KENDALL FREEMAN

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Shaken and stirred

breaking new ground in catastrophe risk transfer

2007 is already shaping up to be less benign for natural catastrophes than 2006. By the end of January, early estimates of the losses from windstorm Kyrill in Europe indicated likely insured losses between €3 billion and €8 billion and Property Claim Services (PCS) had declared the first two catastrophes of 2007 in the US for winter windstorms.

Against this backdrop, there are new opportunities for reinsurers to transfer catastrophe risk to investors outside the traditional reinsurance and retrocession markets in terms of both the structures available and the choice of providers of the capacity. This article examines the sources of the new capacity, considerations when transferring catastrophe risks and some of the solutions available.

Sources of capital and the investor base

In recent years, the capital markets and private equity and hedge funds have demonstrated an increasing appetite to diversify their risk profiles away from the main financial markets (debt, equities, foreign currency and interest rates) by acquiring risks with a relatively low degree of correlation to the performance of such markets. Property catastrophe risk, predominantly held by the insurance industry, is one such asset class, providing low correlation to market performance. The growth in investor appetite is taking place at the same time as (re)insurers are facing tougher capital and solvency requirement regimes. The combination is contributing to the increased use and development of capital markets solutions for traditional (re)insurance catastrophe risks, through the use of swaps, the issue of *"catastrophe bonds"*, *"side cars"* and *"industry loss warranties"* (ILWs): see the *Glossary* (page 12) for definitions.

Increasingly sophisticated structures are being employed to provide the complex protection required by (re)insurers, which also reflect the growing demand from a wider and more sophisticated investor base. For that reason, the events covered in these types of protection are more and more likely to be multi-region, multi-peril and/or multi-year. The spread of risk which these structures can provide, combined with a retention or equivalent (such as the protection being triggered by a second or subsequent loss), allow the transactions to be structured and distributed to a wider investor base according to the seniority of risk (ie remoteness of loss) that an investor class is willing to buy. This can increase the demand and liquidity for the offering with potential pricing and publicity benefits.

By way of example, in November 2006 Bay Haven Ltd issued the highest rated catastrophe bond (the senior tranche was rated AA by S&P) in a transaction arranged by ABN AMRO to provide multi-peril, multi-region, multi-year catastrophe protection to the Catlin Group (whom Kendall Freeman advised). Few catastrophe offerings have been at investment grade ratings suitable to the majority of institutional investors. The transaction structure gave investors the opportunity to invest in senior, junior (rated BBB- by S&P) and quasi-equity tranches. Consequently, institutional investors were able to participate in the investment grade layer whilst investors with greater appetites for risk had the opportunity to invest in the junior and quasi-equity layers.

However, these non-traditional types of catastrophe protection are not yet commoditised and there are a

number of issues with such structures and their triggers which demand a high degree of bespoke tailoring to the particular circumstances of the protection sought.

Defining the protection

An important initial consideration is whether to obtain protection on a pure indemnity basis (such as reinsurance) or a synthetic basis (for example, using industry loss or parametric measures such as the Bay Haven transaction described above). This is critical to determining whether the occurrence of a particular event requires a loss payment and the amount of that loss payment. Acquiring catastrophe protection on a synthetic basis frees the protection buyer (the (re)insurer) from the need to establish that it has suffered loss and the amount of such loss.

The flip-side to valuing loss on a non-indemnity basis is that the protection is not wholly aligned with the (re)insurer's underlying risk. The protection buyer's analysis of the degree of non-alignment, or *"basis risk"*, is a key factor in its buying decision and is discussed further.

Whatever mechanism is chosen, defining the protection is key. That is, what are the events for which protection is sought, how is the loss measured, what triggers payment to the protection buyer and what is the amount of the payment to be made once triggered?

Event definitions should as a minimum set out the following:
- type of event (eg hurricane or earthquake)
- description of the event (eg to distinguish the loss caused by an earthquake from that of a related tsunami or loss caused by a hurricane from the related storm surge)
- location of the event and/or location of loss
- what constitutes a single event or multiple events, for example where:
  - two hurricane systems combine
  - one hurricane affects two territories
  - three earthquakes, not including pre/after shocks, occur within a two day period along a single fault line, but at least 200km apart.

Some seemingly straightforward elements can be surprisingly difficult to define. For example, anyone who attempts to formulate a territorial definition of Japan will discover that it is still at war with Russia (a position that remains unchanged since hostilities ceased at the end of World War II), as no peace treaty has been concluded between the two states owing to unresolved sovereignty disputes over several islands!

