

Into the tempest

Natural catastrophe risk models suggest that insurers are significantly under-capitalised. Firms are tapping the capital markets for billions of dollars in additional reinsurance capacity, but it may not be enough to avoid damaging rating downgrades. Meanwhile, increasing use of so-called side cars is prompting concern that some firms may be self-insuring. By Navroz Patel

Was last year's US hurricane season the worst-case scenario or a sign that weather systems are changing and that states on the Atlantic coast can expect similar, or even more severe, storms in the future? This, says John Brynjolfsson, a portfolio manager at California-based asset manager Pimco, is the question nagging away at all participants involved in natural catastrophe risk markets. Although scientists continue to debate the precise cause, a consensus has emerged among climatologists that the North Atlantic is in the midst of a period of above-average hurricane activity, characterised by a potential for increased severity and frequency and more numerous US landfalls.

In the aftermath of the 2004 and 2005 hurricane seasons, the major catastrophe risk modelling firms - Boston-based Air Worldwide, California-based Risk Management Solutions and California-based Eqecat - came in for criticism as insurers, reinsurers and others discovered that models had seriously underestimated the losses arising from the storms (Risk October 2005, page 12).

These models have all, to different extents, been revised to reflect the experience of the past two years. And now, updated analyses at rating agencies are prompting further upheaval. Standard & Poor's (S&P), for example, put 19 deals on negative credit watch in June. "We are still working through the modelling to see which US hurricane-linked bonds will be affected. Some will experience a downgrade. We're not yet sure how many," says Gary Martucci, a director in the financial services group at S&P in New York.

Fitch Ratings is also reviewing its catastrophe bond ratings, and says that under its new analysis, most insurers will need to increase the amount of capital they hold to support catastrophe risk by 50%. On average, this equates to a 10% rise in overall capital requirements.

Pressure from rating agencies over insurer and reinsurer capital adequacy, coupled with a lack of reinsurance capacity on the back of post-Hurricane Katrina losses, is prompting increasing numbers of reinsurers to use special-purpose entities known as side cars to help them either write more business or lay off risk, or both.

One of the most recent side car deals closed in June - Bermuda-based Harbor Point Re created a side car called Bay Point Re, in which GoldenTree Asset Management, a \$7.1 billion New York-based hedge fund manager, was the principal investor. Shiv Kumar, a vice-president in the financial institutions structured products group at Goldman Sachs in New York, says around \$1.43 billion of side car deals have been completed so far this year, and estimates this could double by the end of the year (see figure 1).

"Side cars allow small groups of hedge funds and private equity investors to cherry pick what they want to reinsure and individually negotiate terms," says Lois Herzeca, a New York-based partner in the corporate law group at law firm Fried, Frank, Harris, Shriver & Jacobson.

In a side car, investors are able to share in a vertical slice of a reinsurer's cat risk book - in other words, they effectively buy a share in that book and assume risk in proportion to their share. In return, they receive a premium. If there are no losses under this so-called quota share policy, the investors get back their initial investment plus the premium. If there are losses, the investors pay their share out of their initial investment.

However, while many investment banks are touting side cars as a hassle-free way for sponsors and investors to negotiate a highly tailored, mutually beneficial transaction, others see some cause for concern. "On the surface, side cars appear to be serving a viable function in that they are lending capacity at a time

when it's constrained," says Robert DeRose, a New Jersey-based analyst at insurance rating agency AM Best. "By the same token, the risk is that they are not sufficiently capitalised for the risk that is passed to them."

While many side cars are structured in full-limit form, where capital is equal to risk passed on, others rely on models to determine the level of capitalisation. These models analyse potential losses and the required premium rates, enabling the firm to calculate the level of capitalisation required - but there's a risk that actual losses will exceed the side car's capital, explains DeRose. "There's a short-term risk that they may not be capitalised to take the full amount of risk that was expected. There's a potential for tail risk with these probabilistic side cars," he says.

