MILLIMAN WHITE PAPER

Reserving Challenges for ILS Funds

Christopher Clarke, FIA

Between October 2012 and August 2017, an absence of major catastrophe events led to Insurance Linked Securities (ILS) funds posting positive returns every month for almost 5 consecutive years. During that period, the ILS market doubled from around $44 billion in 2012 to $89 billion in 2017. However, since 2017, a series of major catastrophe events has caused challenges for the industry, suppressing the returns of ILS funds, and, in 2019, led to the market reducing in size for the first time since the financial crisis of 2008.

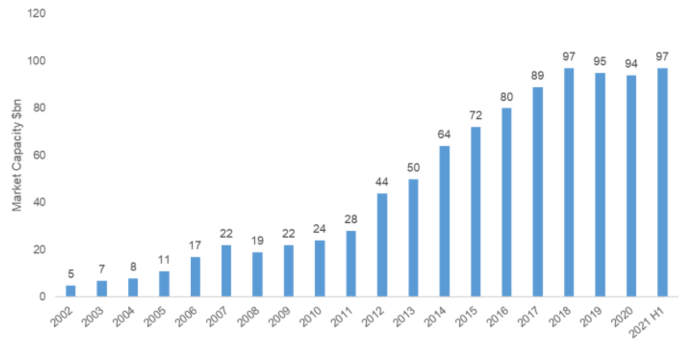
In this article, we look in detail at some of the major losses that have occurred since 2017 and why they have proved challenging to set reserves for, creating heightened uncertainty in the valuations of ILS funds.

The ILS Market

While many of the loss events discussed in this paper have caused issues for traditional insurers and reinsurers, we have focused particularly on their impact on ILS funds. What we refer to as "ILS" encompasses traditional ILS investments such as catastrophe bonds ("cat bonds") and industry loss warranties (ILWs), as well as other alternative capital investments such as reinsurance sidecars and collateralised reinsurance.

ILS funds are investment funds that are invested primarily or exclusively in ILS investments and they are managed by asset managers that specialise in ILS.

Collateralised reinsurance is now the largest component of the market, accounting for around 55% of ILS capacity, and has grown more quickly than other ILS types over the past decade. As can be seen in the graph below, the size of the ILS market peaked at around $97 billion in 2018, before falling back to around $94 billion in 2020. As of mid-2021 capacity had return to levels seen in 2018. After collateralised reinsurance, cat bonds are the next largest product type, making up around 30% of the market. Sidecars and ILWs each make up just less than 10% of the market.



Source: Aon Securities

COLLATERALISED REINSURANCE

Collateralised reinsurance contracts are not dissimilar to traditional reinsurance contracts, and most commonly come in one of three forms:

- Occurrence – these contracts cover individual loss events incurred by the cedant, up to a certain limit, in excess of a particular attachment point specified in the contract. The contracts may cover one or more different perils from one or more different geographic regions.
- Aggregate – these contracts cover a cedant's aggregate exposure to a specified type or types of event. These contracts may also cover one or more different perils from one or more different geographic regions. The contracts will pay out, up to a certain limit, when the aggregate losses, across all qualifying loss events, breach a certain attachment point specified in the contract.
- Quota share – under these contracts, cedants cede a certain percentage of their premiums and losses in respect of a particular portfolio of their business.

What sets these contracts apart from traditional reinsurance contracts is that the limit of cover is fully collateralised. The contracts are typically underwritten by protected cells within special purpose insurance vehicles (either owned directly by ILS funds or rented by the funds from third party providers). ILS funds put up investors' money to collateralise the contracts that they write and in return they receive premiums. When the liabilities under the contracts are extinguished (either through paying out all claims, if any, or through commutation), the collateral invested and the premium, less any claims paid, are returned to the fund.

INDUSTRY LOSS WARANTIES

ILW contracts pay out depending on the occurrence of certain industry loss events. Although often structured as swap contracts, they are essentially a form of parametric insurance. The purchaser of the contract (the fixed rate payer) pays a premium to the reinsurer (the floating rate payer), who will pay out if a certain reference event occurs. A reference event could be, for example, a storm event in Florida with an industry loss of more than $10 billion. The payment is often a fixed amount, although in some cases pay-outs vary based on the size of the reference event. When written by ILS funds, the potential exposure under the contract will normally be collateralised.

