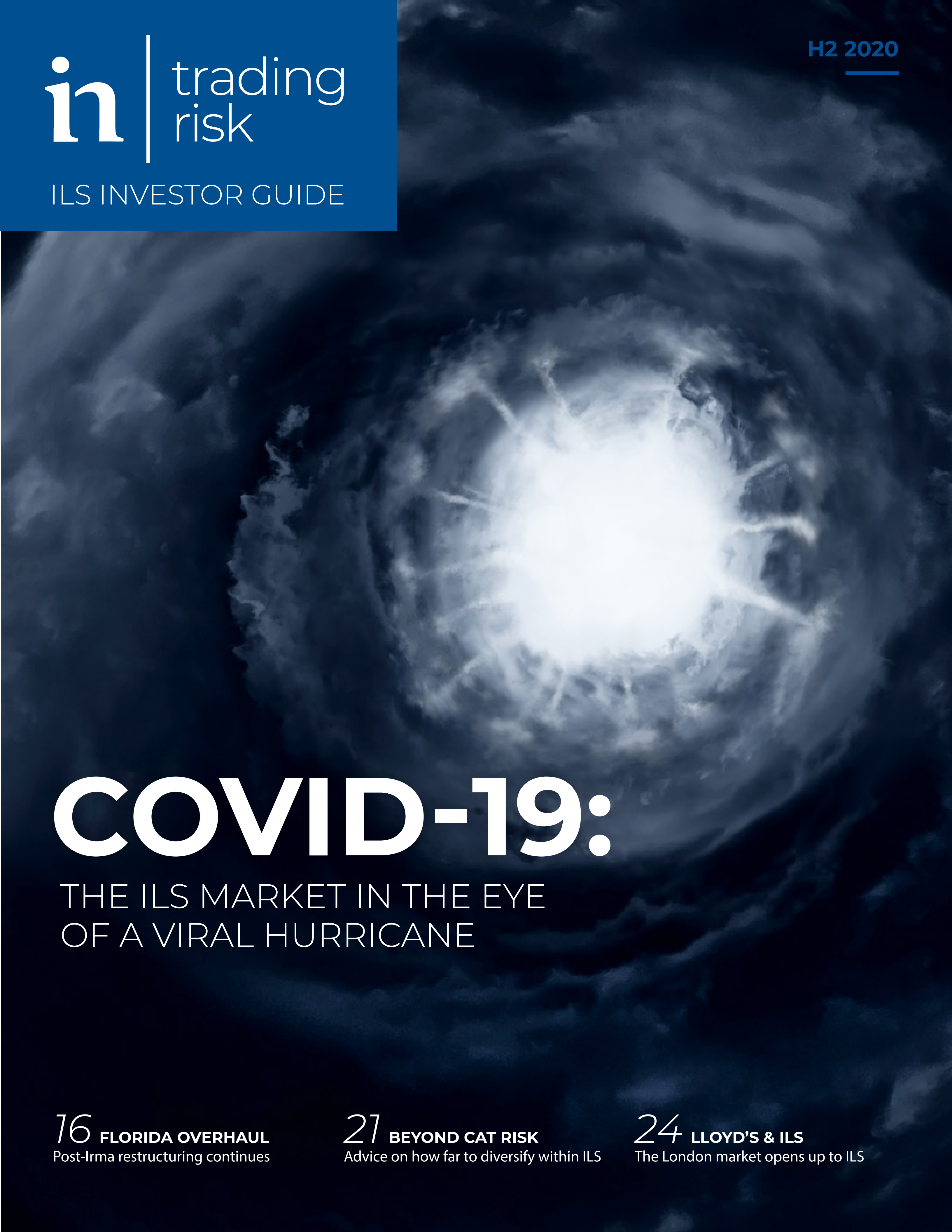
in trading risk

ILS INVESTOR GUIDE

H2 2020



COVID-19:

THE ILS MARKET IN THE EYE OF A VIRAL HURRICANE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From one storm to another...

