark, Calif.-based modeling company, recently added perils to its modeling offerings, including China earthquake and influenza pandemic risks, said Matthew Grant, the London-based chief markets officer for RMS.

Also, new flood models for London and the Czech Republic were introduced last year by New York-based Guy Carpenter & Co. L.L.C., a risk and reinsurance specialist unit of Marsh & McLennan Cos. Inc.

"Flood risk in the U.K. recently has become a matter of growing concern for the insurance industry, amid ever increasing development in the flood plain areas and calls from the Assn. of British Insurers for the government to increase spending on flood protection schemes," a company statement said.

"We have seen an increased demand from clients based in Central and Eastern Europe for new modeling approaches that can help them assess their potential exposures from natural catastrophes," said Hamish Dowlen, vp in Guy Carpenter's Munich office. The Czech flood model, which covers all of the republic's major rivers and most densely populated areas, is based on the company's new Catastrophe Analysis Toolsuite, which is known as G-CAT.

Ceding insurers and reinsurers use catastrophe modeling to better understand the property/casualty risks they face, balance their portfolios and determine an appropriate premium for reinsurance, Mr. Grant said.

"There are very few reinsurers that don't have one or more catastrophe models," he said. Among primary companies, the larger ones will use a model or make use of a modeling company's services, Mr. Grant said.

Interest in modeling products has expanded beyond property/casualty companies to include life reinsurers and the capital markets, he said.

A new RMS program helps insurers and reinsurers better understand the data that they have and reviews inconsistent data to ensure correctness, Mr. Grant said. For example, RMS provided 200 rules related to construction risks that flag inconsistencies, such as incorrect data that recently identified the Empire State Building as being made of wood even though any building over 12 stories must be constructed of more durable material, he said.

A particular concern of some reinsurance industry members is a shortage of knowledgeable people to handle some of the current technological tools, especially catastrophe modeling, sources say.

A few years ago, RMS established a certification program for catastrophe risk analysts, Mr. Grant said. Most of those who obtain the Certified Catastrophe Risk Analyst designation work for client companies, he said.

ERM

Reinsurers and insurers also use technology to provide an enterprise risk management approach to modeling the risks of an entire company, which is the focus of DFA Capital Management Inc. in Purchase, N.Y. Its trademarked ADVISE platform allows insurers and reinsurers to better understand the implications

of potential business decisions on a companywide basis, said Chris Suchar, executive vp for DFA's operations in North America.

The platform solves the technical problems of coping with the hundreds of contracts that a reinsurer is typically involved with, Mr. Suchar said. It helps reinsurers control their portfolio and optimize their pricing of coverage.

In addition, ceding companies are increasingly interested in bringing such portfolio analysis in-house, so they can obtain their own perspective on it, said Karen Verelley, DFA's vp-marketing.

DFA also offers a global economic market simulator that makes projections about how capital markets will perform in the future.

The projections are important for both property/casualty and life/health customers because they are all concerned about the performance of their investments, Mr. Suchar said.

Technological advances also are having a major effect on facultative reinsurance business, sources say.

Under such arrangements, individual risks are offered by an insurer to a reinsurer that has the right to accept or reject each risk.

Facultative placements represent about 10% to 15% of the total reinsurance market in North, South and Central America, according to William Donnell, head of facultative business for Swiss Reinsurance Co. units serving the Americas.

Generally, most reinsurance coverage is placed through reinsurance treaties.

Swiss Re provides different levels of service to clients, depending upon the degree of collaboration they want with company underwriters, he said. A client with a large, complex risk may want extensive collaboration while a client with a much smaller risk may be able to use a Swiss Re program to keep the cost of coverage as low as possible, Mr. Donnell said.

For example, a client with "a vanilla-type risk" that will require facultative reinsurance costing less than \$25,000 in annual premium can make use of the company's SwiftRe program, he said. Under that program, an insurer can use technology that Swiss Re installed in the client's office to enter data about the risk and request coverage from the reinsurer. He said he expects the program to increase its limits in the future.

A client with similarly sized risks also has the option of having Swiss Re make the entire submission for facultative coverage. That process was streamlined during the fourth quarter of 2007, cutting the time to receive a quote from an hour to about 15 minutes.

In addition, Swiss Re Group completed a project last year that increased the uniformity of data requested for facultative placements throughout its operations, Mr. Donnell said.

Munich Re America uses its Dynamic Reinsurance Analysis approach to help clients analyze the value of their reinsurance program and compatibility with their individual risk appetites, said Mike Petrocik, the Princeton, N.J.-based vp and chief actuarial officer for the company's specialty markets division.

A key focus is finding out "how often might something really bad happen" and presenting that and other key outcomes in understandable format, such as a graph that visually summarizes the probability of outcomes and loss totals given various reinsurance programs, he said.

While Munich Re's systems are very complex, they have been engineered so that "desk underwriters," rather than more highly trained actuaries, can use and interpret those accurately for clients, Mr. Petrocik said.

"We don't attempt to say: `Here is the right thing and here is the wrong,'" he said. "Ultimately, it is the client's decision whether the extra risk is commensurate with the extra premium."

Munich Re also offers a program called Auto Fac, an information processing program for P/C facultative placements that can quote, bind, endorse, cancel and renew policies within minutes. It provides rating worksheets for each transaction and has the ability to display a detailed transaction history of any policy in the system, the company said.

Under the program, insurers are given specific parameters under which they can bind coverage for Munich Re, said Kevin Smith, senior vp-direct facultative in Princeton, N.J.

It offers some flexibility, however, in situations in which an applicant's risk exceeds an insurer's parameters, he said. In that case, the system generates an e-mail to a Munich Re underwriter who will review the submission and decide whether to accept or reject the risk or ask more questions about it.

The system also produces a detailed monthly report that helps managers oversee their operations.