

Under starter's orders

John Stroughair and **Ben Brookes** of modelling firm Risk Management Solutions (RMS) look at the pros and cons of indemnity and parametric triggers and ask what is hindering the growth of the ILS market?

The last decade has witnessed a dramatic increase in the volume of insurance-related risk transferred to the capital markets, mostly through insurance linked securities (ILS) and – more specifically for natural catastrophe risk – through cat bonds. Shifting risk through these vehicles instead of traditional reinsurance offers the industry access to a large pool of capital, and because insurance risk is largely uncorrelated to other assets it is an attractive proposition for investors.

Yet, despite this increase and the symbiotic relationship that ILS creates for the insurance and capital markets, less than 12 percent of total natural catastrophe risk is currently being securitised, even though it would be economically rational for it to be significantly more (see chart right). So what is hindering the growth of the ILS market? The evidence points to both cyclical and structural factors.

Obstacles to growth

By historical standards, the reinsurance market has been soft, so the reduced rates on offer means it has been temporarily cheaper to transfer risk into the reinsurance markets than to the capital markets. Additionally, the major disruption to the global credit markets has generated many mis-pricing opportunities for traditional assets, absorbing the attention of investors who would otherwise consider investing in ILS.

These factors can be expected to change over time, but there are more entrenched, institutional barriers that have fettered the

convergence of the two markets. Firstly, it is currently relatively complex and expensive to issue a cat bond, and these frictional costs dilute the economic advantages that ILS should enjoy in comparison to reinsurance. Secondly, ILS is still viewed as an exotic asset class, so many of the funds that invest are effectively reinsurers in a different legal form. These funds hold such highly concentrated positions in insurance risk that they require similar rates of return to reinsurers, again eroding the economic advantage of ILS.

The cyclical disadvantages of ILS will reduce naturally as the reinsurance market turns and the credit crisis unwinds. The structural factors represent an opportunity to find new gateways to grow the market by reducing the cost and complexity of issuing a cat bond and demystifying cat bonds for sophisticated mainstream investors.

ILS mechanics

While the structure of a cat bond transaction is more complicated than

a reinsurance contract, the economic purpose for the ceding (re)insurance company is basically the same. The first stage in issuing a cat bond is to establish a special purpose vehicle (SPV) to provide reinsurance coverage to the sponsor of the transaction in return for regular premium payments. The SPV funds itself by issuing a cat bond to the capital markets, which pays investors a regular coupon of LIBOR (London Interbank Offered Rate) plus a spread determined by the inherent level of risk in the transaction. The principal amount will be repaid at the end of the transaction so long as the triggering event upon which the bond is structured has not occurred e.g. a windstorm or earthquake.

The proceeds from the cat bond issuance are invested in low-risk, highly liquid assets, and the returns from these assets are swapped, through a total return swap, for LIBOR. Together, the ceding insurer's premium payments and the swapped investment returns generate the cash-flow needed to pay the bond's coupons.

Trigger-happy

An ILS can be triggered by several different mechanisms, each with their own benefits and drawbacks. The two main categories are indemnity and parametric structures.

Indemnity transactions – triggered by (re)insurance losses – are the closest form of ILS to insurance and reinsurance contracts. The attraction to the sponsoring party is that the precise loss experience is used as the trigger, so in the event that a catastrophe activates the bond, the payout will match the underlying claims as closely as possible. However, from an investor's perspective, these types of transaction include not only natural catastrophe risk, but also exposure to the underwriting, claims



handling, portfolio management and associated risks of the sponsoring (re)insurance company.

Due to the nature of the risk, indemnity transactions tend to be priced higher than equivalent parametric deals and can take a long time to settle because the claims process, upon which they depend, is often protracted.

Data quality

One of the biggest challenges in modelling indemnity transactions is the quality of data on the insurance risks. Data quality comprises two aspects: accuracy and completeness. The latter is often easier to assess and measure e.g. how many locations in a portfolio contain unknown attributes. Data accuracy is a deeper challenge – data sets, though complete, can often contain indications of bias, bulk coding, unknown attributes in high-hazard areas and inaccuracies caused by data capture practices, all of which can lead to material data risk.

Recently, indemnity transactions have included specific data quality assessments to help investors understand their exposure as best as possible.

Parametric transactions, on the other hand, use measurable characteristics of a catastrophic event as a trigger. These are the direct drivers of property damage, such as wind speeds, flood depths or ground motions. Parametric transactions are usually structured on an index of the event characteristics which are correlated to modelled portfolio losses. For example, the index would indicate the expected level of insured loss resulting from various wind speeds

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in a specific location.

As the event characteristics are measured during the catastrophic event (e.g. wind speeds), they can generally be published within a matter of days, meaning that the transactions can be settled rapidly. In turn, this can lead to greater liquidity in the marketplace.

Unlike indemnity deals, parametric structures remove the insurance risk for investors, so are considerably easier to understand, leading to tighter spreads, and the potential to open the market to non-insurance specialists. They do, however, create some basis risk for the sponsoring (re)insurer, whereby the actual losses incurred after an event may not be covered in full

wind speed measurements are then referenced against databases of insured industry exposure and vulnerability to estimate losses which are then reported as index values.

While the parametric index value gives a good indication of the industry's total insured losses, it will clearly not match an individual insurance company's loss experience. However, the postcode-level resolution of the sub-indices – which have a narrower, more detailed geographical focus – should allow most insurers to tune the overall index to their portfolio exposures.

Although US hurricane has been used as an example, this

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by the transaction payout. This means that sponsors have to make a fundamental decision on risk versus return.

Recent developments in the provision of parametric indices have sought to address the inherent tension between transparency and basis risk by effectively mirroring the actual exposures in an insurance portfolio. For example, Paradex, a new index introduced by RMS, is designed to benefit both issuers and investors by seeking to overcome these issues.

RMS has partnered with WeatherFlow, which owns a network of hurricane-hardened weather stations along the US coast that can accurately measure and record hurricane-strength wind speeds. The network currently covers Houston and the surrounding areas and Florida, but is planned to be extended to the entire Gulf region and Eastern Seaboard by the start of the 2009 hurricane season.

The data supplied from this network allow peak wind speeds to be accurately estimated down to postcode level across the entire area impacted by a hurricane. The

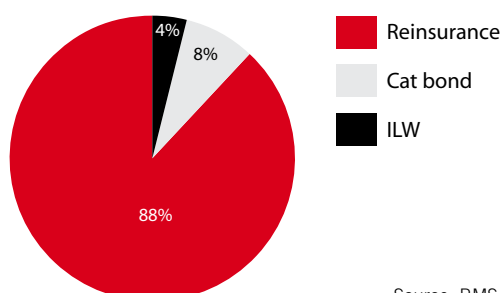
approach would work for all natural catastrophe perils, as long as the hazard can be measured in sufficient detail that sub-indices can be developed to minimise basis risk. Potential investors don't need to understand the intricacies of insurance, just the odds of specified physical events occurring, while (re)insurers can tailor the index by adjusting the weights of each sub-index to manage basis risk to acceptably low levels.

Which solution?

Both types of transaction have their advantages and disadvantages. Broadly, these can be split into three factors: complexity, basis risk and settlement time. Each factor has its own varying level of importance depending on the type of transaction – for example, an ILS designed to provide contingent capital may consider the basis risk to be less important and would therefore favour a parametric transaction.

At the simplest level, a sponsor's choice of the optimum solution for the creation of an ILS then comes down to a question of price versus basis risk.

The cat market sliced...



Source: RMS