Company Management's Reaction Capacity and Management Actions: Need and Difficulty to Take These into Account in ORSA

by Stephane Loisel
Translation by David Schraub and Pierre Laurin

One goal of Own Risk Solvency Assessment (ORSA) is to estimate the present and future solvency of an insurance company. ORSA should be framed within a prospective and multi-period process with a projection period length comprised of between three and 20 years, depending on the company's business, but most often between five and 20 years. Hence, this allows ORSA to be the link between the enterprise risk management (ERM) framework and the one-year horizon solvency framework. Indeed, one-year security/solvency usually goes against profitability. On a 10-year horizon, a solvency requirement partially depends upon minimum financial performance of the company: good performance, while mainly benefiting shareholders, helps build safety nets that should benefit policyholders but can also be used as risk-absorbing mechanisms in unfavorable events. Conversely, a less profitable company could stay for several years in a riskier zone where it could be challenged by unanticipated events. The multi-period aspect allows reconciling profitability and value creation with solvency and stability. Further, ORSA should allow the demonstration of the advantages of some products whose profitability emerges over time, and which are often unfavorably treated by capital allocation and standard performance measurement approaches. ORSA should reflect the positive impact of a tailored ERM process and should take part in the risk appetite and risk limit discussion.

Reinsurance strategies are defined at the beginning of each year for a one-year period, except potential non-automatic reinstatements. The management actions related to the investment side—the strategic asset allocation, asset-liability management (ALM) and the hedging of some financial risks—are usually projected through the entire duration of the portfolio under the current strategies.

One should already theoretically take leadership team decisions into account within internal models, but it is essential to include them in the multi-period ORSA context: stopping a non-profitable, underfunded or risky business; limiting the scope of a line of business; or increasing its risk management allocation will have a much more significant impact on a five- to 10-year horizon.

The forecasted level of solvency and the quality of the risk management process will therefore rely in part on a solid knowledge of risks and products, but also on the ability of the leadership team to react quickly enough in adverse situations, while handling the risk of false positive alarm signals.

This quick intervention ability raises some statistical issues related to early warning signals of trend shift. These were studied by the Russian school of probability theory in the Cold War era: How to point out a signal shift on a radar screen, which corresponds to a nuclear strike, early enough to allow response while limiting the risk of a false positive that could trigger a nuclear war due to a too-long Brownian excursion. El Karoui et al. (2012) show that a longevity trend shift usually requires 10 years of data to be detected statistically. This shows the practical limitation of yearly cycle review for these kinds of risks.

Fast turnaround requires both a well-established risk monitoring process within the company, as well as expertise and experience of the management team. ORSA should evaluate qualitatively these processes, as well as the ability of senior management to make knowledgeable strategic decisions: exiting a market quickly

Company Management's ... *by Stephane Loisel*

enough in case of profitability drop and timely selling the right quantity of an asset after a significant natural disaster rely both on the expertise of the leadership team and its advisors, and also on the tool timely quantifying the loss.

One should not model management behavior but rather evaluate its ability for prompt reaction and its potential mitigation impact on losses under specific scenarios.

To that purpose, bunkering exercises (see Cousin et al. 2012) allow requesting leaders to react under various scenarios and analyze their reactions. Neurologist Klaus Wunderlich and co-authors (Wunderlich et al. 2011) demonstrated the causation and correlation between risks are best assimilated through experience and unconscious process rather than analytical process. These types of techniques could be more fruitful than advanced technical education on internal models. According to Kahneman et al. (1982), most individuals generally understand the directional impact of new information but underestimate its magnitude when analyzing a probabilistic puzzle. Through tailored management games, leaders should be allowed to build their own frame of reference within the new solvency framework (see Loisel and Védani 2012). For example, a manager generally knows that the Solvency II standard formula tends to penalize nonproportional reinsurance strategies, but he will need reference points in order to evaluate the magnitude.

