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2004 Enterprise Risk Management Symposium—From Cutting Edge Theory to State of the Art Practice

by Valentina Isakina

Nearly 400 chief risk officers and enterprise risk management experts gathered in Chicago on April 26 and 27, 2004 to discuss the latest developments on enterprise risk management (ERM) and share their thoughts on how ERM enables companies to optimize the overall corporate risk exposure and leverage business opportunities more profitably.

Sponsored by the Society of Actuaries and Casualty Actuarial Society, the ERM Symposium brought together enterprise risk managers from a variety of disciplines and industries from all over the world. Guided by its mission statement, " From Cutting Edge Theory to State of the Art Practice," the symposium drew top ERM experts to Chicago to share their experience with colleagues and challenge the audience with thought-provoking issues to address in the future. The Georgia State University's Thomas P. Bowles Symposium and Professional Risk Managers' International Association (PRMIA) were co-sponsors of this event and generously contributed to the program development.

For the two days of the symposium—over the course of five general sessions and 35 concurrent sessions—the attendees discussed and deliberated over the most critical aspects of implementation issues and obstacles for creation of the most effective, yet customized, enterprise risk management framework. Topics discussed spanned across various industries—insurance, banking, energy, retirement systems and beyond and various other disciplines—from technical risk measuring applications to broad operational risk issues and implementation. In the following paragraphs, we offer you a glimpse of the symposium topics. The complete program and presentations are available online at: *http://www.casact.org/coneduc/erm/2004/handouts/*.

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CRO Forum

The symposium was launched with a CRO forum moderated by Harry Panjer.

With such panelists as Robert Mark, president and CEO, Black Diamond Inc.; James Lam, president, James Lam & Associates; and Luc Henrard, general manager and chief risk officer, Fortis Group, the forum was a sure hit. These experts were at the cornerstone of the implementation of ERM systems/processes in general and their respective firms in particular, and have written authoritative books and/or articles on ERM. Each of them was able to bring a profound insight to the session.

First, Bob Mark described the components of a proactive risk management function:

- Policies/procedures, including setting risk tolerances and constraints
- Best practice methodologies, including calculating VaR, stress testing, setting of models and the tie-in to performance measurement
- Developing the infrastructure, including an assessment of people skills, operations, data and technology.

Second, James Lam discussed the history and proliferation of the CRO position. In particular, his description of the "good CRO" attributes resonated with the audience:

- Organizational/leadership skills
- Communication skills—to simplify without being simplistic
- Technical skills—need two out of three in credit/market/operational risk
- Balance business and risk requirements
- Courage to push back/say no
- High IQ and high emotional quotient
- Ultimate test: the ability to integrate risk management into the day-to-day business operations.

James also gave his 10 predictions for the future of ERM, including the line "Economic capital is in, VaR is out!"

Luc Henrard presented to the audience his experience with the risk management of a financial conglomerate and the challenges in bridging the gap between banking and insurance risk management.

In Fortis's framework, risks include insurance risks, investment risks and operational risks. Return measures include ROA (return on assets), ROE and return on risk-adjusted capital (RORAC)/risk-adjusted return on capital (RAROC). Luc also stressed the importance of economic capital (EC) as an economic measure for solvency capital. In his organization, EC is calculated by turning embedded value models into risk models.

All the panelists emphasized the importance of buy-in from senior management and suggested that the actuarial curriculum be expanded to include all-around financial risk management, thereby integrating actuarial and economic sciences.

Closing Remarks

The closing remarks session was one of the most remarkable sessions at the symposium, and those who attended this last session were richly rewarded. Three expert panelists presented to the audience their impressions of the symposium, summarized the results achieved and challenged the participants with thought-provoking issues to address for the next gathering of the symposium in 2005.

1. Observations on ERM Practice:
First, Prakash Shimpi, visiting fellow from the London School of Economics & Political Science, senior fellow at the Wharton School and president at Fraime LLC offered his observations on the ERM practice. He pointed out that the roots of ERM are in both asset-liability management (ALM) and corporate finance and identified the following key challenges that face practitioners striving to implement ERM in their organizations:

Alignment of management
According to Prakash, breaking down the silos that have arisen due to history and jargon across different groups of professionals is one of the most critical steps in moving the ERM profession forward, but it also seems to be the biggest challenge. Learning from each other's best practices and speaking one language makes the ERM process more effective and brings value in ability to communicate between different professional groups and provide management a solid and consistent message.

Problem misspecification
For actuaries or other risk management professionals, it is very important in their modeling work to keep in mind that the relationships used as proxies for the underlying problem remain just that—proxies. There are plenty of favorite risk metrics used in a variety of industries, and some of them are more valuable than others. However, according to Prakash, the lesson remains—it is essential to understand the real problem and not just the proxies.

