

ASIA **ERM** NEWSLETTER



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MILLIMAN ASIA ERM NEWSLETTER

WE ARE PLEASED TO PRESENT THE INAUGURAL *MILLIMAN ASIA ERM NEWSLETTER*. THROUGH THIS PUBLICATION, WE AIM TO BRING YOU THE LATEST DEVELOPMENTS AND INSIGHTS INTO THE BURNING ISSUES FROM THE RAPIDLY EVOLVING FIELD OF ENTERPRISE RISK MANAGEMENT (ERM) FROM ACROSS THE ASIA PACIFIC REGION.

ERM activity in the insurance sector is accelerating at a rapid pace around the region, especially since a number of regulators have introduced Own Risk and Solvency Assessments (ORSA). Even in countries where ORSA has not been introduced yet, there is an increased interest and engagement with risk management as managers come to realise the value that ERM can add to their business through enhanced business resilience.

Over the past year, the attendance at ERM seminars has increased rapidly across the region. Milliman has sponsored ERM seminars in the region and our ERM experts have spoken at conferences held in Australia, China, India, Singapore and Thailand.

This issue covers the following:

- An update on the ERM related regulatory and market developments from India, Singapore and Thailand.
- An article by Neil Cante on the complexity of risk in any business and how best to capture this complexity in the ORSA.

We hope you find this first edition interesting, and we look forward to receiving your feedback.



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MANAGING DIRECTOR
SOUTHEAST ASIA
& INDIA LIFE



MICHAEL DALY
PRINCIPAL AND
CONSULTING ACTUARY



WING WONG
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COUNTRY SPOTLIGHT

INDIA

SIGNIFICANT RISK EVENTS

Following a *sting* by online magazine Cobrapost relating to breaches of anti-money laundering (AML) and know your customer (KYC) guidelines by leading banks and their life insurance partners, the Reserve Bank of India (RBI) has levied heavy fines on 31 banks and has sent out cautionary letters to the remaining banks operating in India. The Insurance Regulatory and Development Authority (IRDA) has also initiated probes against the insurance companies named in the sting. Leading banks and insurance companies have set up internal investigation teams and have started suspending errant employees.

The IRDA has also imposed a fine of INR31 million on Bajaj Allianz Life for violation of the distributor compensation norms and its refusal to honour policyholder claims. This is the highest-ever penalty handed out by the IRDA and is part of its recent crack-down on breaches by insurers on its regulations on distributor compensation.

Devastating floods in the Northern state of Uttarakhand have led to large-scale destruction of life, property, vehicles and projects in the state. Insurance companies have set up simplified claims settlement processes for the victims/beneficiaries of these floods. While insurance companies are still in the process of settling claims, initial loss estimates from general insurance companies are as high as INR30 billion.

Policyholder complaints against life insurance companies have grown 9.2% over the past year. In the same period, complaints against general insurance companies have declined by 15%. The nature of complaints includes mis-selling, sales related fraud and non-refund of premiums on policies cancelled during the free-look period.

REGULATIONS

The solvency requirements for insurance companies in India are currently calculated using a formula-based approach. Since March 2010, insurance companies have been required to submit their economic capital calculations, based on draft guidelines issued by the IRDA, along with their annual statutory submissions. However, in the midst of continuing product related regulations and in the absence of a member actuary at the IRDA, these guidelines are yet to be finalised.

With the aim of expanding risk management practices in the insurance industry, the IRDA has issued guidelines which extend the definition of *key persons* to include the positions of *chief risk officer* and *compliance officer*. Apart from these two positions, the definition of key persons already includes the *chief executive officer*, *chief marketing officer*, *appointed actuary*, *chief investment officer*, *chief of internal audit* and *chief finance officer* positions. Insurance companies are required to submit the details of the key persons to the IRDA within 30 days of the issuance of these guidelines and any changes to the key persons or their particulars on a regular basis. Individuals are allowed to hold more than one key person position as long as there is no potential conflict of interest.

CONFERENCES AND EVENTS

Milliman's Joshua Corrigan recently presented at the Second Seminar on Enterprise Risk Management (ERM) held in Gurgaon by the Institute of Actuaries of India. The speakers at this well-attended seminar included key risk professionals from India and abroad, who presented on hot topics in the area of ERM. Josh's presentation on the *Innovations in integrating operational risk measurement and management* was thought provoking and was very well received by the attendees.

SINGAPORE

IMF ASSESSMENT

As part of its Financial Stability Assessment Program (FSAP), the International Monetary Fund (IMF) has rated the regulation and supervision of Singapore's financial sector as being among the best globally. However, it has also highlighted that Singapore is exposed to a broad array of domestic and global risks, especially in light of its interconnectedness with other financial centres.