This happened with Olympus Re, a side car created in 2002 to enter into a quota share arrangement with New Hampshire-based White Mountains Insurance Group's Folksamerica reinsurance subsidiary. Prior to the Bermuda-based side car's management requesting that it be removed from AM Best's rating process in March 2006, Olympus Re's financial strength rating had been downgraded from B+ to B- and assigned a negative outlook to reflect a significant deterioration in risk-adjusted capitalisation as a result of 2005 catastrophe losses.

On June 16, White Mountains, whose Folksamerica Reinsurance subsidiary had ceded \$143 million of cat risk reinsurance to Olympus Re, announced that it was upping its pre-tax 2005 hurricane loss estimate by a whopping \$203 million. This would have wiped Olympus Re out. Luckily, however, White Mountains announced that it would reimburse Olympus Re for up to \$137 million, so that the side car could continue to offer Folksamerica reinsurance capacity.

The bailout set alarm bells ringing for some. "Losses associated with Olympus Re, while not having a huge impact on White Mountains, raised some questions surrounding risk management and, in general, the efficacy of side car structures," says Pano Karambelas, an analyst at Moody's Investors Service in New York.

Karambelas says that, while Moody's is not totally negative about side cars, it does have concerns over whether a side car - which is supposed to be separate from the ceding company - is truly at arms' length. "There is supposed to be a ceding of liabilities. If there is subsequent recapitalisation of the side car for losses, then it's a round trip," he says.

A reinsurer and its side car are usually accounted for separately, so investors in a ceding company quite reasonably assume that losses from a side car should not affect the ceding reinsurer. However, rating agencies sometimes look at both the side car and the ceding reinsurer for ratings purposes. "Our ratings analysis looks beyond accounting to see if there are reasons to look at losses on a gross basis - that is, an analytical consolidation," says Karambelas.

Nonetheless, despite the highly unusual reimbursement agreement, Moody's took the view that the analysis of White Mountains and Olympus Re should not be consolidated. This meant that Olympus Re's woes did not exert a downward pressure on White Mountain's rating, and the agency did not take the view that White Mountains was, in effect, involved in the potentially dangerous practice of self-reinsuring. "We tended to think that the reimbursement of Olympus Re's shareholders was a one-off," explains Karambelas.

He declined to give details of the White Mountains/Olympus Re analysis, but says Moody's takes into account any potential conflicts of interest between the ceding company and the side car - for instance, through a sharing of management roles or if staff at the ceding company have an investment in the side car. "We continue to watch the situation and we are comfortable with it, to date," says Karambelas. "It is our expectation that reimbursement will not happen again - if it does, that would change the ratings dynamic altogether." All the parties involved in the Olympus Re side car either failed to respond to requests for comment, or declined to comment for this article.

Controversy has also been a feature of the more established part of the current catastrophe risk transfer markets. In particular, some cat bond investors believe rating agencies should continue using pre-Katrina models, and are disgruntled by the potential for ratings actions. "I understand them being miffed, but a rating is not supposed to be forever, and we have to reflect that there is now seen to be a greater probability of attachment," says Martucci, referring to the likelihood of bonds being triggered, resulting in principal losses.

"We are being fair. They know there is a greater potential for a higher frequency of hurricanes. They can watch the news too and see things have changed." Standard & Poor's is requesting that, for rating purposes, sponsoring insurers rerun underlying catastrophe portfolios for some deals using an updated model.

Fitch Ratings is also reviewing its ratings for catastrophe bonds. "We haven't issued any ratings actions on insurers yet. But we only just started to get model results under the new framework in June and are still digesting this information," says Jim Auden, a senior director at Fitch Ratings in Chicago. The rating agency estimates that insurance companies would require, on average, 10% more capital to maintain ratings.

Downgrades are not out of the question if companies are unable to source additional capital. Auden says Fitch will allow some companies a 'cure period', during which any inadequacy in their capital under new models can be discussed and acted upon. But he does not preclude the rating agency moving more quickly if the need arises.

