

THE NEW

Actuaries and Risk Management



These days corporate America's all abuzz about the urgent need to launch so-called enterprise risk management (ERM) programs, and who better to lead those efforts than actuaries, appointed as a company's chief risk officer (CRO)?

That's the view of a growing percentage of actuaries across the United States, who increasingly see the evolution of ERM as a means of increasing their influence and authority at companies across the nation.

Not just at insurance and other financial services companies, mind you, where several actuaries already hold the coveted CRO job and are in charge of ERM efforts. They want to do the same thing at companies outside the financial services business, be they traditional manufacturers, retailers, or those in other service industries.

What's their chance of success, particularly in regard to stepping outside the financial services? It's too early to tell, but actuaries face stiff competition from other professions, including accounting; banking; corporate treasury management; and those at energy trading companies who manage physical and financial portfolios of energy-related risks.

No matter, actuaries say: Bring 'em on.

That doesn't mean—to use former Vice President Spiro Agnew's now-infamous phrase describing the media—that there aren't lots of “nattering nabobs of negativism.”

Stubbornly, the American public and corporate America continue clinging to the “green eyeshades” view of the actuarial profession: boring, centered on crunching numbers and creating inexplicable tables that dictate what policyholders pay for policies covering everything from health care to auto insurance.

The question: how to break out of that stereotype, to make those executives understand that the actuarial professional today is dynamic and proactive—capable of producing, among other things, models that help companies deal with situations ranging from hurricane destruction to the cost of delayed product introductions.

How to make those in the “c” suite understand that what actuaries do is not simply a cost but ultimately a major contributor—or potential contributor—to the bottom line.

How, finally, to get the point across that actuarial work is a crucial component of risk management and ultimately a key contributor to stakeholder value.

GOSPEL

Actuarial work is a crucial component of risk management and ultimately a key contributor to stakeholder value — **By Lawrence Richter Quinn**


The answer: by preaching the new actuarial gospel outside established circles. That means talking it up with senior executives and board members at non-actuarial forums. Those outside the insurance and financial services industry need to know just exactly what risk management skills actuaries bring to the table and how those differ from the talents of others.

They need to see that actuaries can translate their actuarial and risk management wherewithal into plain English, worded in a way that addresses a company's core business.

Finally, they need to see that actuaries have the diplomatic skills to deal across silos with line, unit, and business managers in a way that will produce value-added optimal risk solutions, enhancing stakeholder value in the process.

And that's exactly what actuaries say they are going to do.

A Tall Order

 any executives, particularly those risk managers from other professions, think this is too tall an order for the actuarial community, that it will never fulfill its dreams. One simple reason: There are only about 25,000 actuaries in North America, a fraction of the

hordes of those in accounting, insurance risk management, banking, energy trading, and other professions competing to be the head of risk operations.

Most actuaries acknowledge the challenges ahead. "Actuaries do have the professional reputation and risk modeling skills, but we need to overcome the limitations of our too-specialized functions," says Dr. Shaun Wang, director of the actuarial science program at Georgia State University's Risk Management and Insurance Department. "A lot of job functions in corporate America are too specialized, and actuarial functions are even more so. As actuaries we really need to enrich our own experience and gain broader business perspectives.

"Actuaries have part of the technical background to become CROs and head up ERM efforts," Wang adds. "At the same time, they lack other parts, the broader perspective of corporate finance and management. As a result, it's hard for them to see the big picture. We should encourage actuaries to be more open-minded, to learn other people's perspectives so they can have effective conversations with business managers. If we can speak their language while offering our analytical skills, we can add much value for our employers."

Others are more confident. Frederick W. Kilbourne, president of an actuarial consulting firm in San Diego, had no trouble stating the case upfront in the cover story of the November/December 2002 *Contingencies*: "An Actuarial Audit Would Have Prevented the Enron Disaster."

Actuaries already have a positive impact in the ERM arena, many agree. Says David Ingram, a consulting actuary at Milliman USA and one of the profession's leaders in pushing the ERM/CRO initiatives: "Regarding ERM, actuaries do contribute and can contribute more in the area of risk evaluation of financial structures that are not market traded. Much of the bank risk management that has been developed has centered around evaluation of market prices."

