Risk Based Capital in General Insurance

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Introduction

Insolvency of insurance companies have made it imperative for the regulators to reconsider the ways of managing risk in insurance companies and whether insurers are adequately capitalized to face the risk. Globally, as a part of regulatory framework, insurance supervisors are developing solvency standards that will ensure that insurers are adequately capitalized and operate safely thereby reducing the risk of failure of insurance companies. One factor that has emerged out of these discussions is that the risks before insurance companies are varied, complex and dynamic and there is no universal formula that fits all.

This paper discusses the risk before general insurance companies, risk based capital standards adopted by regulators to monitor solvency and the assumptions and implications there off.

The Risk:

Risk is defined as uncertainty, volatility or variability in the expected outcome of the process or event. In his book "Risk, Uncertainty and Profit" F.H. knight differentiates risk as one that is measurable and quantifiable and that which is not measurable and therefore quantifiable as uncertainty. Risk management in the insurance industry refers to managing the risks that are quantifiable and measurable.

Many studies have been carried out and enumerate the various risks before non life insurance companies. What emerges out of these studies is that the three major risk groups that are important to non-life insurance companies are –

- Premium related risk,
- Claims risk, and
- Investment risk.

Premium Risk:

Premium related risk encompasses the risk in the process of product definition, pricing, underwriting, and selling either operating individually or collectively. Given below are some of the underwriting risks facing the insurance companies and the list is by no means exhaustive.

- Flawed Product definition
- Product not be appropriate for the market
- Pricing of the product might not be correct
- Unfavorable Terms and conditions of the product

- Product might not be competitive
- Lenience in underwriting
- Adverse selection
- Inappropriate discounts
- Change in market, economy, regulation and judicial decisions and
- Inability to reach the project sales volume
- Inadequate reinsurance
- Inability to get reinsurance cover

Claims Risk:
Claims risks are those risks involved in the claims process such as claim notification, adjudication, settlement, reserving, litigation and recovery consisting of

- Increased Severity
- frequency of claims high above the expectation
- Increase in fraudulent claims
- Reporting delays
- Judicial decision adversely impacting the claims
- Latent claims
- Catastrophes
- Failure of reinsurers
- Accumulation of risk
- Expense risk

Investment Risk:
Investment risk is the risk of an adverse movement in the value of a general insurer's assets or off-balance sheet exposures which includes

- Liquidity risk
- Market risk
- Credit risk
- Cash flow
- Security of capital

Insurance companies manage these risks by

- diversification: - by country, currency, industry, classes, assets
- reinsurance,
- matching and hedging of assets,
- good management information system and
- internal control mechanisms

Risk, Capital and Solvency

Solvency is the ability of an entity to meet maturing obligations as they fall due. Solvency is measured by excess of assets over liability, such that the assets would be able to cover unforeseen liabilities also. The solvency capital acts as a cushion against the unforeseen losses.

The magnitude of unforeseen liabilities before the insurance companies vary by classes of business written, business mix, size of the company, strategy adopted, management excellence, geographical spread and other external factors. Individually and collectively these aspects of insurance business are the cause of many of the risk before the insurance companies.

The link between the risk and capital and change in the risk profile of insurance companies over a period of time has resulted in the need for reviewing the existing solvency standards and revising the same in accordance with the reality.

A Survey of Risk Based Capital standards:

The solvency standards adopted by a few regulators around the world are outlined below:

USA:
In the US Risk Based Capital (RBC) is the solvency standard for non-life insurers. Risk factors are decided based on the company's own experience, with the stress on underwriting risk. The building block of RBC are asset risk, credit risk, loss reserve risk and written premium risk. A factor is assigned to the above risk categories to determine risk capital. Each risk category is then combined according to a formula that considers covariance between the categories to arrive at the RBC. RBC is compared with actual adjusted capital to determine the solvency of the company and acts as a guidepost for early intervention by the regulators.

Canada:
In Canada three components of risk namely – unpaid claims and unearned premiums, premiums written and claims incurred are the factors that decide solvency capital.

The margin of admitted assets over liability will be the highest of the three

- 15% of unearned premiums and outstanding claims,
- 15% of gross premium volume in the preceding 12 months and
- 22% of average gross claims incurred over the 3 preceding Years

In each case an adjustment is made for reinsurance of up to 50% of the gross margin requirement.

UK:

In UK, FSA requires insurers to calculate Minimum Capital Requirement (MCR) and Enhanced Capital Requirement (ECR)

For general insurers, the MCR is the greater of the General Insurance Capital requirement (GICR) and an absolute amount set by the EU also known as the Minimum Guarantee Fund (MGF).