As summer drew to a close, Covid-19 was no longer front of mind for the (re)insurance industry – Hurricane Laura had knocked it off the top of the agenda.

Early estimates are always cautious ones, but it ultimately looked to be another minor earnings event for the industry.

But it was a reminder of the grim outlook for the 2020 hurricane season is entirely in keeping with this dire pandemic year, with so many forecast storms that most of the alphabet is set to be used up.

This daunting prospect will shape the direction of the market in 2021, regardless of Laura's ultimate cost.

Reinsurance rates are firmly on their way up, as risk-takers rein in their appetite for catastrophe risk – the only question is what losses are taken on the way there, and the knock-on impact.

But while the forecasts may be nerve-wracking, there are some underlying truths that I find both reassuring and mind-blowing after 10 years covering this industry.

First off is that the element of fortuity when it comes to insured losses creates such a huge range of possible outcomes. Disaster activity can be horrific, but minor swings in wind strength or location can have a huge bearing on the ultimate insured loss from an event.

This might not seem reassuring on the face of it, but it highlights that there is no certain doom in taking catastrophe risk – you can have a hyper-active hurricane season that doesn't hit an ILS portfolio at all. It really does reinforce the role of catastrophe risk-takers as being there for the hugely unlucky mischance – which means you need to be prepared to be in the asset class for the long haul.

Finally, it may be tempting to take this year as a portent of climate change doom, but it is so easy to fall into recency bias – especially when it comes to something like the weather, which has such an all-encompassing impact on our daily lives.

"The 2020 hurricane season will shape the direction of the market in 2021, regardless of losses"

Of course, climate change is clearly a threat that needs to be better researched by the ILS industry and modelling agencies, but this year is no more or less than one year's data.

Much of the decade I've spent writing about this market was in the midst of a so-called "hurricane drought" – so much so that for years before 2017, part of me felt that the prospect of a hurricane hitting the US was so remote that it might as well have been a figment of my editor's imagination.

This year that feels a very old memory, as we wait to see what kind of storms churn up in the Atlantic. But I do know that the ILS industry has been tried and tested in recent hurricane seasons, and will be facing it better prepared to tackle both its challenges and opportunities.

Fiona Robertson
Managing Editor,
Trading Risk

Contents

Safe havens amid Covid-19: the ILS market's diversifying case

The global financial crisis of 2008 was ultimately a great selling point for the ILS market and laid the ground for its boom years in the early 2010s. This year, after a challenging period of catastrophe loss activity, the market has a chance to reset.

Returns have held steady through a period of wild volatility in the equity and debt markets, and with ILS yields on the rise, the asset class is largely delivering on its promise as a diversifier.

However, while certain parallels exist, Covid-19 and the meltdown of mortgage-backed securities in 2008 are very different crises, suggesting the pandemic could reshape the ILS sector in complex ways.

The first wave

When governments around the world announced lockdowns in March, the ILS market had some of the same pressures as at the start of the financial crisis, chief among which was a general flight to cash.

However, outflows from the alternative capital markets have been smaller than in 2008 and mark-to-market losses were subdued compared to other asset classes.

Despite that, ILS yields have continued to improve, with cat bond rates having risen to levels last seen in 2013.

At the peak of the first wave of the pandemic, some multi-strategy investors sought to bulk-sell their cat bond holdings, which pushed down secondary market prices and temporarily halted new issuances.

That said, the resulting markdowns hardly compare to swings observed across other asset classes.

From February to April for example, Aon's ILS index slipped 0.8%, while the S&P 500 tumbled 20% and the Bank of America Merrill Lynch three-to-five-year BB US High Yield Index fell 10%.

Brokers estimate that when the cat bond market reopened, investors demanded spreads 10%-30% above pre-Covid-19 levels.

In terms of the margin on cat bonds – the multiple of spreads to expected loss levels – Swiss Re Capital Markets pegged the increase at 18% year on year, with margins approaching the 3x mark up from under 2x in 2017 (see graphic).