It is also usually necessary to define certain temporal aspects of events and the cover, including:
- when an event starts and ends
- limits on the duration of an event (to limit the data to be processed for parametric modelled losses and to separate single from multiple events – an issue particularly relevant to earthquakes)
- the period in which the event must occur to be covered
- whether an event must have completed or need only have started during the covered period.

Additionally, the event definitions must be reconciled with the trigger mechanism for payment. If a PCS estimate of industry loss forms the basis for determining whether a trigger is satisfied or the amount of a loss payment, the relevant event definition must be wholly aligned with the event for which PCS provides its estimate. For example, if the PCS estimate for loss arising from an earthquake includes damage arising from a related flood, but excludes tsunami, that may need to be reflected in the event definition. Similarly, whether the PCS estimate of the industry loss in respect of a particular catastrophe type includes workers' compensation claims is likely to impact the level of any trigger threshold set for that type of catastrophe.

Despite recent calls in Europe for an equivalent service, as yet there is no equivalent to PCS outside the US. Consequently, non-US catastrophe events require a mechanism to determine whether the loss threshold has been reached and typically parametric models are used to achieve this. However, the use of bespoke parametric models produces other issues that must be addressed in the documentation, such as:
- the data (eg peak and/or average wind speeds) required to operate the model for each covered event type and from which locations and sources
- the locations used to model the covered loss
- ownership of the model and who is licensed to use it
- the contingency arrangements in the event that the owner of the model ceases to provide the required modelling service.

The greater the clarity of the event definitions, triggers and valuation mechanisms, the less friction there will be in the protection and the risk of investor challenge will be reduced.

Basis risk

While reinsurance is a contract of indemnity against the cedant's actual loss, ILWs and catastrophe bonds provide a wide range of degrees of indemnity protection. ILW structures usually incorporate a double trigger based on industry loss and the cedant's actual loss in respect of the covered event, but the indemnity trigger may be set low enough that if the industry loss trigger is reached, it is virtually certain that so will the indemnity trigger.

Some catastrophe bond transactions are structured as reinsurance underwritten by a special purpose vehicle (SPV), which in turn issues to investors securities whose performance depends on actual losses claimed by the cedant under the reinsurance contract. However, increasingly, catastrophe bonds are based on industry loss or parametric, rather than indemnity, triggers because of the comparative loss experience with indemnity-based catastrophe bonds and their increased transparency for investors, which in turn makes the securities more liquid. In those transactions, the (re)insurer will enter into a derivative (a contract for differences known as a *"catastrophe swap"*) with the SPV.

Where ILWs and catastrophe swaps do not contain a material indemnity element, it is very possible that a difference will exist between the amount of the loss suffered by a (re)insurer on its inwards business and the amount of its recovery under the ILW or catastrophe swap. On the other hand, traditional reinsurance and retrocession provide indemnity cover offering a more perfect hedge against loss.

Of course, whichever basis is used, if the trigger threshold (or attachment point) is not reached there will be no loss payment. Additionally, a protection buyer's exposure may not be proportionate to the overall industry loss of a given catastrophe. For example, a hurricane causing an estimated US$10 billion loss in the Gulf of Mexico, which typically falls below the trigger thresholds of catastrophe protection for Gulf hurricane events, may disproportionately impact an insurer with a large exposure to off-shore energy infrastructure in the Gulf.

The perceived advantages of the synthetic (non-indemnity) basis include:

— the speed of payment (likely to be quicker than on an indemnity basis but time (12-24 months) still needs to be allowed for industry losses to develop)
— increased certainty of payment and amount of payment (often in a prescribed amount) following satisfaction of a trigger
— reduced legal basis risk because such synthetic products generally reduce or avoid legal uncertainty (eg due to good faith issues such as non-disclosure and misrepresentation) through being effected on ordinary contract law rather than insurance law principles.

It is possible to mitigate the basis risk in synthetic products through the careful development of an appropriate set of triggers to define the risk, measure the loss, determine if a payment is due and the amount of that payment, as discussed above.

Onshore or offshore?

Another issue which frequently arises in non-traditional protections is the use of offshore vehicles in the structure. An offshore SPV is important in a number of types of structure, for example to *"transform"* risk from reinsurance (sold by the SPV to the buyer) into a capital markets product, or as a convenient bankruptcy remote mechanism for issuing listed securities (as in the Bay Haven transaction).