The GICR is calculated as the higher of the premiums amount, the claims amount and the brought forward amount where

- premium amount is calculated as 18% of first 50 million euro of written premiums in last year, 16% thereafter multiplied by net/gross claims incurred in last 3 years (minimum 50%) and,
- claim amount as 26% of first 35 million euro of 3-year average incurred claims, 23% thereafter multiplied by net/gross claims incurred in last 3 years (minimum 50%)

Enhanced Capital Requirements (ECR) is more risk-sensitive and considers two categories of risks

- asset related risk that includes credit and market risk
- insurance related risk comprising technical provision risk factors and net premium written risk factors

Loss ratio volatility by line of business is incorporated by the need to carry additional reserve based on the class of business.

ECR is presently only a reporting requirement rather than a hard test.

In addition insures are also required to undertake individual capital assessment (ICA) based on their risk profile and FSA also gives Individual Capital Guidance (ICG) based on its estimate.

Europe - Solvency II

There are two levels of capital requirements under Solvency II, the Solvency Capital Requirement (SCR) and the Minimum Capital Requirement (MCR). The SCR is a target level of capital while the MCR is a minimum threshold level.

The SCR may be calculated using the Standard Approach or company internal models. The standard approach will be the bench mark for SCR comparison with internal models. Solvency II is still a work in process and internal models and SCR are still under consultation.

Australia – ICA

In Australia, Minimum capital requirement which is aligned with the risk profile of the insurance company can be decided either based on the internal model or prudential standard subject to a minimum threshold level.

The risk factors considered are:

- Insurance risk,
- Investment risk and
- Concentration risk.

Insurance Risk has two components: a charge in respect of Outstanding Claims Risk and a charge in respect of Premiums Liability Risk.

The Outstanding Claims Capital Charge is determined as the sum, over all classes of business of the insurer, of the value of the net outstanding claims liabilities for each class multiplied by the appropriate Outstanding Claims Capital Factor for that class.

The Premiums Liability Capital Charge is determined as the sum, over all classes of business of the insurer, of the net premiums liabilities for each class multiplied by the appropriate Premiums Liability Capital Factor for that class. Currently all classes of business are classified in to three groups. The total Insurance Risk Capital Charge is the sum of the capital charge for each of the two components.

Investment Risk is the risk of an adverse movement in the value of a general insurer's assets or off-balance sheet exposures); the Investment Risk Capital Charge is determined as the sum, across all assets and certain off-balance sheet exposures, of the value of each investment multiplied by the relevant Investment Capital Factor for that investment.

The Concentration Risk Capital Charge relates to the risk associated with an accumulation of exposures to a single catastrophic event at a single site. The Concentration Risk Capital Charge is set equal to the insurer's Maximum Event Retention (MER), plus the cost of one reinstatement of the catastrophe reinsurance cover in cases where the reinstatement reinsurance cover has not been pre-paid by the insurer.

Thus, the common features under solvency standards are:

- Solvency capital is set in two tiers – tier 1 which is a minimum absolute amount of required capital and tier II which is a risk based capital requirement
- Premium Risk, Claims Risk and Investment Risk are the three major risk groups considered for solvency calculation.
- Current formula for risk quantification works on empirical data, simple and provides valuable insight.
- Factor based method is the most prevalent method.
- In addition to the common standards companies are allowed to develop their own internal models for measuring and monitoring the risk subject to the approval of internal models by the regulators.
- There is no common standard adopted between the countries to account for additional capital based on the portfolio class of risk. The additional risk capital for class of business varies from nil to % based capital based on the class of business written.

While these measures reduce the risk and provide for a capital base in line with the risk profile of the insurance companies there are certain inherent challenges that the insurance industry has to contemplate.

Assumptions & Implications:

Insurance company failures are costly compared to other industries and insolvency in insurance industry is happening despite the precautions by the industry. While risk based capital is a step above the erstwhile absolute amount of stipulated capital, it has its own challenge which is how do we measure risk precisely?

Expected losses are amenable to statistical valuation. It is unexpected losses that pose real threat to solvency. Multiplicity of risk factors that are volatile and operate in tandem is what industry needs to be concerned about.

Discussed below are some of the points that need to be examined towards this purpose.

