SOCIETY OF ACTUARIES

Article from:

# Risk Management

June 2010 – Issue 19

# Risk Evaluation: What do you CARE?

By Jeremy G.T. Waite and Andy White

**THE GLOBAL FINANCIAL CRISIS REVEALED SOME SIGNIFICANT GAPS IN RISK MANAGEMENT.** One of the contributory factors often singled out as a root cause is the reliance the banking industry placed on sophisticated mathematical models. There are two elements to this issue, firstly the extent and use of the models to make informed decisions, and secondly the models themselves. Mathematical models are deductive by nature, and simplifications of real life. The problems with models can be the premise, the use or the validity/accuracy of the underlying thing it tries to represent. There is scope for fundamental misunderstandings between model creators (and their models) and management who make decisions based upon the outputs. The failure of management to understand the nature of the models and any associated overconfidence in their decision making ability can be addressed, at least in part, by having a Comprehensive Actuarial Risk Evaluation (CARE) performed by an actuary.

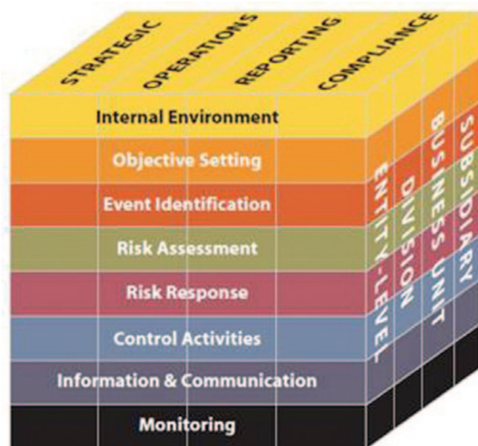
**Jeremy G.T. Waite, FIA, MAAA,** is an executive director at Willis Re in Sydney, Australia. He can be reached at *waitejg@willisre.com*.

**Andy White,** FIA, FIAA, is actuarial manager at QBE Australia Asia Pacific in Sydney, Australia. He can be reached at *andy.white@qbe.com*.

One of the core competencies of actuaries is understanding risk. Actuaries are competent at building models to represent risk. It is crucial however to have a healthy respect for the limitations of any model, and to be able to place the risks in context. Models don't predict the future and don't replace judgment, they merely help gain better insights and understandings as to what can go wrong given the inputs used. As the designers and owners of many risk models, actuaries are well positioned to understand precisely how much reliance should be placed on models and where additional judgment is needed.

The Committee of Sponsoring Organisations of the Treadway Commission (COSO) is a private sector initiative that has a well established ERM framework, as shown in figure 1. The framework is useful as it clearly lays out the multi-dimensional nature of risk and places strategy as the first step of this framework. The CARE can play a role in being objective and independent in the assessment of the risks for the firm, given their context, history, culture and strategic positioning, and works within this framework.

**Figure 1: The COSO ERM framework**




## RISK ASSESSMENTS

Within this article and the CARE paper the definition of risk used is the potential for an outcome with negative consequences. A negative consequence can be the failure to meet objectives, fulfill realistic expectations or take advantage of a positive (profitable) opportunity. To fully evaluate risk we must look at all potential negative outcomes. Narrowly defining risk can make evaluation more convenient, but wrong (e.g., looking for your lost keys under the nearest lamppost).

Many companies mismanage risk using some or all of the below methods:

- Relying on historical data (e.g., house prices will continue to rise)
- Focusing on narrow measures
- Overlooking knowable risks
- Overlooking concealed risks
- Failing to communicate (risk managers/actuaries not communicating the model error well enough)
- Not managing quickly enough—"When the music stops, in terms of liquidity, things will be complicated. But as long as the music is playing, you've got to get up and dance. We're still dancing."—Charles Prince, CEO, Citigroup

"Narrowly defining risk can make evaluation more convenient—but incorrect, like looking for your lost keys under the nearest lamp post as that's where the light is."

The CARE report would provide for a platform to discuss the issues of risk in a company specific context, it can make recommendations and would a useful read for auditors and shareholders alike.

## THE CARE PAPER

A working party of the International Actuarial Association undertook a project to understand what dimensions of risk should be considered in an ERM risk assessment. The working group consisted of 15 actuaries and non-actuaries from five countries. The resulting report it is a working paper not a standard of practice. It is intended to start up a discussion that might someday lead to the establishment of a standard for actuarial risk assessment.