And Samir Shah, a principal with Tillinghast Towers Perrin in Arlington, Va., notes: "Actuaries feel they are experts in risk management; if you accept that, then certainly they should be interested in anything that involves ERM."

Shah adds: "With ERM, there are risks you can't quantify, but you still have to integrate those into your program. You need to

figure out how to quantify new risks. The good news is that that may be a challenge in some cases, but it's not insurmountable."

Barry Franklin, a consulting actuary with Aon Risk Services (ARS) in Chicago, says, "I don't think any one profession has put a stake in the ground as a provider of quantitative solutions for ERM, but actuaries are playing a critical role."

Valentina Isakina is a finance practice area actuary, formerly an internal staff consultant on risk management issues at the Society of Actuaries in Schaumburg, Ill. She points out that the ERM discipline is new enough that there's no reason actuaries can't come up along the learning curve in tandem with risk executives from other professions.

"I see actuaries becoming more and more involved in ERM issues," she says. "It's very much an evolving and developing area of expertise and not only for actuaries. There are no right answers at this point. It's a very complex and sophisticated discipline, and we, as actuaries, should take the initiative to contribute with our tools and techniques to its development."

The Agony and the Ecstasy



IT'S ONE THING to want the ERM portfolio, another to get it and manage it well.

That, anyway, is the view of Dr. Shaun Wang, former actuary and research director at the SCOR Group, a global reinsurance company in Schaumburg, Ill., which launched its ERM program about three years ago at the request of the company's president.

"Most people don't know what ERM is and how it should be done, and we were pretty much in that position ourselves when we launched our project," says Wang. "A lot of people have misconceptions; now, after three years of working on our own program, we have a much better understanding, but it's a continuous learning process."

Wang, who had worked in pricing reinsurance, was asked to head up the project because of his actuarial background. "In addition, we hired a banking management consulting firm to help—they gave us a jump-start on the project—but ultimately we felt we needed to develop our program inter-

nally. At the end of the day, you have to have an internal process in place."

Today the company has an ERM committee overseeing the project, a group that includes, among others, its chief risk officer, chief underwriting officer, and chief investment officer.

The goal of SCOR's program is straightforward. "Improving overall financial performance is what we're after," says Wang. "The company wanted to do a better job of pricing and enhancing the performance of our business units."

To get there, Wang says, "the management wanted a better way of running our enterprise because we're a large multinational company. We have many regional offices, each with its own kind of business and market dynamics. As a result, it's hard for management to know what's going on. We need a framework in place so that relevant information can be passed on to management for decision-making."

Wang notes that when making decisions, "management obviously looks from the top; it's concerned with really

big-picture stuff, and it's hard to see what's going on at a detailed level. We cannot have the executives at the top making all the decisions without knowing what's going on in the company. If they don't know, it's a potential disaster for the company.

"When you go to individual units, decisions are based on their local experience and judgments; they may not be fully aware of the big corporate mission, so there's some disconnect. The essence of ERM is to connect all of those pieces," Wang adds.

"Part of what we're doing with ERM is figuring out the risk/reward payoff of various business units and how that calculation affects the whole company," Wang says.

"For instance, a local business unit would insure California earthquakes. In any one year it may have had great financial performance because there were no quakes. However, if an earthquake did occur, claims incurred could drag down the whole company."

Comparing cost (of hedging and capital consumption) versus benefit

An All-out Effort



BEHIND THE PROFESSION'S EFFORTS to head corporate ERM programs and ultimately become CROs are associations such as the SOA, the Casualty Actuarial Society (CAS), and the American Academy of Actuaries in Washington D.C. These groups believe that future career opportunities for actuaries are integrally tied to their ability to reshape their image.

To that end, the SOA has taken the lead in two initiatives, launching an image campaign on the one hand, and creating a new risk management section on the other. Both are related.

The new risk management effort is the result of a risk task force the SOA formed in 2000; later, early in 2004, the SOA's board of governors decided to establish its risk management section. "The task force's job was to get the topic high up on the radar screen and to serve as a launch pad for what now has become the risk management section," says Hubert Mueller, a principal at Towers Perrin in Hartford and another leader in getting the SOA's risk management efforts going. Ultimately, the

section may have several thousand members, he predicts.