By the middle of the year, some upward pressure on cat bond spreads had equalised as maturities returned cash to investors, while in the private reinsurance market, rate momentum in Florida only gained speed (see p16-17 for more).

Insured losses and the BI debate

After the global lockdown, (re)insurance market participants began warning that the pandemic could rank among the most expensive insured losses in history, but how much those losses will affect ILS remains unclear.

Projections for ultimate Covid-19 losses vary dramatically. This was illustrated by scenarios set out by Willis Re in May showing an estimated $11bn loss for an optimistic three-month lockdown, $32bn for a moderate six-month lockdown and up to $140bn in a worst-case disaster.

The global death count in August of 765,000 has surpassed levels envisaged in Willis Re's optimistic scenario, but remains well below the three million linked to its moderate scenario.

In line with this outcome, during the Q2 reporting season in July and August, some market participants questioned whether loss projections were overblown, with (re)insurers categorising their initial reported claims as a loss to earnings, not a threat to capital stability.

For its part, Lloyd's of London projected in May that insured industry losses may reach $107bn, with three major sectors comprising the bulk of claims: property, event cancellation and credit insurance.

One key reason the ILS market has withstood this disaster with such a minor impact to returns is that investors have very limited exposure to credit and cancellation risk, which is dominated by traditional (re)insurers.

Despite that, some fear that property business interruption (BI) coverage could still be a major swing factor in the ILS loss toll.

In terms of the ILS market's exposure to BI claims, certain segments of the market are well-insulated against potential losses, such as the cat bond and ILW markets, which typically provide coverage only for specified natural perils.

Aon Securities CEO Paul Schultz said remote collateralised reinsurance layers will also be well-isolated from Covid-19's impact.

"Rather than a non-correlating asset class, we describe it as having low correlation – at the tail events, some correlation emerges," he added (see p11 for more).

Commercial reinsurance and quota share/sidecar vehicles are the most likely to pick up losses, but here the ILS market's bias towards US coverage should provide some protection.

This is because US commercial policies employed much more uniform BI cover than their counterparts in the UK and European markets, typically excluding virus claims and requiring physical property damage to justify a payout.

Moreover, treaty reinsurance usually allows insurers a week-long period to accumulate claims under their excess-of-loss covers, implying that only limited interruption claims could be covered by these deals, although there is the possibility for hours clause applications to be disputed.

In an April webinar hosted by *Trading Risk*, HSCM Bermuda co-founder Michael Millette said BI losses were "not terribly likely" to get far into the catastrophe reinsurance world due to the strength of US wordings.

"For the sector to see losses creep up into cat towers, we would have to see a thoroughgoing judicial refutation of language which I do not expect," he said.

Millette suggested Covid-19 trade credit losses could come to around $20bn, with $10bn-$15bn from liability lines, and $10bn from the contingency market and additional workers' compensation losses.

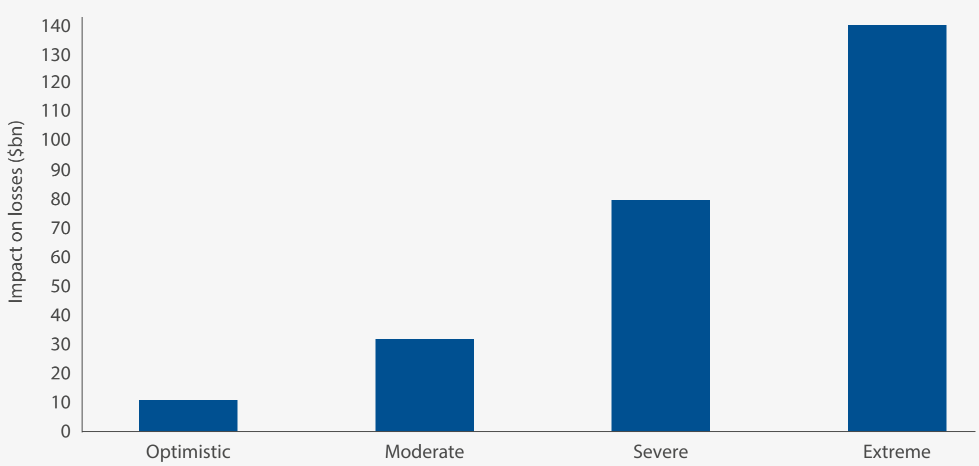
"Those numbers are not really part of the capital market segment of reinsurance," he pointed out.