In addition to simply looking at one-in-100-year or one-in-250-year probable maximum losses (PML), Fitch now looks at the entire loss distribution to understand what the models say about a company's losses in the most extreme of circumstances. Fitch is also in the early stages of using a more novel statistical measure: tail value-at-risk, which averages losses from the one-in-250-year point, out to the end of the tail.

"We are still seeing how companies measure up using tail VAR," says Auden. "The whole of our new cat risk methodology is being incorporated into our new capital model, which is stochastic rather than factor-based." Called Prism, the new model is able to look at a panoply of risks - including those associated with catastrophes, underwriting and reserves - and incorporates correlation effects.

As Risk was going to press, Fitch was preparing to publish final documents related to its new capital methodology. "Rating agencies are looking at PML under new models, and this may give some companies pause that they are carrying too much cat risk compared with other exposures, given their rating," Auden says.

For their part, insurance firms are evaluating how best to cope with a lack of traditional reinsurance capacity, given the increased capital requirements, says Christopher Lewis, head of alternative market solutions within property and casualty capital management at the Hartford Financial Services Group in Connecticut. "There is currently a spike in demand for access to capital markets," he says.

And, as the emergence of side cars demonstrates, companies have been doing a lot more than just thinking about their under-capitalisation. "A lot have now decided they simply can't keep all cat risk on their balance sheet," says Teresa Radzinski, head of insurance debt capital markets at Merrill Lynch in New York.

For many, cat bond issuance is one answer. Paul Schulz, president of Aon Capital Markets, part of Chicago-based insurance and risk management specialist Aon, estimates that total cat bond issuance during 2006 will be in the \$4 billion-6 billion range. By the start of July, issuance for the year had reached \$2.2 billion, eclipsing the nearly \$2 billion issued during the whole of 2005.

In turn, dealers are scrambling to bolster their insurance-linked groups as investor and sponsor appetite for capital markets-based cat risk products grows. Merrill Lynch, for instance, entered into a strategic partnership in April with Benfield, a London-based reinsurance and risk intermediary. "Benfield has tens of people whose job it is to model cat risk. That capability, together with their access to insurer chief risk officers and our capital markets expertise, should get us in with a lot more issuers," Radzinski says. The firms plan to continue the tie-up until the end of 2007.

While Radzinski believes the rise in the number of cat bond deals coming to market this year has been hugely beneficial to insurers, she admits it's not been plain sailing for issuers. "Some issuers are disappointed by the terms they got. Maybe they wanted to place \$200 million and they only did half that. Deals have also priced at increasingly wide spreads," she says. "A lot of deals still got through the pipeline, but for the first time, all the leverage is sitting in the investors' camp and they are dictating terms."

This year, investors have, on occasion, been able to choose from five or more deals at a given time - so they can afford to be more picky. Barney Schauble, a partner at Nephila Capital, a Bermuda-based hedge fund

that invests in insurance-linked assets, says the firm has participated in several deals this year. "Some have been well structured and have been oversubscribed, while others have had a tougher time getting completed," he says. Nephila is also one of the few hedge funds to be active in the industry loss warranties market (see box).

Mark Azzopardi, London-based head of insurance and pensions in the global risk solutions team at BNP Paribas, says the cat bond market reached a critical point at the end of June. "The market became saturated and it got progressively more difficult to place US wind risk," he says. "It appeared as if some of the specialist insurance-linked investors in the market had reached their portfolio limit on this peril."

In terms of trigger types, many investors have begun to look more favourably at cat bonds with modelled-loss and parametric-type triggers this year, says Goldman's Kumar. "For a complex commercial portfolio, they would rather not worry about the subtleties of the underlying portfolio," he says. In modelled-loss deals, the underlying portfolio is analysed with a particular model, and if a catastrophic event occurs, the actual parameters of that event are input into the same model on a specified property insurance portfolio, and settled accordingly.