Domestically, the rapid growth of credit and real estate prices in recent years has been identified as a cause of vulnerability. Globally, possible spill-overs from a future tightening of US monetary policy, an economic slowdown in China or a deterioration of economic conditions in Europe are seen as the main risks to Singapore's financial system.

With regard to the insurance sector, the report identified potential vulnerabilities from guaranteed returns under some policies, relatively high exposure to equities and exposure to catastrophe risks arising from the rapid growth in the offshore sector.

While the IMF concluded in its report that these risks are manageable based on stress test results and various actions taken by the Monetary Authority of Singapore (MAS) to address these risks, it still recommends continuous monitoring of the economic and market conditions and further strengthening of regulation and supervision.

REGULATORY DEVELOPMENTS

MAS Notice 126 was introduced by the MAS on 2 April 2013. This notice introduces ERM requirements on the insurance industry, and sets out both mandatory requirements and non-mandatory standards for all registered insurers, including the need to establish an ERM framework, a process for risk identification and risk measurement, the establishment of a risk management policy, establishing and maintaining a risk tolerance statement, a process for ensuring risk responsiveness, the establishment of feedback loop and a formal requirement to perform an ORSA. Based on the MAS's schedule, Tier 1 insurers are required to submit a board-approved ORSA report to the regulator on an annual basis, starting 31 December 2014. Other insurers need to submit their report once every three years, starting 31 December 2015 (with a need to maintain an internal ORSA from 2014).

In light of evolving market practices and global regulatory developments, the MAS is embarking on a review of the current risk-based capital (RBC) framework, which was introduced in Singapore in 2004. The MAS sent out a consultation paper regarding this review (termed as *RBC2 review*) to the industry in June 2012. This consultation paper set out proposals for the new RBC2 framework which was intended to capture some of the recent regulatory developments in some of the more advanced markets (e.g. Solvency II in Europe) and to better reflect the risks insurers face in the proposed capital and solvency requirements. After the consultation paper was issued, the MAS received feedback from the industry, through a working party formed by the Life Insurance Association of Singapore (LIA) and other sources. Based on a recent update from the MAS, insurers will be asked to perform a quantitative impact study (QIS) on the proposed changes in the first quarter of 2014, following which we can expect the MAS to refine the proposed framework before formal introduction later this year.

THAILAND

NATURAL DISASTERS

The large scale devastation caused by the 2011 floods took the insurance industry by surprise. Following the event, insurers in Thailand consider floods to be their primary loss drivers, replacing earthquakes and typhoons. Following the floods, several risk management initiatives were launched in Thailand, including the improvement of Thai flood modelling service, and the development of risk mappers to help insurers track and analyse their exposures to flood.

POLITICAL RISK

There have been escalating political tensions and large-scale protests sparked initially over a controversial proposed bill that would have provided amnesty to the deposed former Prime Minister, Thaksin Shinawatra, allowing him to return from self-imposed exile without having to face corruption charges. A general election was held on 2 February 2014, but a boycott of the election by the main opposition party and disruption of the voting process in many areas of the country means that there is uncertainty as to whether the election result will be valid and a new government can be formed. The on-going political standoff threatens to impact currency and financial markets and economic growth, and increases operational risk exposure for companies operating in Thailand. As a consequence, several insurers have been giving more focus to enhancing and testing their business continuity planning procedures.

REGULATORY DEVELOPMENTS

The Office of Insurance Commission (OIC) has taken an active role in recent years in introducing a number of initiatives in the area of ERM:

- In the 2011 Stress Testing Conceptual Paper, four new Insurance Core Principle (ICP) Standards, Guidance and Assessment Methodology have been incorporated. The fundamentals of these ICPs include the understanding of insurance companies' risks, corporate governance and compliance.
- Stress testing was introduced in 2012, and insurance companies are carrying out Quantitative Impact Study (QIS) exercises so that the stress test requirements can be finalised.
- The framework of risk-based capital (RBC) Phase 2, which will make changes to the current RBC framework introduced with effect from September 2011, is currently under consultation with the industry.
- OIC also aims to introduce ORSA as a subsequent component of the Thai solvency framework.

CONFERENCES AND EVENTS

The Thai Life Assurance Association (TLAA) hosted an ORSA conference in Bangkok on 22 November 2013. This was attended by the OIC, TLAA members, senior executives from life insurers in Thailand and risk management practitioners from other Asian markets. Milliman was a co-sponsor of this event, delivering a presentation on innovations in risk management.