If property BI losses did rise to the $20bn level, this would start to affect the reinsurance and retro markets, but it would "by no means be a wipeout", he noted.

At the $7bn-$8bn level, claims would not transfer far into the reinsurance markets at all.

The outcome of a highly level UK test case led by the FCA against insurers will be a major landmark that should provide some certainty for the industry on how losses will evolve.

Wide range of loss forecasts for Covid impact



*UK and US market loss estimates for business interruption, contingency, D&O, general liability, mortgage, trade credit, surety and workers' compensation combined
Source: Willis Towers Watson

Question of confidence

Although ILS investors are expected to have limited exposure to any ultimate losses from Covid-19, there could be short-term disruption or collateral trapping.

In the mid-year renewals, several retro buyers held back collateral on grounds that the pandemic was an ongoing event for which losses were not yet clear.

While some retro contracts avoided exposure to the pandemic by covering only named natural perils, others were written on broader all-risks terms or were exposed to named perils "including but not limited to" events like hurricanes, earthquakes and the other meteorological nat cats.

Continued on page 06

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Non-Life and Life Strategies

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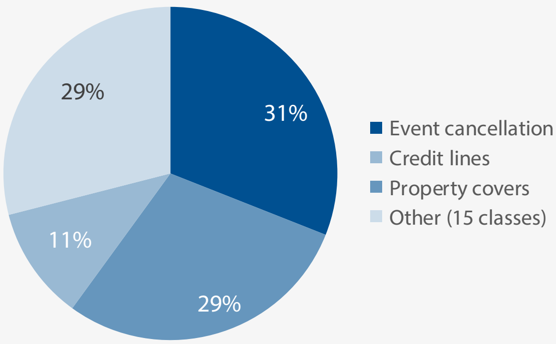
Covid loss potential split by insurance lines



Source: Lloyd's

Continued from page 05

This stands in sharp contrast to the standard "all risks" basis for reinsurance, where commercial deals could also face trapping. The market has quickly moved to ringfence itself from future exposures, with a shift towards introducing virus exclusions apparent in the mid-year renewals.

But ultimately, the degree of dislocation may come down to how confident investors are with that remediation on wordings and that their prior exposure to BI losses remains insignificant to the non-correlating thesis behind their ILS holdings.

New capital inflows

Even though initial Covid-19 losses have been bearable for (re)insurers, the shock to results on the back of underlying concerns over other longer-term trends, such as loss inflation and casualty under-reserving, has produced a major change in the pace and tone of the (re)insurance market after years of soft market conditions.

This year may not yet be a "hard market" in reinsurance expectations, as capacity is still available to meet buyer demand – but a broader uptick in rates, even on loss-free business, was observed in the mid-year renewals.

Amid this building momentum, several (re)insurers have completed major new equity issuances and a number of start-up efforts are underway, with leading industry executives tapping up private equity firms for backing.

One ILS firm is among the year's new launches: Integral ILS based in Bermuda. But the bias towards equity launches undercuts previous orthodoxy that the arrival of the ILS market implied an end to reinsurance start-ups following major loss events in 2001 and 2005.

One explanation is that the US excess insurance market is seen as a major area of opportunity in 2021, and this is a better fit for rated platforms.

However, Aon's Schultz said traditional start-ups are still developing in a harmonious way alongside ILS interest. "Start-ups are still thinking about putting in collateralised capacity next to them," he said.

But most of the new potential rated start-ups are being pitched to private equity, a different capital base than the institutional ILS investors.

However, there may be some overlap.