Another popular kind of structure that Goldman, among others, has worked on is a cat bond with a modified index trigger. The idea is that insurers can approximate a portfolio's exposure using an index where actual industry losses are weighted to reflect the proprietary exposure. Notes issued via Hartford's \$750 Foundation Re catastrophe bond programme, launched in 2004, are an example of this kind of structure. In this way, the index can serve as a good proxy for the firm's exposure, without exposing it to the classic problem of indemnity deals - in indemnity-type deals, payouts are linked to the sponsor's actual losses. However, bonds can take a long time to settle as the underlying insurance claims are checked and settled.

Pimco's Brynjolfsson says the dramatic widening of spreads over the past 12 months makes cat bonds more attractive for investors, on paper at least. Whereas a cat bond referencing US wind risk may have priced with a spread (to Libor) in the 400- to 750-basis-point range a year ago, it now prices around 600-1,000bp. In terms of assessing relative value, Brynjolfsson and his colleagues employ two different perspectives: pricing based off new models and looking at new deals against what he describes as a more constant metric - namely old models and industry losses. "When using the new models, you can't compare new deals with historical deals, as the latter weren't put together using the new models," he explains. Conversely, using the old models is advantageous because it illustrates the additional compensation investors receive for taking on risk this year in comparison with 2005.

This dichotomy in attitudes to the model revisions has also manifested itself in the secondary market. "If you had asked me early in 2005 about secondary cat bond trading, I would have told you it was a lot more active than many other BB-rated markets," says BNP Paribas' Azzopardi. "But during the first quarter of 2006, the secondary market was barely there - sellers would rather hold on to their impaired paper than sell at reduced prices demanded by buyers using revised models. And the market still hasn't regained its former liquidity."

However, cat bond downgrades from BB+ or BB- to B could prompt a surge in secondary trading activity, as ratings-related investment guidelines are likely to prompt some portfolio managers to sell their paper. Azzopardi says most cat bond investors appear to have taken mark-to-market losses in their stride. "It's true that some had possibly become a little too comfortable with the models. That said, a 40% change in expected losses for US Wind is at the wider end of what they would have expected."

However, Nephila's Schauble points out that models should be viewed simply as a measuring device. "Cat models come with a whole set of dials and levers that you can turn to reflect your own specific view of risks and confidence in portfolio data," he says. "They are not necessarily a predictor of the future."

Looking back at recent hurricane seasons, Pimco's Brynjolfsson describes 2005 as unprecedented. When the twenty-seventh storm came into existence last year, scientists had to abandon their convention of choosing names that start with each letter of the English alphabet, in order. "Later on in the season, I felt I may be in danger of exhausting my knowledge of the Greek alphabet," he says. And who said all investors want alpha?

Options in disguise

The industry loss warranty (ILW) market is a catastrophe risk transfer market that few, outside those trading the instruments, have ever heard about. Dealers estimate the notional size of the market, which began in the early 1990s, is somewhere around \$10 billion.

ILWs are priced off industry-wide-type losses. In the US, this is often the Property Claim Services index, an indicator of catastrophe-related property losses produced by ISO, a New Jersey-based insurance data specialist.

Part of the attraction of an ILW is the speed at which deals can be put together. In contrast to a cat bond, which can typically take two months or more to bring to market, a reinsurer could conceivably decide to do an ILW deal in the morning and go on to complete it by the end of the day.

"For the buyer of protection, ILWs are somewhat of a blunt hedging instrument that traditionally exposes them to the same counterparty credit risk as a reinsurance contract," says Barney Schauble, a partner at Nephila Capital, a Bermuda-based hedge fund manager. "Hedge funds have begun to become significant players in this market. In effect, an ILW is a catastrophe index option that hedge funds can provide, on a collateralised basis, directly to an insurer, or via a third party."

ILWs typically qualify for reinsurance accounting because for the option buyer to collect, the industry-wide index strike price must be met, and the buyer must additionally demonstrate that it has suffered losses on its own portfolio from the covered event that caused the index strike price to be hit.