The overall image campaign, "Turn Risk into Opportunity," touts actuaries as "the best-kept secret in business."

"The campaign is first about helping educate potential stakeholders such as media and prospective employers—both traditional and non-traditional—about what actuaries can bring to the table," Valentina Isakina says. "In the process, we're also trying to uncover whatever additional things we need to address in our education and professional development. This is a long-term initiative that will take 10 to 15 years to address."

Modeling Is Key



ACTUARIES POINT TO THEIR ABILITY to model current and potential risks as a unique skill that demonstrates their ability to move beyond actuarial charts and graphs. Modeling can bring them into contact with business unit and line managers, as well as with senior management and even board members. Success in modeling is a key demonstration that actuaries can work cross-silo, under-

(profit margin) is an important part of the ERM project. It's also critical to match capital allocation with the company's areas of expertise and market niche.

Even though ERM programs have been around just a short while, Wang believes SCOR might have been better off if it had started its program earlier. "We probably started our program too late because now we're having financial difficulties as a result of decisions made five years ago," he says. "It's the problem of the long tail: You don't know what your financial performance will be many years down the line; it drags out for a long time. You can have really great financial performance the first three years, but in the fourth you can have a major loss due to unexpected reserve increases. During the ERM project we came to a better understanding and quantification of this long-tail risk, and now we wish we'd done this much earlier."

In terms of his own experience with ERM, he's learning the limitations of being an actuary. "Coming from an

actuarial background, I thought I had all the analytical skills to model all kinds of risks," says Wang. "However, as I got involved in our ERM process, I learned that analytical skills are one thing; understanding the businesses—the local culture and dynamics—is quite another. All of these things are as important; it was a humbling experience."

Nevertheless, Wang still believes actuaries are the best candidates for leading ERM projects for insurance companies.

Regarding hiring a consultant to work on an ERM program, Wang urges companies not to rely solely on outside expertise. "Our consultants came from the banking side," he says. "They provided us with a set of tools for quantifying different types of risks. However, we quickly found a disconnect between their models and our reality."

"In the financial community they think about capital markets risk, stock price risk, credit risk, but in our case the major risk is underwriting," Wang continues. "The banking people just didn't have that perspective."

Wang says that actuaries must be proactive and play a bigger role in the ERM project. "As actuaries in the insurance field, we obviously understand the dynamics of insurance much better than banking people do," says Wang. "A quantitative model by itself does not give the right answer. Our banking consultants were smart people, but they didn't really understand our business."

The result? "Ultimately we concluded their numbers didn't make sense for making everyday business decisions," says Wang. "So we assembled our own team of actuaries who worked closely with our local business managers. Because we engaged those business managers in the discussions, they were more open and cooperative than they had been with an outside consultant."

Wang emphasizes a lesson he thinks all risk managers should take to heart regarding their ERM programs. "We all have to remember that this is an ongoing process," he says. "It's part of a day-to-day job function, rather than a project you finish over X number of years."

standing and speaking in the language of business rather than in the arcane verbiage of the actuarial world.

"The actuaries aren't going to build every single model from scratch because it's going to be hard for them to be experts in everything, but they can work with professionals in other industries," notes John Kollar, a fellow of the CAS and vice president of the Insurance Services Office (ISO) in Jersey City, N.J.

One major problem confronting those involved in ERM programs: Many risks that executives want to include under the ERM umbrella are difficult to measure (reputation and operational risks come to mind). If they can't be measured, then they can't be managed, the argument goes, and as a result it's difficult to work with those risks to enhance shareholder value.

Unlike risk professionals from other backgrounds, actuaries are optimistic that virtually every type of risk can be modeled in time. "You'd be surprised at how many risks can be quantified," says Tillinghast-Towers Perrin's Shah. "We need to quantify risk to help make decisions, not necessarily to predict outcomes."

Adds the ISO's Kollar, "Overcoming modeling fuzziness can be done. Remember, CAT (catastrophe) models were very fuzzy 20 years ago. And now we're attacking new areas such as modeling for terrorism."