Industry loss amounts are typically determined by an independent third party, often ISO's Property Claims Services (PCS).

CAT BONDS

Cat bonds are securities that are issued by special purpose reinsurance vehicles (SPV). These companies participate in reinsurance contracts that protect the bond sponsor. The SPV sells the bonds to investors in return for a principal that is held in trust to collateralise the limit of the reinsurance contract. The investor receives coupon payments from premiums paid by the sponsor. If a claim event occurs under the terms of the reinsurance contract, the collateral is used to pay the sponsor. Any collateral remaining is returned to investors.

Much like collateralised reinsurance, the reinsurance contract underlying the bond can be on an occurrence or aggregate basis. It could also be based on a parametric trigger, like that of an ILW.

Cat bonds are often rated by a credit rating agency based on their riskiness, as determined by catastrophe modelling. A secondary market exists in cat bonds, which means that market prices may be available, although in practice there are very few trades.

Investors in cat bonds include ILS funds, as well as mainstream institutional investors and reinsurers.

SIDECARS

Sidecars are insurance vehicles that provide dedicated reinsurance to an existing (re)insurer and are often a convenient way of accessing third party capital. The sidecar typically provides quota share cover in respect of part of the (re)insurer's portfolio. Sidecars are also normally fully collateralised, providing the (re)insurer with readily available funds to pay claims.

ILS funds may invest in sidecars of one form or another, although the structure is not unique to ILS funds. Sidecars are often used as a means for a joint-venture between two existing (re)insurers.

Reserving for ILS investments

The key component in the valuation of any ILS investment is the value of the insured liabilities. ILS funds share many of the challenges of traditional insurers and reinsurers when it comes to reserving. However, there are a number of reasons why reserving for ILS funds can be more challenging. These include:

- ILS funds typically report fund valuations to investors monthly, on a market consistent basis. This frequent reporting means that valuations often need to be made shortly after major events occur, leaving little time to estimate exposures. The need for market consistent valuations means that funds will try to avoid undue prudence in reserve estimates and may be less willing to add margins to reserve estimates than traditional (re)insurers, even when uncertainty is high.
- Reinsurance contracts, particularly retrocession, which predominate on many funds, can be more challenging due to a lack of detailed information from underlying cedants and delays in the receipt of information. The quality of information, and frequency of updates provided, can vary greatly by cedant.
- The collateralised nature of the contract can also impact on the motivations of cedants. When loss events occur, collateral gets "trapped". The amount trapped is based on the reserves advised by cedants multiplied by a "buffer factor", which reduces as the event matures. Therefore, there is an incentive, particularly when the events become more mature and the buffer factors reduce, for the cedant to advise loss estimates that are overstated in order to trap as much collateral as possible. If too much collateral is released and reserves subsequently deteriorate, it may not be possible for the cedant to make further recoveries.
- ILS investments have tended to focus on providing coverage for property catastrophe exposures, often at high attachment points. By their nature, these coverages give rise to unique, infrequent losses of potentially very high severity, limiting the applicability of traditional actuarial reserving techniques.
- ILS funds are relatively young and may lack historical data and experience. Funds have needed to refine their reserving policies in light of the heavier claims experience seen in recent years.
- For ILW contracts, while their value is dependent on a third party assessment of industry losses, those assessments are not immediately available after events have happened and it may take some time before final figures are produced. An extreme example of this is 2017's Hurricane Irma, for which PCS's final industry loss estimate was not published until December 2020, more than 3 years after the event. Uncertainty in the final

estimate is a particular issue where industry losses are thought to be at or around the trigger point for an ILW.

We note that, when uncertainty is particularly acute, investors may be prohibited from selling their interests in funds due to the difficulty in accurately valuing contracts. ILS fund managers may have discretion to "side pocket" contracts, preventing investment into or out of these investments until there is more certainty regarding their value. Side pocketing has been used in the wake of some of the major catastrophe events in recent years, as well as in relation to contracts potentially impacted by COVID-19.