Margins for error
As with any new discipline, ERM is dealing with various limitations—from systems to data availability—while being asked to provide answers for increasingly complex questions. Prakash suggested that for the process to be successful, it is important to re-examine the traditional statistical methods and consider alternative techniques that help mitigate data limitations through margins in the analysis.

Spurious precision
Spurious precision, stated Prakash, is a natural consequence following from the previous two observations. Being correct to the third decimal place on something with many assumptions built in is not necessarily valuable information. Prakash argued that in ERM, it is more valuable to have a more complete representation of the firm's risks at lower overall precision than to have surgical precision on some risks and no information on others.

Analytics
The last observation Prakash made was to identify the greatest limitations in the progress of ERM—the lack of solid analytics. He argued that in the absence of strong analytics is it difficult, if not impossible to demonstrate value—"Analytics should enable us to convert the raw risk data of a firm into knowledge about how the risks impact the firm and the economic value of the instruments and strategies that can be used

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Editorial

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as mitigants. Such analytics should become an integral, not separate, part of the routine corporate planning process of a firm."

2. Summary Remarks on the ERM Symposium 2004 Chicago

Next, Thomas Ho of the Thomas Ho Company took the microphone and provided a brilliant summary of the story that the general sessions conveyed in the two days of the symposium.

For Thomas, the overwhelming message that came out of the conference was the intense search for the definition of enterprise risk management—the scope of ERM, the responsibility of ERM, how to define the destiny of ERM. First, Shaun Wang challenged the audience to invent a new paradigm of ERM, and stated that ERM is a manifold, a system that relates all the small parts to form the whole. Other symposium speakers described ERM from other perspectives, and, to help describe these perspectives, Thomas invited the audience to join him on a tour of a headquarters of a securities firm.

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First stop—the trading floor

In the CRO Forum, Bob Mark illustrated how the CRO could have lowered the VaR tolerance level in the months prior to the Russian Crisis August 98—tying the risk measures to performance is key to the success of risk management. This view was extended by Leo Tilman in the second general session, "State of Risk Management Practices." Giving specific derivatives examples, Leo observed that ERM must be aware of the external forces in the marketplace and that the CRO should take a holistic approach and have resources beyond capital markets instruments.

Second stop—up one floor of these corporate headquarters

On this floor, Thomas described how James Lam drew from his experience in ERM to conclude that the CRO must be a leader who leads the main asset in ERM—people. James also stressed a practical perspective, which is the alignment of incentives: GE's success in the Six Sigma campaign owes much to the compensation scheme, which attributes one-third of the compensation to meeting the six sigma targets. Thomas also noted the contribution made by Chuck Lucas, who stated that the CRO has the unique challenge of being a leader in the business sense and a leader in the technical sense. Chuck used the variable annuity product to illustrate how the CRO must understand the technical aspects of hedging the risk of the guaranteed death benefits and at the same time can bet on the disappearance of the reinsurance market for the variable annuity guarantees.

Third stop—taking the elevator to the third floor

Thomas described how the theme of economic capital, first introduced by James Lam and Donald Mango, was appearing throughout the symposium. Don extended Chuck and James' points to suggest that managing all the stakeholders of ERM is the greatest challenge to the CRO and the best way to resolve the issue is to assign economic capital to the units. However, Donald asserted that we need a more dynamic definition of this process and introduced the concept of "renting" capital. In this analogy, the CRO was presented as a hotelier who rents rooms out for use, keeping the optimal balance of the needs of the stakeholders.

Further, Thomas noted Luc Henrard's contribution to the discussion of the challenges facing ERM in setting a uniform standard across businesses. Luc observed that the regulatory capital requirements for banks, insurance companies and other entities are different and challenged the audience to specify the economic capital appropriately for the management of risk across the various industries. To continue the theme of ERM and regulation, Thomas made a connection to the presentation by Darryll Hendricks. Darryll Hendricks described the complexity of setting a uniform required capital that is being negotiated among the regulators. While the European regulators are making progress across the Atlantic in aligning the regulations across different industries, the office of the comptroller currency (OCC), sub-area council (SEC), NAIC, Federal Reserve Board (FRB), and other regulators on this side of the Atlantic are not converging and will have a complex problem to solve. Thomas noted that the luncheon keynote speaker Zvi Bodie also showed concern for the impact of ill-conceived regulations in the arena of pension—the alternative pension liability valuation accounting methods conflict with economic principles. Zvi argued that the asset valuation accounting methods must adhere to the law of one price and urged that our 401(k) plans should be prompted by regulations to invest more in bonds and not equities. Inappropriate regulations affect not only corporations in the small, but the economy in the large.