Ensuring Fairness and Adequacy of Estimates:
The existing risk calculation presumes the correctness of the estimate of unearned premium reserve (UPR), loss reserve, and incurred but not reported (IBNR). The problem arises when the margin of error/deviation between the estimate and actual is wide. If the basic estimation is incorrect obviously the additional risk provision which is based on the estimated known liabilities might not be right and hence under reserving and inadequacy of the capital occurs at two levels.

Historically under reserving has been the major reason for many of the insolvencies in insurance world. According to A.M Best report on Insolvency, 27% of insolvencies have been attributed to non-identifiable risk and 22% to insufficient premium and reserves. Recent revalidation of reserve estimates by major insurers also exposes the weakness of the industry. As such back testing of reserves need to be carried out to ensure adequacy of capital.

So the major challenge is how does the industry ensure that liability estimate is fair and adequate? How to ensure self regulation by the insurers prior to regulation by the regulators?

Catastrophe loss a special challenge
Catastrophe models are used extensively in the industry to predict cat losses. These models depend on the historical data on catastrophe events and loss data to predict future events. These data contain errors and are neither adequate nor complete. For example errors on earthquake are subject to errors with respect to location, time, magnitude, and loss suffered.

There is also a large measure of uncertainty associated with the damage calculations. Structural changes by way of increased population density in the disaster prone areas, development of mega cities, and inflation in the property value have occurred over a period of time. This has resulted in scenario where severity and frequency of claims per event has increased.

The frequency of cat losses have increased and timing between the catastrophes are reducing. Recent years have witnessed high impact low probability risk events and events that defy probability estimate. Climate change is predicted to have an adverse impact in the insurance industry though empirical evidence is yet to be available

Flood damages are increasing around the world. Excessive rainfall leading to flood is becoming an annual future in many parts of the world in the last few years.

The question here is should the industry re-examine the cat risk. Should catastrophe models be recalibrated? How do we bring the entire globe under the modeling perspective? Considering

the uncertainty in cat loss prediction and high margin of error would additional risk capital be called for?

Increase in terrorism across the globe

Post 9/11 the industry has woken up to the horrors and likely losses arising from terrorism. Terrorist activity post millennium has increased changing the loss distribution. Terrorist favored spots are generally crowded and populated areas such as trains, shopping malls, tourist destination and business centers which pose accumulation risk. Spate of train bombs in cities such as London, Spain and Mumbai within last two years has killed hundreds and injured thousands. No geographical area seems to be spared questioning the wisdom of geographical spread as a tool for risk reduction. Unlike cat losses where there is historical data, the industry lacks expertise to estimate maximum probable loss from terrorism.

How do we quantify terrorism risk is the question that has to answered prior to deciding on the capital to cover terrorism risk.

Accumulation Risk
Mega corporations have thousands of people working under one roof. Malls, sports events and exhibitions attract people in thousands. Any loss producing event will have impact across multiple portfolios say property, liability, personal accident, health and life insurance portfolio simultaneously and hence the impact to the industry could be much more than expected.

Accumulation risk needs to projected and provided for appropriately.

Change in internal practice:
A policy or procedural change in operation of the company could project a change in risk profile without actual change in the risk. To give an example in the case of long-tail liability claims, the practice of not discounting the claim to discounting or variation in the discount ratio could modify the risk profile and hence the required capital.

The insurance industry has to responsibility to determine the risk from above perils and provide for the same.

Conclusion:

While it might not be prudent to provide capital for all the above risks, the insurers companies are to have a framework designed to mitigate the impact of risk when these risk materializes. The time lag between the manifestation of event generating loss and reaction needs to be minimized. The emphasis should be on the ability to bring in additional capital if needed to meet liabilities, and quick response time.

The management of the companies needs to be proactive in visualizing the structural changes in risk and prepare adequately for the same.

A business continuity plan in the case of worst case scenario and plan for sourcing of additional capital has to be available with the insurance companies

To quote Peter Bernstein "The essence of risk management lies in maximizing the areas where we have some control over the outcome while minimizing the areas where we have absolutely no control over the outcome and the linkage between effect and cause is hidden from us." The current focus of industry is on areas where risk can be quantified and monitored. This is effectively done at the company level, and the industry as a whole should gear up to effectively manage future uncertainties.

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Karpagam Sankaranarayanan has over 20 years cross functional experience across banking, insurance, and IT industry. In Insurance she has wide experience in underwriting, rating, policy administration, account management, risk assessment, portfolio planning, and claims management operations of general insurance business. She has an all round experience in commercial, personal and health insurance. She is also aware of regulatory constraints, industry trends and standards and the issues facing the insurance industry.

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