A key component of the CARE paper is the multidimensionality of risk, the dimensions selected in the paper are not intended to be exhaustive, and the key dimensions to consider include:

- Market consistent value vs. fundamental value
- Accounting basis vs. economic basis
- Regulatory measure of risks
- Short-term vs. long-term risks
- Known risks vs. emerging risks
- Frequency risk (earnings volatility) vs. severity risk (solvency)
- Viewed stand-alone vs. full risk portfolio
- Liquidity risk

There is more detail in the paper but the chart below considers briefly the core considered risks. Of course not every single aspect of risk can be considered in every evaluation so the communication of the limitations of any analysis is crucial. This includes avoiding over-reliance on any particular model and abandonment of judgment. Any situations of deficient data should be identified along with any significant assumptions (implicit or explicit) and any areas where models used diverge from reality. It is just as important to consider what is not covered by a model or analysis as it is to understand what is.

| OOMPONENT | CORE CONSIDERED RISKS |
|---|---|
| Market consistent value vs. fundamental value | All businesses use fundamental analysis to make decisions, without it there would be no trading and no market. Market consistent analysis substitutes the analyst's own judgment for that of the market. Where a company has sufficient expertise to refine models and assumptions to reflect a risk to a company's individual profile better than using market assumptions these should be documented and the difference between this and market assumptions should be identified. Market assumptions can also help to identify the view external stakeholders may take to a company's actions. |
| Accounting basis vs. economic basis | Accounting rules can never reflect all of the specifics of a company's performance. The economic view attempts to do this, reflecting the true value creation within the company and reflecting the interplay between risk taken and reward achieved. The accounting basis is however the view of the company seen by shareholders (and other stakeholders) and ignoring this dimension could be at the cost of deviations the cost of capital and business opportunities. |
| Regulatory measures of risk | Regulatory measures of risk and capital are crucial to the ongoing operation of the company. If the firm's view of risk is less than that of the regulator and the firm follows what it believes to be the 'true' value and cost of risk this could lead to problems meeting regulatory standards. If the firm's view of risk is higher than that of the regulator then focusing only on regulatory requirements could miss any risks specific to the institution which are not covered in the regulator's approach. |
| Short-term vs. long-term risks | True value creation requires a view of the ultimate value (i.e., the long term). In reality though companies which become insolvent can rarely trade out of that insolvency. In less extreme circumstances short term volatility in share price & financing costs can have a material impact on a company's performance and cannot be ignored. |

CONTINUED ON PAGE 22

Risk Evaluation: What Do You Care … | from Page 21

| OOMPONENT | CORE CONSIDERED RISKS |
|---|---|
| Known risks vs. emerging risks | There is a degree of Knightian Uncertainty in all risks, rather than binary delineation of known and unknown. Allowing for risks that are unknown can not be an exact science by definition. Consideration should however be given to risks which may fall outside of experience to date and may be toward the unknown end of the continuum of degrees of uncertainty. |
| Frequency risk (earnings volatility) vs. severity risk (solvency) | Statistical techniques work well for high frequency risks which are the risks which will be the most important to the shorter-term time horizons. They do not work as well for low frequency / high severity risks which sit toward the emerging risk end of the spectrum. For these risks other techniques are available such as scenario analysis. The use of judgement is essential for severity and / or unknown risks and the analyst needs to be appropriately sceptical towards model quantification. |
| Viewed stand-alone vs. full risk portfolio | For risk controlling it is usually more practical to set a limit for each risk on a stand-alone basis. For risk pricing stand alone risk levels are often indicative of market pricing. The interaction between risks is also crucial to a company, the difference between the sum of the individual risks and the portfolio view being the diversification benefit. Risk steering is primarily concerned with effective utilization and allocation of any diversification benefit. The diversified view allows management to direct the risk taking of the firm. |
| Liquidity risk | Liquidity risk is different from the accounting, economic or regulatory views of risk, and can be of critical importance (as recent history shows). It involves access to cash or cash equivalents when needed and may differ for different time frames. |

**Figure 2: Description of a CARE Report**

- Purpose of the report
- Qualifications of the actuary preparing the report
- Expected users and usage of the report as well as limitations of the report
- Statement of adherence to actuarial standards
- Discussion of data used for the analysis:
  - Description of methods and assumptions used for the analysis
- Reasons for choosing these methods and assumptions
- Presentation of results of evaluations:
  - Risk types of various risks by risk measures
  - Ranking of various risks by risks measures
  - Comparisons of different risk measures
- Conclusions and recommendations

## FURTHER DETAIL

The view put forward here is of the actuary as the professional who can and will deal with the multi dimensional characteristics of risk evaluation utilizing a combination of complex models, stress tests and professional judgment with appropriate consideration of the limitations of each approach.

The full paper produced by the working party is available online at *http://www.actuaries.org/CTTEES_FINRISKS/Documents/CARE_EN.pdf.*

This report is intended to be the start of a discussion of what would encompass the unique role of the actuary in the area of risk evaluation. The report has just been issued by the International Actuarial Association. The working group looks forward to the reactions to this vision from those within and outside of the actuarial profession. ■