What are some of the specific types of modeling where actuaries have unparalleled experience?

■ *Any insurance contract that includes so-called embedded options—contracts that might include investment options, for instance, where the policyholder decides when to exercise that option and/or which option to exercise.*

These contracts might incorporate interest rate options where the rate paid changes with the prime or other interest rate. They might also include penalties revolving around when cash is withdrawn or other benefits received. All of these are increasingly commonplace.

"Most insurance products involve future contingent financial transactions that cannot be deconstructed and replicated easily with market-traded instruments," says Ingram. "Actuaries are experts at developing models of such structures and using prospective liabilities that develop from an existing commitment and/or the amount of risk capital that is needed to assure the continuation of the firm that backs the commitment.

"Many of the transactions that actuaries have developed experience in evaluating are multi-year deals," Ingram continues. "As a result, the actuary's modeling techniques regularly take into consideration the observed degree to which customers

Damn the Accountants! Full Speed Ahead



LIT'S NO SECRET that actuaries face stiff competition as they seek to be put in charge of ERM programs and even become chief risk officers. Corporate insurance risk managers, auditors, accountants, treasury executives, and those who head up hedging operations at energy companies, banks, and other organizations—all say they're best qualified to head up ERM programs and serve as CROs.

Among all these competitors, however, actuaries apparently believe that the greatest threat to their efforts comes from the accounting community. The actuarial accusation: Accountants are too focused on current and past risks companies face, with little ability to focus on long-term future risks and to model them.

"I think we actuaries are unique among the professions in dealing daily with financial uncertainty," says Fred-

erick W. Kilbourne, president of independent actuarial consulting firm the Kilbourne Co. in San Diego. "We're in striking contrast with accountants, who tend to be uncomfortable in the presence of uncertainty."

Indeed, the actuarial community is upset that the Committee of Sponsoring Organizations (COSO), an international group currently putting together a "best practices" framework that many believe will be adopted by corporations worldwide, is unfairly biased against actuaries.

"COSO is saying accountants should lead these efforts by putting together a list of all the risks a company faces and then assigning them to someone to manage," says Max J. Rudolph, vice president and actuary, financial risk management, at Mutual of Omaha. "And I would make the argument: Why should accountants do this?"

Adds Kilbourne: "The COSO draft I've seen seems to deal with form rath-

er than substance, mentioning neither actuaries nor risk managers nor even insurance in its many pages. It needs a lot of work to avoid being mere window-dressing."

Accountants aren't the only ones under attack, however. "Actuaries have technical depth in statistics and risk modeling but also know insurance, finance, accounting, and law," says Don Mango, director of research and development at GE ERC. "We have similar quantitative and probabilistic modeling skills to financial risk managers, but we also have depth in regulation, accounting, and law. We have what it takes to fill the leadership role for ERM.

"Actuaries are building the theoretical framework and evaluation processes and risk models themselves," Mango adds. "It's similar to what they do in the financial risk management arena—that is, at commercial and investment banks. Financial risk management is well en-

Actuaries are getting out from behind their desks and tables, introducing themselves to new financial services sectors and products.

actually exercise those options.”

An obvious benefit to actuaries of these contracts, according to Mueller, is that “actuaries are working a lot more closely with the capital markets folks. You see that, for example, right now with variable annuities and the guarantees offered.”

Translation: Once again actuaries are getting out from behind their desks and tables, introducing themselves to new financial services sectors and products, and learning the complex world of hedging and derivatives. And, unlike bankers or accountants, they’re looking farther into the future, often as far out as 10 years or more.

A specific corporate example where embedded option-related risk has been successfully modeled and managed by actuaries is Sun Life. The Ontario-based insurance giant sells variable annuities in the United States, which means the company’s

subject to equity-market risk. In most industries, the corporate treasury department would design and execute hedging strategies. Not so at Sun Life.

“The actuaries worked this out, telling the investment folks. They jointly designed the strategy,” says Mueller. “So this is a great example of where actuaries took the lead in ERM and added value by avoiding losses.”