Loss Events of Recent Years

HURRICANE IRMA

After several years without major hurricane losses, 2017 saw the insurance industry grappling with claims from 3 major storms: Hurricanes Harvey, Irma and Maria. Hurricane Harvey led to insured losses in the US of around $20 billion, with Texas accounting for much of this. Hurricane Maria didn't materially impact the mainland US, but led to insured losses of over $25 billion in US territory of Puerto Rico and other Caribbean islands. Hurricane Irma has given rise to the largest insured losses (around $27 billion in the mainland US) and has also been the most challenging for insurers to evaluate, largely as a result of the unique features of the legal system in the state of Florida, which took the brunt of the storm. This led to many insurers posting repeated reserve deteriorations in the years following the event.

According to the National Association of Insurance Commissioners, homeowners' insurance lawsuits in Florida in 2019 accounted for more than 76% of all litigation against insurance carriers across the whole US, despite only accounting for a little more than 8% of the claims. Two drivers behind this have been the target of recent legislative reforms in Florida: assignment of benefits and attorney fees.

Florida's "assignment of benefits" statute allows policyholders to assign the benefits of their insurance policies to third parties, such as contractors. Doing so enables policyholders to avoid paying up-front for repairs prior to claiming back from their insurer. However, when the policyholder passes over the rights to make claims on its insurance policy to contractors (including the ability to sue the insurer when there is disagreement on the settlement value), it creates an environment where there is an incentive for the contractor to perform unnecessary repairs and inflate costs beyond reasonable market prices. Contractors also often wait until after the repairs have been carried out before bringing claims, making it difficult for the insurer to adjust the claims.

The situation is exacerbated by Florida's "one-way attorney fees" statute, which states that, even if a policyholder loses when litigating a claim against an insurer, the policyholder will not be liable for the insurer's legal costs. Contractors with assigned benefits therefore have little to lose in bringing claims against insurers.

In 2019, Florida enacted legislation to curb abuses of the assignment of benefits statute. This included revisions to the one-way attorney fees such that an assignee can only claim attorney fees if the final judgement exceeds the insurer's pre-trial settlement offer by a certain threshold and, furthermore, if the final judgement doesn't significantly exceed the offer, the assignee may be liable for the insurer's attorney fees.

Further, legislation that came into force in July 2021 makes revisions to the one-way attorney fees for litigation brought directly by policyholders. The insured's attorney fees will only be fully recoverable if the difference between the amount of the judgment and the pre-trial settlement offer is at least 50% of the disputed amount (being the difference between the insured's pre-trial demand and the insurer's settlement offer). If the difference between the amount of the judgment and the pre-trial settlement offer is less than 20% of the disputed amount the insured will not be entitled to any fees. Between 20% and 50% fees would be paid on a proportionate basis.

The new legislation makes a number of other provisions such as reducing the claims notice deadline to two years from the date of loss (3 years for supplemental claims), as well as measures to try to halt the spate of roofing claims and litigation that have been seen in recent years. However, it doesn't include a number of provisions that insurers had been seeking, including the elimination of attorney fee multipliers (where attorneys are able to seek reimbursement of their fees at multiples of their standard hourly rates for property insurance cases) and the ability to apply stricter policy language to mitigate the costs of roofing claims.

Whether or not these reforms will mitigate loss creep on hurricane losses impacting Florida in the future remains to be seen. While the reforms discussed above were not implemented prior to the occurrence of the next major hurricane to hit Florida (Hurricane Michael in 2018), loss creep for that event has not been as significant an issue. However, this may reflect insurers taking a more conservative approach to reserving in the wake of Hurricane Irma. It is also worth noting that Hurricane Michael was a fast moving storm that affected a parts of Florida less known for assignment of benefits claims.