MILLIMAN INSIGHT



ALL IN THE RISK MIX

When we look at the risk strategy our business is trying to deliver we see a forest of multiple factors which depend on other factors, which in turn interact with others. It is hard to see the wood for the trees and make sense of it all. Insurance companies are moving into a regulatory regime which requires an Own Risk and Solvency Assessment (ORSA) exercise—a formal assessment of the risks they face, the resources available to meet them and clear communication about how they intend to manage them.

Risk management is an evolving discipline—historically more about hazard avoidance and mitigation but increasingly about insights into business performance and resilience. So how should one go about trying to unearth the uncertainties inherent in a modern insurance company and make sense of them?

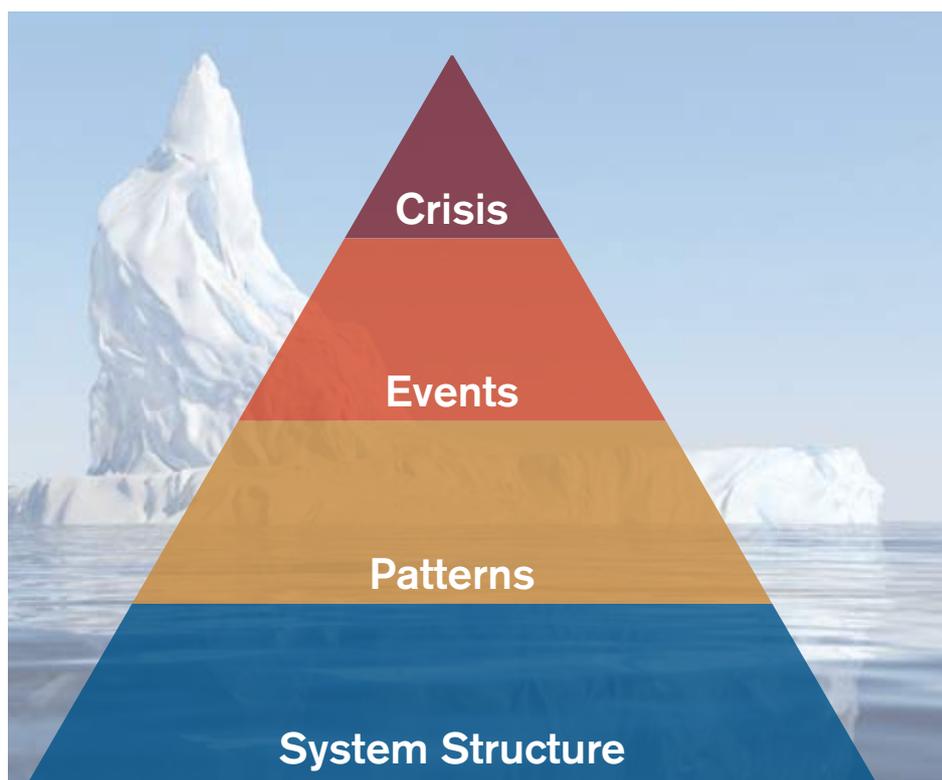
The articulation of risk appetite is at the heart of exercises like ORSA, as it explains the types, and amounts, of uncertainties that you would like to be exposed to in pursuing your chosen strategy, those you will accept as necessary evils and those you would like to avoid. To operationalise the concept, however, it is necessary to understand how those uncertainties arise and assign operational parameters to help the organisation know the boundaries of day-to-day activity. But this is where things get hard—surely there could be a million ways in which profit might not be the figure we had planned?

Complex phenomena have been studied by a number of disciplines outside of the business world and it turns out that the insights from these are helpful for us here.

As described in Allan, Cantle, et. al. (2012), *For complex systems, like an economy or financial organisations, a new paradigm or philosophy is required to understand how the constituent parts interact to create behaviours not predictable from the sum of the parts. Systems theory provides a more robust conceptual framework which views risk as an emerging property arising from the complex and adaptive interactions which occur within companies, sectors and economies.*

People traditionally focus a lot of energy on the visible part of risk and uncertainty—the part above the water in the image. They identify undesirable outcomes crises and seek to identify their causes—the events which lead to them. The information collected at this level is often categorised and stored in databases in the belief that

it can help inform predictions of future trends—a promise it generally fails to deliver on. This failure arises because we are still a way from understanding why these events took place—we simply know that they did and what some of the potential consequences might be. We need to look deeper, and consider the part of the iceberg underneath the water in the image below. We have to seek out the patterns that will help us to make sense of how the events might be related in some way, and ultimately seek an understanding of the underlying mechanism which produces these. People are generally afraid to venture beneath the water as they believe that the complex outcomes we see are surely the result of impenetrably complex dynamics and that describing them at this level would be impossible or prohibitively complex to be useful.