Last stop—the Board Room

Thomas described the Board's concerns with the shareholders' value and how various speakers addressed this fundamental issue during the conference. Tom Wilson, for example, saw ERM managing all the business processes of the firm. While ERM provides the risk measurements, monitoring and analysis, Tom stressed how important the "soft" aspects of ERM were in relating the analytics to the business processes of the firm. To illustrate his observation, Tom provided a complex and comprehensive map of these processes in a firm. At the same time, Thomas noted that David Ingram, in his 12 points of the best practices of ERM, suggested that one element was missing in the map, which was: "The firm has a process to identify weaknesses of ERM." Thomas noted that Dave's presentation spoke of ERM as a dynamic process, not a map. This process has to have a self-correcting mechanism, and this self-correcting mechanism is the essence of risk management.

3. The Foundations of Enterprise Risk Management

The final speaker of the session was William H. Panning, EVP and Managing Director of Willis Re Inc. Bill focused on an issue that is crucial to ERM but rarely discussed—time.

Bill stated that measures of risk such as (VaR), and its close relatives are like flashlights in a cave, in that they illuminate some aspects of reality but simultaneously conceal others that fall outside their scope. In particular, these measures focus on the distribution of possible outcomes at some particular point in time. In fact, however, firms such as insurers take on risks for a variety of time horizons, and no single point in time is predominant. This has several implications.

First, Bill suggested that for insurance companies, a more appropriate approach to risk measurement should be three-dimensional: "Instead of thinking about risk as some feature of a probability distribution at some particular point in time, an insurer should think about a surface constructed from a probability distribution of outcomes one day from now, behind which is another distribution for outcomes two days from now, and so on, extending out to infinity. The result is a three-dimensional surface, where the dimensions are percentage change in value on the horizontal axis, probability on the vertical axis and time on the axis projecting into the future." What is needed is a more adequate measure of risk that reflects the time dimension.

Second, Bill argued that looking at risk metrics from such time prospective brings the importance of strategy into clearer focus. Enterprise risk management is not just enterprise risk measurement. One way ERM can benefit senior management is by assisting them in identifying appropriate strategies for responding to events or conditions that potentially affect the value of the firm. Ultimately, by making appropriate strategy choices, managers can change the shape of the three-dimensional surface.

Third, the ability to manage this three-dimensional surface should likewise enable managers to enhance shareholder value. Bill stressed the importance of creating valuation models able to link the shape of the three-dimensional risk surface to the market value of the firm. At the present time, such valuation models are relatively primitive.

In his summary, Bill identified the following opportunities for managers to make ERM a clear value-adding tool for executive decisions:

- focus on the time dimension of outcome distributions;
- identify ways in which this return surface can be altered by adopting appropriate corporate strategies; and

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RMTF Subgroup

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New volunteers are encouraged to join the subgroup. You may join the Risk Metrics Subgroup listserve by contacting Julie Young at the SOA (*jyoung@soa.org*). The listserve provides its members with the conference call dates/times, meeting materials, and minutes to the meetings.
—Fred Tavan

Economic Capital Subgroup

The Economic Capital Calculations and Allocation (ECCA) subgroup has been very productive in its two years of existence. It has been a vital forum for the exchange of views and news regarding both the development of economic capital (EC) as a concept and its acceptance in practical settings.

Under the leadership of Hubert Mueller, the ECCA subgroup produced an ECCA specialty guide, which can be accessed from the ECCA Web page at ***http://www.soa.org/sections/rmtf/rmtf_ecca.html***. The specialty guide is an overview of several aspects of economic capital. It is a great starting point, but it also situates economic capital in the context of its many possible uses, going so far as even offering alternative definitions that are currently in use.

The body of the document is very straightforward, while the annotated bibliography provides thoughtful guidance to those seeking more in-depth treatment of particular topics. The body of the document treats economic capital primarily from a practical viewpoint, while the bibliography includes resources that can offer more rigorous theoretical treatment. Many people contributed to the review of the literature covered in the bibliography. The annotations offer meaningful guidance regarding how helpful each publication might be toward meeting particular needs. Brett Roush not only contributed to the annotations, but also brought the bibliography to life as a high-quality, finished product.

It is no surprise that the ECCA specialty guide has been included in the syllabus for the new SOA Risk Management exam, which will be offered this fall under the Investment Track.

We included non-actuaries in the ECCA subgroup, particularly representatives of all major rating agencies, whose insights and updates expanded members' perspectives. It also became apparent that all rating agencies are very interested in developments in this area.

We found that there were many people thirsting for knowledge about practical approaches to ECCA. We agreed that it was difficult to extract from the available literature specific methodologies that could be generalized or even compared. It seemed as though each demonstration was either too specialized and included too many non-transferable assumptions or was just too complicated to break down into comparable elements.