Typically, two factors have driven SPVs offshore: regulation and tax. However, the samelight touch regulatory structure which makes it easier to set up and run such vehicles offshore may create additional legal and financial risk for the protection buyer. The Financial Services Authority (FSA) has made it clear that it will closely scrutinise the arrangements to ensure that any residual risks (including credit, market, liquidity and operational risks) are reflected in the buyer's individual capital assessment (ICA).

Following partial implementation of the EU's Reinsurance Directive by the FSA on 1 January this year, it is now possible to establish an Insurance Special Purpose Vehicle (ISPV) in the UK. It is already possible to establish similar vehicles (known as *"Special Purpose Reinsurance Vehicles"*) in Ireland and it will soon be possible in Germany. Briefly, an ISPV is a new corporate vehicle which fully funds its exposure to its cedant, whether by way of a debt issue or some other financing mechanism. The FSA will operate a simplified authorisation process in relation to ISPVs and will directly apply only light touch regulation, focusing on the effect the ISPV has on its cedant's risk profile. Because the entity is established in the UK, one legal system can apply to both the cedant and the ISPV and there is no perceived gap in the regulatory regime. A potentially significant benefit under the Reinsurance Directive that ISPVs may bring to cedants is the ability to treat the protection that they afford as an asset of the cedant rather than as reinsurance.

Tax issues may still inhibit the use of ISPVs in the UK, although depending on the requirements of the investors in the ISPV and the nature of their investment, it is likely to be possible to mitigate any adverse tax consequences, for example by the ISPV issuing quoted Eurobonds (bonds listed on a recognised exchange) to investors and by structuring the transaction to avoid the creation of a profit in the ISPV.

Conclusion

The sophisticated structures discussed in this article involve a high degree of bespoke tailoring to provide protection that responds to the buyer's requirements, that the investors are willing to sell and, if relevant, that the rating agencies rate at a satisfactory level. These structured solutions are not about replacing standard reinsurance and retrocession, but are a feature of both the shortage of capacity in the reinsurance market for catastrophe risks and the appetite of investors to carry risk in respect of high intensity, low frequency catastrophe events.

As this article went to press, the Florida state government signed legislation to add up to $17 billion in state backed capacity for buyers of property catastrophe reinsurance. The impact of this initiative on the reinsurance market is potentially considerable but remains to be seen.

Glossary

Catastrophe bond and swap	An insurance linked security under which the risk of a catastrophic event is transferred to investors by way of a sale of bonds or notes. The purchase price forms collateral which is paid to the protection buyer on the occurrence of a specified catastrophic event, which results in the investors losing the right to repayment of all or part of their investment. The issuer of the bonds/notes will usually be an SPV. The SPV will generally acquire the catastrophe risk by selling protection to a cedant through a reinsurance or retrocession contract or a contract for differences (known as a *"catastrophe swap"*).
Industry Loss Warranties (ILWs)	A type of protection contract based on the seller (reinsurer) paying the buyer (cedant) if insurance industry loss estimates exceed an agreed threshold and, generally, the buyer suffering actual losses in excess of a (usually relatively low) threshold.
Parametric trigger	A parametric trigger or model is, typically, one based on the intensity of a natural catastrophe in a predefined area and predicts the level of insurance losses arising from that catastrophe either in monetary terms or relative to an index or scale.
PCS	Property Claims Services is an industry body that publishes estimates of insurance industry losses in respect of events affecting the US only. PCS declares events which cause very large losses for the type of event to be catastrophes by issuing a catastrophe bulletin in respect of the event.
Side car	A reinsurance company that provides a single cedant group with capacity (usually) for its catastrophe business through a quota share reinsurance contract. Side cars are typically set up by investors for short periods of one to two years, reflecting short term problems in the retrocession market.
Secial Purpose Vehicles (SPVs)	An incorporated entity established to fulfil a particular purpose. SPVs are typically bankruptcy remote, are used to isolate financial, regulatory and/or tax risks and to hold specific assets. The SPV will usually be independent for accounting, legal, regulatory and taxation purposes.

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Richard Spiller	*Insurance*	tel: +44 (0)20 7556 4541	richardspiller@kendallfreeman.com
Jonathan Teacher	*Insurance*	tel: +44 (0)20 7556 4556	jonathanteacher@kendallfreeman.com
Chris Sage	*Insurance*	tel: +44 (0)20 7556 4607	chrissage@kendallfreeman.com

One Fetter Lane, London EC4A 1JB, UK
tel: +44 (0) 20 7583 4055
www.kendallfreeman.com