Some important misconceptions and myths about the behaviours of complex systems mean that some of the techniques typically used can actually be dangerously misleading.

The first error is thinking that a complex systems problem is best solved by reducing it to a series of simpler parts. The outcomes of complex systems are emergent, arising from the interactions of many underlying parts, and the understanding of these interactions is crucial to understanding the system overall. So, unlike merely complicated systems, complex ones cannot be reduced and must be studied holistically first. The second major error is ignoring adaptation and basing statistical analyses on historical behaviours which are unlikely to repeat. We therefore need a way to understand what is actually going on before we try to simplify our information or models.

PEOPLE AT THE HEART

There is an inescapable link between people and risk, not least because risk itself is a social construct. Companies are essentially groups of people, all trying to follow processes and procedures to achieve the particular goals of their organisation, introducing myriad complexities as they go about their work. But people are not just passive parts of the system. They are often actively trying to anticipate outcomes and influence them, creating feedback and non-linearities. A lack of complete information and understanding means that human interventions nearly always have unintended consequences.

In trying to simplify the risk problems we face we tend to make assumptions about the behaviours of others. In particular it is often assumed that everyone is behaving rationally and that their behaviours are consistent over time. Neither of these things tend to be true.

People also suffer a number of further cognitive shortcomings when we look at their role in risk assessment. People rely on judgmental heuristics (which are influenced by recent experience) and are fundamentally poor at assessing probability (Fenton and Neil (2012) gives a series of good examples of how people get this wrong) and yet we consistently rely upon expert opinions in our risk management activity—even models calibrated *factually* with historical data are relying upon an expert's opinion that such a trend will continue into the future.

Another big challenge is that stable environments naturally select resources with skills optimised for that environment, reducing future flexibility. This process of specialisation and optimisation forms part of an adaptive cycle (Holling and Gunderson [2002])—as a company becomes increasingly optimised and forgoes resources which assist flexibility it becomes increasingly fragile and exposed to changes in the environment. In areas such as ecology it has increasingly been accepted that resilience is a far more sensible target than optimisation when you are dealing with complex systems, but it does require short-term inefficiency by investing in resources which preserve flexibility.

Culture, or rather organisational behaviour, plays a crucial role in risk management too. The prevailing behavioural environment can have profound impacts on the way in which risks arise and how they are identified, assessed and managed. In particular, there is no single *mood* or culture at any point in time, but rather a dynamic and evolving blend of four risk attitudes as described in Ingram and Thompson (2011):

- Pragmatists who believe that the world is uncertain and unpredictable.
- Conservators whose world belief is of peril and high risk.
- Maximisers who see the world as low risk and fundamentally self-correcting.
- Managers whose world is risky, but not too risky for firms that are guided properly.

In your head you form a view of the world that is helpful in making sense of the complexities around you. It is possible to largely recover these images by reformatting narratives about particular topics as cognitive maps. Each node on the map represents a *concept* mentioned in the narrative and the links between nodes represent the connections that you make between these concepts. So, for example, the sentence *increasing life spans is causing a strain on retirement income* could be represented by the linked nodes *increasing life spans* and *strain on retirement income*.

Such maps can contain hundreds of nodes but the structure of the map lends itself to rigorous analysis which can identify the most connected parts of the narrative (immediately or more globally). These nodes which most often lead to such important concepts can also enable the identification of biases from the respondents and missing elements of the narrative. Narratives from multiple sources can be combined into a single coherent view of the problem.

We therefore need to understand which blend of risk attitudes we have at any point in time and the drivers leading them to change.

It is also important to note the overall culture, or that of subgroups, is an emergent property of the group and is therefore different to how someone might behave on their own. It is important not to *judge* culture against some perceived perfection, but to understand the interaction between it and risk management activity.

HARNESSING EXPERT INPUT

So, people are at the heart of generating complexity and the failure to understand its meaning for risk. All is not lost, however—there is a range of techniques that can be used to make sense of these things.

We have seen that people are not necessarily the best source of information about risk—but they are often the only source of information. This is particularly the case where events are rare or where emerging trends can be imagined to a new conclusion that has not been seen before—historical data will have little or nothing to add to the analysis of such situations and yet these are precisely the ones that most risk managers are faced with on a daily basis. It is possible to recover the collective insights of your experts using cognitive techniques, like cognitive mapping (Eden, 1988) (see above for a brief overview of cognitive mapping), to distil a robust and meaningful insight into what is happening. The use of cognitive maps to capture and analyse the narrative of your experts provides a rigorous way to form a coherent single story. From this you can develop a deep understanding of the most important dynamics of your risk profile to feed into a wide range of risk management activity, including the ORSA.