JAPANESE TYPHOON LOSSES

2018's Typhoon Jebi was another major loss event that saw significant reserve drift in the subsequent two years. In the immediate aftermath of the storm, catastrophe modelling agency AIR had estimated an industry loss of circa $4.5 billion. PCS ultimately estimated the industry loss at around $13.7 billion. Initial estimates proved inadequate in part due to catastrophe modelling for Pacific storm events being less reliable than that provided by the better calibrated Atlantic hurricane models. Domestic Japanese insurers also performed poorly when it came to advising losses to their reinsurers. Initial estimates that were benchmarked against historical typhoon events proved inadequate due to a number of factors unique to Typhoon Jebi. The severity of the event led to more severe damage to properties than was initially expected, which, in turn, meant that more claims exceeded attachment points than was originally projected. The large number of claims also led to a shortage of contractors to carry out repairs, which drove up average costs even further. This was exacerbated by another typhoon (Typhoon Trami) occurring at a similar time, as well as the earlier Osaka earthquake. This meant that some properties were already being adjusted or repaired at the time that Typhoon Jebi made landfall. A significant amount of construction activity associated with the Tokyo Olympics created further demand for contractors, putting additional pressure on repair costs. In addition, the area affected had a much higher percentage of commercial losses than had other historical benchmark events.

2019 saw two further major typhoon events: Faxai and Hagibis. These were not as significant as Jebi, and have not suffered the same degree of reserve drift as Jebi. To some extent this results from more conservative reserving, both on the part of the domestic insurers and of reinsurers trying to avoid the issues seen the previous year with Jebi.

CALIFORNIA WILDFIRES

ILS funds have seen losses from a number of wildfire events that have affected California since 2017. As well as the impact of the fires themselves, the 2017 fires also gave rise to events that resulted in mudslides that occurred in early 2018. However, it was the Camp and Woolsey wildfires of 2018 that have been the most costly to reinsurers and that have proved the most challenging to reserve for. Reserves for these events did see some drift during the first year or so after the event, but in more recent times the extent to which potential subrogation should be factored into valuations has been the most challenging issue.

Both the Camp and Woolsey fires are thought to have been triggered by faulty infrastructure owned by the local electricity companies: PG&E in the case of Camp and Southern California Edison in the case of Woolsey. Insurers and uninsured property owners have pursued claims against these utility companies in order to recoup losses related to the fires. This eventually led to PG&E filing for Chapter 11 bankruptcy protection. PG&E emerged from bankruptcy in June 2020, having reached a settlement with insurers and other creditors. In early 2021, Edison also reached a settlement with insurers in relation to the 2018 fires, having concluded, in September 2020, a settlement relating to the 2017 fires and mudslide claims.

These subrogation settlements have benefited and will continue to benefit reinsurers (including ILS funds) considerably, but the impact has proved difficult to assess. Prior to the settlements, it was difficult to assess the likelihood of settlements being concluded, as well as their magnitude. It was particularly challenging to assess the impact for retrocession contracts where details of all the underlying cessions may not have been known. The situation was further complicated by a number of insurers selling their subrogation rights to hedge funds in order to realise potential subrogation benefits early. This led to some cedants reducing loss estimates prior to the settlements being finalised. However, under retrocession contracts that covered a range of underlying cedants, some of which had sold their rights and some had not, the extent to which advised loss amounts reflected subrogation and the scope for further benefits emerging was unclear.

It will still be some time before the effects of these settlements are fully known as cedants will likely wait until the proceeds of the settlements are received before advising reinsurers, who in turn will then update retrocessionaires.

COVID-19

Although 2020 saw three hurricane events that will have impacted ILS funds to some extent (Sally, Laura and Zeta), none of these was been particularly significant. The most challenging loss event to value in 2020 was the COVID-19 pandemic. While losses related to the pandemic may not ultimately be particularly material for the ILS industry, assessing potential exposure has been fraught with difficulties. These losses have also led to some funds having coverage disputes with their cedants, and disputes around whether collateral should be trapped due to potential COVID-19 exposure.