What exactly was the equity-related risk the company faced? “A lot of Sun Life’s business is equity based; its revenues are a fixed portion of its assets, so when its assets grow its revenues go up and vice versa,” says Mueller. “But the company doesn’t have a lot of control over this situation. It can’t tell its policyholders what to do, and it doesn’t control the stock market.”

So in June 2002, Sun Life put in a static hedge on its overall variable annuity portfolio that worked as follows: If the market

grained, well focused, but its concentration is very heavy on hedging, counterparties, and market risk. Banks’ risk tolerance is different from insurers’.”

Many actuaries believe that if they’re going to be ultimately successful in heading up ERM programs, they’re going to have to build alliances with other ERM leaders.

“We need to build a large, inclusive effort with the other risk professionals,” says Mango, who points out that organizations such as the Risk Management Association (www.rmahq.org), an association of predominantly bank risk managers), the Professional Risk Managers International Association (www.prmia.org), and the Global Association of Risk Professionals (www.garp.com)—along with the actuarial organizations worldwide—are doing a good job educating their members about ERM.

Others agree. Says John Kollar, a fel-

low of the CAS and vice president at the Insurance Services Office (ISO) in Jersey City, N.J.: “Accountants and actuaries each have their own skill sets. Both have roles, but the actuaries are focused on the models, tools, pricing, and dealing with risks. They’re complementary.”

Samir Shah, a principal with Tillinghast Towers Perrin in Arlington, Va., points out that the actuarial and banking professions are already melding together to some degree. “I know risk management consultants on the banking side are starting to provide consulting services to insurance businesses; perhaps it can go the other way too. But I don’t see actuaries on the insurance side going to banks and saying, ‘We can help you manage your risk.’”

But actuaries may find that, initially, one of the best ways into the ERM world will be through the consulting industry, which is already heavily involved in the ERM arena.

ISO, for instance, an information company that historically has provided services to the property/casualty industry, is interested in getting into ERM work.

“We intend to provide information and analytics to the risk space and pricing space,” says John Kollar. “ERM is part of our vision, but I’m not sure where to place us in the ERM arena. It’s a little fuzzy yet, and it’s hard to say who’s at the forefront. Consultants probably are because they’re developing customized products. Other people are moving more and more into this space.”

Some actuaries at least have a sense of humor about the competition. Jokes Shah: “GARP used to say that it was the oldest risk management association in the world. That was a huge laugh to actuaries who consider themselves risk managers. But nobody outside the actuarial profession challenges that claim because people don’t think of actuaries as risk managers.”

To move forward, 'baby steps' may be what's needed, possibly with efforts to work with others competing for ERM and CRO posts rather than against them.

(S&P) goes below 995, its investment bank—its counterparty in the hedge transaction—would pay SunLife X dollars.

"It was a hedge against the S&P, costing Sun Life about \$4 million per quarter," says Mueller. "When they did it the S&P was around 1,200; by the fourth quarter of 2002, it was less than 800. They sold the hedge and realized a profit that offset the revenue shortfall they would have had because of lower profits from declining assets."

■ *Situations where there's little available historic information or where it's just being aggregated and put together in a way where it can be modeled.*

The best examples of this include the development of catastrophe bonds in the aftermath of Hurricane Andrew and, more recently, the evolution of weather-related derivatives.

"What the actuary generally can do is take the expertise of other people, their opinions and data, and deal with the financial consequences of it," says Kilbourne. "That happened with earthquakes. For instance, the modeling company EQECAT put together a very sophisticated system that developed the anticipated workers' comp cost in future years resulting from earthquakes. It's zero in most years, but every 20 or 30 years it might total in the billions of dollars. That's exactly the sort of thing where actuaries can excel."

Another good example where actuaries are successfully modeling risk with little data is in pricing reinsurance.

"Of course, everybody knows that casualty actuaries are involved in pricing and reserving for insurance lines such as automobile and workers' compensation, but what's not as well known is that there are also reinsurance actuaries involved in evaluating reinsurance on those and other lines," says ARS's Franklin. "In evaluating reinsurance there's some reliance placed on underlying history, but there's not a lot of credible experience on certain excess layers.