Forming an understanding of the underlying drivers of uncertainty is crucial if we are to make any kind of progress in assessing the risks that can emerge. In the real world we are nearly always faced with large gaps in our data relating to any but the most frequent observations, so a cognitive method for getting our first understanding of the system is invaluable.

ASSESSING COMPLEX RISKS

There are now a number of additional factors we can consider in trying to assess and understand our risks. First we can attempt to build models which replicate the interesting dynamics that our experts have explained.

The benefits of using a cognitive approach before proceeding to modelling are described, for example, in Cante, Charmaille et al (2012) *financial stresses are serious, but the political and reputational aspects of [the organisation's] critical success factors mean that failure could very well come from other directions... Actuarial models are very powerful... however, for reverse stress testing the challenge is to know which scenarios should be considered... The model simply cannot tell us which scenarios to look at. We must decide which scenarios to look at ourselves and then use the model to evaluate them.*

Assuming we have sufficient data, statistical models may well be capable of mimicking the outcomes but they have little to say about the drivers of such outcomes. As described in Fenton and Neil (2012), it is far more productive to consider causal models, such as Bayesian Networks, which *help us to make sense of how risks emerge, are connected, and how we might represent our control and mitigation of them.* In particular we would like to be consistent in the way that we handle uncertainty when we study our risks, meaning that we have to find a way to incorporate subjective judgments about uncertainty. We also need to be able to revise our views when new evidence is observed.

The Bayesian approach permits a subjective view of uncertainty which enables us to make much better progress with our risk studies than the classic frequentist approach that typical statistics requires.

Processes like ORSA demand rigour in areas where risk management is traditionally weak, such as capturing judgment and expert knowledge about things the data doesn't know. Framing risk using insights from other sciences which embrace complexity, culture and psychology brings the opportunity to add that rigour and also improve the resulting insights obtained.

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THOUGHT LEADERSHIP ON ERM

MILLIMAN'S INDEPENDENT THINKING IS BASED ON STRONG THEORETICAL FOUNDATIONS THAT ALLOW US TO DEVELOP PRAGMATIC, IMPLEMENTABLE SOLUTIONS FOR CLIENTS IN THE ASIA PACIFIC AND AROUND THE WORLD WHO ARE COPING WITH TODAY'S MOST CRITICAL ERM ISSUES. THE FOLLOWING ARTICLES AND PRESENTATIONS HIGHLIGHT SOME OF OUR RECENT WORK.



ORSA: AN INTERNATIONAL REQUIREMENT

Eamonn Phelan and Padraic O'Malley,
4 December 2013

Numerous insurance regulators around the world are introducing ORSA requirements. How do these requirements compare in Europe (through Solvency II), the US and Australia?

Read the full article:

<http://tinyurl.com/kubamb4>



THE ERM JOURNEY

Milliman video

In this short film, Milliman consultants discuss how techniques for analysing organisational structures and processes can increase resilience.

See the video:

<http://tinyurl.com/kfg8c5x>



DYNAMIC POLICYHOLDER BEHAVIOUR AND MANAGEMENT ACTIONS SURVEY REPORT

Dominic Clark, Edward Morgan and Jeremy Kent,
3 October 2013

The results of this survey present current practices for modelling dynamic policyholder behaviour and management actions in Europe, the US and Japan.

Read the full article:

<http://tinyurl.com/kmhj7tq>



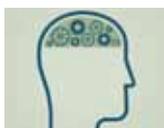
OPERATIONAL RISK MODELLING FRAMEWORK

Joshua Corrigan and Paola Luraschi,
13 February 2013

This article provides an overview of current methods and emerging practices in operational risk across the world.

Read the full article:

<http://tinyurl.com/kfakltp>



PREDICTION VERSUS EXPLANATION

Neil J. Cantle, 4 September 2013

Big data is taking us into a new era of decision-making and learning, insight and explanation.

Read the full article:

<http://tinyurl.com/mc6qrzt>



A REVIEW OF THE USE OF COMPLEX SYSTEMS APPLIED TO RISK APPETITE AND EMERGING RISKS IN ERM PRACTICE

Neil Allan, Neil Cantle, Patrick Godfrey
and Yun Yin

This study aims to apply new thinking and techniques from complex systems science to two key problem areas for risk management and governance: risk appetite and emerging risk.

Read the full article:

<http://tinyurl.com/n8mnu7j>

To learn more about Milliman's ground-breaking research and see other articles on ERM, please visit the Milliman Insight page on our website at: <http://tinyurl.com/mjth4sl>

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