It is generally difficult or inefficient to justify a shift in the whole pricing process to take into account an unknown or unobserved threat, even if it is likely to occur. Similarly, fair value dogma hardly allows any shift from market value even when it lacks credibility. This implies potential lag in reaction time that should not be underestimated.

Should ORSA and an internal model or standard formula (RBC, Solvency II, or other) have the same approach on the first projection period? It may be useful to perform nested multi-period simulation while looking for risks that could create adverse scenarios and mitigation actions. However, computing times may be prohibitive, and one should be careful about this anchoring bias. A less granular and less constrained but more creative approach through identification of risk sources and management actions sounds more relevant to me. Expert judgment should have a place of choice. One should not hide behind models calibrated on historical data for some risks, like massive surrenders, but answer questions like: Do I address policyholder expectations in this context? What type of other products could they turn to? ORSA should include a balance of qualitative and quantitative sections; the deep knowledge of the business, the underwriting process, the adverse selection bias and the market driver should prevail over overengineered models. An interesting exercise is to request leaders and risk managers to identify the 10 main risks the company faces in the next five years. This allows the emergence of various viewpoints from various groups (see works from David Ingram on group sociology).

ORSA should include some thoughts on procyclical risks for the company and the industry. If counter-cyclical mechanisms are included by some regulators for a few financial risks, other activities could be threatened by a double whammy effect: for example, a natural disaster may be followed by an increase in the 1-in-200-year-event level.

ORSA content should depend on the specific audience and who would have access to the information: Many details on strategy should remain private information

Company Management's ... *by Stephane Loisel*

regardless of potential merger and acquisition (M&A) risks being quite important. This limits the prospective nature of ORSA that requires updates after each significant strategic shift.

ORSA suffers from moral hazard as does every other risk reporting framework: One sometimes fears that reporting tax, regulatory or legal risk could be misinterpreted as admission of guilt. How to evaluate the risk of failing the internal model validation and how to communicate to the supervisor the lobbying capacity of a firm or of a group to influence public institutions and avoid or mitigate adverse regulation shift? Just mentioning a risk might sometimes lead to its occurrence....

A metaphoric example for conclusion: Instead of building an extremely complex model through space and time to predict storm formation over a decade for several air traffic lanes, ORSA should rather identify the characteristics of potential downside environments and the ability for pilots to maneuver around or through these, limiting negative impact thanks to experience and training and thanks to dashboards and early warning systems available. Actuaries have a role to play by teaming with other professions to build realistic flight simulators that allow educating the managers to fly new planes and to anticipate potential conflict inside the cockpit or with passengers in a crisis situation, but also to take into account both the reaction time of those pilots and the efficiency of their operational support system in the completion of new safety air traffic regulations.

References

Cousin, A., J-P. Laurent, V. Maume-Deschamps, F. Planchet, B. Rey-Fournier and D. Rullière. 2012. "Point Méthodologique pour le Bunkering: Regroupement des Scénarios et Risk Appetite." Cahiers de Recherche de l'ISFA 2012-8.

El Karoui, N., S. Loisel, C. Mazza and Y. Salhi. 2012. "Fast Detection of Changes in Longevity Trends." Cahiers de Recherche de l'ISFA 2012-11.

Kahneman, D., P. Slovic and A. Tversky. 1982. *Judgment Under Uncertainty: Heuristics and Biases*. New York: Cambridge University Press.

Loisel, S. and J. Védani. 2012. "Les Dirigeants et l'ORSA." Cahiers de Recherche de l'ISFA 2012-12.

Underwood, A. and D. Ingram. 2012. "The ERM Rainbow," to appear in *Bulletin Français d'Actuariat*.

Wunderlich, K., M. Symmonds, P. Bossaerts and R. Dolan. 2011. "Hedging Your Bets by Learning Reward Correlations in the Human Brain." *Neuron*, Vol. 71-6, 1141–1152.

Stephane Loisel is a professor at the University of Lyon in Lyon, France. She can be reached at *stephane.loisel@univ-lyon1.fr.*