We attempted to enlist the help of practitioners who would apply their ECCA methodology to relatively simple sample case studies, so that the differences could be compared and explained. What we found was that most practitioners either had not yet found just the right method to meet their own needs, or were not yet ready to share them.

We have concluded that the discipline of ECCA is still too immature for us to find meaningful, dependable "best practices" that we can analyze and share in an effort to help actuaries bridge the gap between theory and the "real world." Therefore, we have decided to disband our subgroup for now, with the idea that in 12 to 18 months there may have been sufficient progress in this area to support a survey of best practices.

As evidence that EC is a vital topic that continues to gain attention, Hubert and Brett have provided the following updates regarding recent regulatory efforts to determine risk-based capital, using proprietary company models consistent with the determination of EC.
—Jenny Bowen

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Extreme Value Models (EVM)

The main objective of the Extreme Value Models (EVM) subgroup of the Risk Management Task Force (RMTF) is to enhance the knowledge base of the actuarial profession concerning extreme event risks. Extreme events have very low frequencies (e.g., once-a-century) but extraordinarily high costs. In pursuing this objective, the EVM subgroup has two goals:

- to increase the actuarial profession's awareness of these extreme risks and of the pitfalls of using simplistic methods to assess these risks; and
- to provide education and tools needed to quantify, manage and price the risks associated with extreme-valued outcomes.

At the recent Bowles Symposium on Enterprise Risk Management, jointly sponsored by Georgia State University, the Society of Actuaries and the Casualty Actuarial Society, the EVM subgroup organized an embedded mini-seminar on Extreme Value Theory. Professor H. N. Nagaraja, Ph.D., of Ohio State University and Steve Craighead, FSA, of Nationwide Insurance presented three breakout sessions, instructing attendees about actuarial applications of the theory of order statistics, the three basic extreme value models and their generalization and methods of inference using extreme value models. Handouts from these sessions, including a spreadsheet illustrating the techniques covered, are available on the Web at ***http://www.casact.org/coneduc/erm/2004/handouts/***.

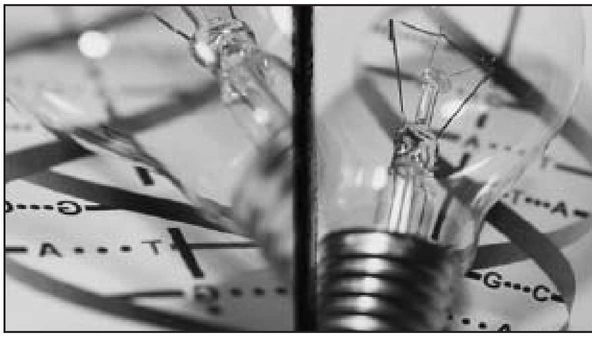
Other resources on extreme risks, including the essays entered into the X-treme Actuary contest sponsored by the EVM subgroup last summer, can be found on the EVM subgroup page of the RMTF section of the Society of Actuaries Web site, ***http://rmtf.soa.org/rmtf_evm.html***.
—Tom Edwalds

Pricing for Risk

The stated goals of the Pricing for Risk subgroup (PFR) are to:

- Evaluate the effectiveness of different pricing techniques as to their ability to capture and quantify the risks associated with the sale and administration of life and annuity products
- Document and provide guidance to actuaries for when a given technique or measure may be appropriate and the limitations of its use

In fall of 2002 the PFR, under the leadership of Todd Henderson, performed a survey of how actuaries currently reflect risk in pricing. The actuaries surveyed are members of the Investment and Individual Life and Annuity Product Development sections. The completed survey and results can be found in the PFR section of the Risk Management Task Force (RMTF) Web site. The general observation is that asset-related risk has a higher tendency to be modeled, but liability-related risk is more often stress tested; relying more heavily on judgment in assessing risk.



The PFR's current proposed objective is to develop a specialty guide that:

- Identifies the common profit measures used in the insurance industry and the common methods for reflecting risk
- Provides actuaries with relevant information on those risks that have not been traditionally considered in their pricing models
- Include recommended readings that provide indications of how to price each of the risks and how they should be incorporated directly and interactively or independently with traditional actuarial risk models
- Identifies gaps in current literature and practice with regard to pricing for risk.

The PFR is currently discussing the scope of the specialty guide; whether it is in the form of an annotated reading list or as comprehensive as the ALM specialty guide. We are also looking into the possibility of funding a research project to develop the specialty guide that the PFR will direct.

The stated goals of the subgroup seem rather daunting and the current objective is a step toward achieving those goals. The results of the survey and the regulatory movement toward stochastic reserving and capital (C3 RBC Phase II, AG 39, etc.) indicate that the goals are relevant. If you feel the same and are interested in participating please e-mail ***pfrlistserv@list.soa.org***. ✦
—Novian Junus