"Some of those layers have never been priced using traditional actuarial methods; there's little or no actual experience with them, no historic data from which to predict losses even within the relatively small realm of insurable risks," Franklin says. "Actuaries have developed a variety of approaches to solve problems like this, including the use of Monte Carlo simulation and other modeling techniques. So actuaries are accustomed to using models to predict risk. The bottom line is that it's not that big an extension for actuaries to apply these same skills beyond traditionally insurable risk areas."

■ *Helping companies understand worst-case scenarios—and the hit to shareholder value—where something could go terribly wrong with*

a core business activity, such as the introduction of a new product.

This kind of modeling may well be the key to propelling actuaries out of the insurance and financial services industries and into manufacturing and services businesses. One example: Aon was asked by a biotech company to model the cost to the company—and ultimately, to shareholders—if the introduction of a major new product were delayed, or if the product introduction were canceled.

"We're not trained in analyzing pharmaceutical or biotech operational risks, but we are trained in analyzing risk in general and translating that analysis into financial consequences," says Aon's Franklin. "Investors place a value on future profits. To the extent that there's a delay in the launch of a pipeline drug that potentially reduces future profits, the stock price can be expected to go down.

"In fact, there have been numerous examples of delays in the planned launch of a product in the biotech and pharmaceutical industries," Franklin says. "There's a production life cycle from inception to product launch; we identified the critical risk factors that can have an impact on key points along that product lifecycle.

"We then built a model based on our understanding of the process that a drug would go through in bringing the product to market," Franklin continues. "The model incorporated assumptions about the different risks affecting the product at any given time, either in terms of delaying the product introduction or potentially canceling it altogether."

The result? "We were able to take the company's estimates of future revenues and associated costs of a product in the pipeline and evaluate the associated risks using this model," Franklin says. "From there we could evaluate the impact on discounted cash flow in the event something would either delay or cancel the launch of an individual product or the entire portfolio of products in the pipeline."

Business Acumen and Diplomacy



OF COURSE, actuaries and their professional competitors are all quick to point out that modeling expertise alone won't give the actuarial community the brass ring it wants. Valentina Isakina's blunt assessment: "The perception—which shows clearly in the SOA's latest market research—is that actuaries are too technically oriented, can't communicate, and don't have the right business acumen."

Robert Hoyt, director of the recently created Center for Strategic Risk Management and an actuary by background at the

Terry School of Business at the University of Georgia in Athens, believes an over-reliance on technical wherewithal and precision may be as much a stumbling block as an asset.

"ERM is more about the process and the organization for handling risk than 'Let's go and grab the modeling and hedging tools,'" says Hoyt. "By themselves, they do not add up to ERM. In fact, companies are saying: 'We have the tools, but we don't know what the problems are. The solutions are ahead of the problem identification.'"

To move forward, "staying the course" and "baby steps" may be what's needed immediately, possibly with efforts to work with others competing for ERM and CRO posts rather than against them.

Says Don Mango, director of research and development at GE ERC (the old Employers Re), who reports to the chief risk and underwriting officer and to the chief actuary: "Due to their relative scarcity, actuaries can't be risk leaders for all companies in the short term. However, as leading risk analytics professionals, actuaries will play a critical role in the development of enterprise risk management as the science of well-run organizations."

Many actuaries feel it's time they should be out talking up

their skills at non-actuarial functions. "I think actuaries need to talk about these types of risk management issues outside of our own profession," says Max J. Rudolph, vice president and actuary, financial risk management, at Mutual of Omaha. "We need to get out there in front of CROs and COOs regardless of industry at conferences, letting them know what we can do. Some people are more open to hearing about what we can do at conferences rather than through efforts we might make within our own organizations."

For their part, those in risk management from other professions are intrigued by what actuaries might bring to the table.

"There's no question that actuaries have got a portion of the risk picture because they can quantify some of it, but some risks are not quantifiable," says Rich Inserra, the risk manager at Danbury, Conn.-based Praxair Inc., who has a corporate insurance background.

"From an actuarial standpoint, I don't know how they intend to blend in business and reputation risks," says Inserra. "Are they going to come up with a methodology? It will be interesting to see. But can they be a component? Absolutely." ●

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