

*In the case where the traditional insurance market cannot provide insurance cover or where the cost of traditional cover is too expensive, finite risk insurance, namely insurance mechanisms which provide continuous and full protection to a client for a multi-year period of time at a premium that is payable in periodic instalments and/or annually in advance, fills the gap.*

*Warren Koch, Senior Actuarial Analyst of Centriq Insurance elaborates on the actuarial methodologies insurers use to effectively price and structure finite risk.*

Finite risk insurance programmes lend themselves to high severity, low frequency loss distributions where losses are expected once or twice every three to five years, but where the premiums are spread consistently and annually over the full three to five year multi-period, hence the term “spread loss” insurance.

As a result of the infrequent and irregular loss patterns, the actual data analysis and subsequent calibrations speak to a process that cannot always follow a strict approach, but rather a means to an end approach. Ideally ground up individual loss data is required for at least the last five years, but this is often difficult if not impossible to obtain. There are typically two elements to the core loss data, namely:

- Losses within the traditional insurance deductibles/excesses; and
- Losses above the deductibles

Losses below the deductibles are paid by the insured who may not have accurately and completely recorded these losses. Losses above the deductible are paid by the relevant insurers at the time, who may have subsequently changed and even the intermediary who typically could be relied on to retain and record information that may have changed over the prior periods.

As the experienced losses are generally few and far between, an understanding and analysis of the exposures and their relationship to experienced losses is critical. This is also difficult to obtain with the desired level of accuracy as companies often experience restructuring or mergers/acquisitions over the retrospective periods which change the exposures.

To model the expected outcome of a finite risk structure, a statistical curve reflecting the experienced losses adjusted by inflation needs to be overlaid with a curve reflecting the exposures being covered.

The exposure calibration, however, is more difficult to calculate than the experience calibration, as historically, only long playing reinsurers had the 30+ years of exposure curves to be referenced to that particular risk.

Failing the ability to obtain the appropriate exposure curve, one can ‘force fit’ a parametric distribution to the exposure model points based on the various sum insured and the Maximum Probable Losses typically contained within an insurance survey conducted by an experienced surveyor. The analysis of the experience of losses is used to understand the

patterns of volatility and seasonality, while the analysis of the exposures is used to understand the potential quantum of loss.

When back-testing, the method of converging experience and exposure curves often yield more prudent expected results as opposed to merely taking a single distribution derived from the experience analysis and shifting the curve tail out to accommodate losses to the maximum exposure. The combined fitted curve is then used to project the expected three to five years of possible expected and worst case losses modelling at least 10 000 scenarios ensuring sufficient convergence, resulting in a more accurate determination of the underwriting, income statement and credit risk impact of the structure.

Predicting the expected losses is a critical element of structuring the spread loss at the right level and appropriately pricing the structure adequately to compensate for all the risks. Lack of historical data makes the reliable prediction of losses extremely difficult and it is only through relevant experience that this can be performed with any degree of confidence.