ILS funds writing proportional collateralised reinsurance contracts will likely accept that they have incurred some losses from COVID-19, albeit that there remains considerable uncertainty surrounding the ultimate cost of these claims. However, the situation for some non-proportional reinsurance contracts may be less clear. While some contracts may cover clearly defined perils such as hurricanes or earthquakes, others are more loosely worded, covering (say) “all natural perils, including but not limited to…” and there typically follows a long list of mainly weather and tectonic related perils. Some cedants are presenting losses to reinsurers on the basis that COVID-19 is a “natural peril”. This has led to coverage disputes between ILS funds and their cedants. Other disputes have emerged due to issues surrounding the aggregation of claims.

In addition to evaluating uncertain underlying exposures, ILS funds have therefore also needed to build into their valuations the likelihood of prevailing in these legal disputes.

2021: WINTER STORM URI, FLOODS, HURRICANE IDA

The first half of the year is typically quieter for ILS funds as the major storm losses, to which they are predominantly exposed, do not normally start to occur until the third quarter. However, 2021 bucked that trend with the unusually large Winter Storm Uri. Snow and freezing temperatures as far south as Texas led to power outages that lasted several days. This gave rise to property damage claims relating to damage to buildings from snow and ice, as well as water damage and flooding claims resulting from frozen pipes. The total insured cost of the winter storm has been estimated to be as much as $18 billion. Demand surge for contractors and construction materials from the sheer volume of claims will likely contribute significantly to the overall volume of costs.

Reserving in the immediate aftermath of a major event usually relies heavily on estimates from catastrophe modelling as well as benchmarking to previous comparable events. The unique nature of Winter Storm Uri, with no winter storm events in recent times of a comparable magnitude, has made reserving for it particularly challenging, and resultant valuations particularly uncertain.

There was been further bad news for ILS funds in the third quarter of 2021. It is estimated that flooding in Europe (particularly Germany) in July will give rise to insurance and reinsurance market losses as high as $10 billion, and, with loss estimates currently between $30 billion and $40 billion, Hurricane Ida, which struck Louisiana, before deluging north eastern states with rain in late August, could turn out be the biggest insured hurricane loss since Katrina in 2005.

Concluding remarks

Since 2017, ILS funds have had to deal with a series of major catastrophe events that have given rise to a wide range of reserving challenges. While the sort of property catastrophe contracts written by ILS funds may often be thought of as providing binary coverage that is settled quickly, recent experience has shown that, even for the most straightforward of contracts, the ultimate value may not be known with certainty for some years. This has led to investors' capital being tied up for longer periods of time than they might have expected.

When events occur, collateral is trapped so as to ensure that sufficient funds will be available to pay claims even if loss estimates deteriorate. While the level of margin over and above the cedant's best estimate of the loss amounts that must be trapped diminishes relatively quickly in the months that follow an event, it is the cedant's estimate that determines the amount of collateral that is trapped, and conservative estimates from cedants can lead to more collateral being set aside than might be expected.

Having collateral trapped reduces the amount of capital that ILS funds have available for new investments. In order to alleviate the impact of trapped collateral, ILS funds have used debt financing (secured against the trapped collateral itself, or more generally against the assets of the funds) to provide them access to additional capital that can be invested in new contracts.

Reserving appropriately for the loss events incurred by ILS funds is of critical importance for the accurate valuation of the funds, which is in turn essential to providing confidence to investors. At the same time, it must be appreciated by investors in ILS funds that all reserves are uncertain and valuations may change from initial estimates as further information emerges. While ILS funds have traditionally written relatively short-tailed insurance classes, it can still take significant amounts of time for losses to be fully settled. It is important that investors understand that some of their capital may be tied up for extended periods of time, significantly beyond the one year time frame of the contracts typically written, and that, where material uncertainty exists, it may not be possible to trade out of those investments.

The slight reduction in the size of the ILS market in the past few years may reflect diminished investor appetite in the asset class in the wake of recent major catastrophe events. However, as investors gain increasing knowledge and understanding of ILS investments, bolstered by accurate reserving and communication of the uncertainties around loss estimates, the appeal of the ILS market as an asset class will increase and the market will continue to be a major provider of reinsurance capital.

CONTACT

Christopher Clarke
christopher.clarke@milliman.com