At the other end of the spectrum, opportunistic fundraising and potential new launches or fundraising is likely to focus on the retro market, which is expected to face further dislocation after hardening significantly over the past year.

This is where Schultz forecast that new launches could benefit from an overlap in the capital base flowing into the market, given that retro risks offer an equity-like risk-and-return profile.

As ever, one big question remains: can ILS managers convince investors that now is the time to enter the market or expand their positions?

If the answer is yes, ILS funds may be able to grab their share of the rising market in 2021 alongside other growing reinsurance start-ups.

Private equity fundraising activity

Individual/company	Amount ($mn)	Further notes
Ark	800	Evercore and TigerRisk advising on fundraise to target Lloyd's and Bermuda expansion as well as possible US onshore
Beat Capital	Unknown	Evercore appointed for fundraise in order to create own balance sheet and support existing Lloyd's business
Convex	1,000+	Looking to raise additional equity capital, with speculation that it will seek to hit its previous go-live target of $3bn
Dinos Iordanou	1,000-1,500	Capital lined up with Carlyle and H&F to deploy either via a new venture, or through acquisitions. Former Axa XL CEO Greg Hendrick linked to venture
Jeff Consolino, Ed Noonan	610	Noonan and Consolino with backing from Aquiline, Dragoneer and SkyKnight has bought into StarStone US; Enstar retains minority stake
Fidelis	500	Fidelis has tapped investors including ADIA, Crestiview and CVC to grew equity base by 45%
Martin Reith	700	Working with Macquarie to size up start-up or buy-in opportunities
Mitch Blaser	Unknown	Early stages of exploring the feasibility of creating a new specialty insurer, Lloyd's preferred platform. Targeting stamp of £200mn
Richard Watson	Up to 1,000	Appointed Evercore for fundraise, working alongside Russell Merrett and Stuart Bridges for Lloyd's-Bermuda venture
Joel Livingston	Unknown	Is in early stages of exploring a Bermuda reinsurance business and has met with PE firms to assess appetite

Source: Insurance Insider

ILS: profitable diversification in 2020

The non-life reinsurance markets are experiencing a scarcity of capacity not seen since 2006, enabling ILS managers to drive better prices and terms when deploying capital. Meanwhile, Covid-19 may open up more trading opportunities on the life ILS markets

Non-life ILS market overview

Non-life reinsurance remains one of the few strategies with low correlation to the mainstream equities and credit markets, having performed well through the 2007–2008 global financial crisis and this year through the Covid-19 pandemic.

During the Covid-19 crisis in March 2020, the Swiss Re Global Cat Bond Price Return index declined by a modest 2% (compared to other indexes such as the S&P 500 and the Finra investment-grade and high-yield bond indexes) following a sell-off from investors looking to monetise liquid assets. However, by the end of June the Swiss Re Cat Bond Total Return Index had recovered by 1.66% and quickly made further gains thereafter, highlighting the limited impact on valuations in the traded ILS market so far.

During both the 2007–2008 and 2020 crises, the negative impact on (re)insurers' investment portfolios reduced traditional deployable capacity, leading to higher premiums due to a lower supply of capital.

As a consequence of the above – together with a reduction in market-wide ILS assets under management (AuM) and a significant re-pricing of risks following recent catastrophic events in 2017, 2018 and 2019 – the reinsurance market is enjoying a "hard market" (premiums go up strongly, and repeatedly on loss-impacted and loss-free investments), with a scarcity of capacity not seen since 2006. During hard markets there are often material industry-wide premium rate increases combined with tighter reinsurance coverage, and disciplined sellers of (re)insurance (protection capacity providers) gain traction on more qualitative items such as the structural mechanics and contract terms and conditions.

The ILS asset class is currently experiencing a hard market that is perceived to be the best in terms of both pricing and terms and conditions in over a decade (US property rates increased 76% year on year following hurricanes Katrina, Rita and Wilma in 2005).

From Leadenhall Capital Partners' underwriting perspective, this very attractive market environment is enabling all of our non-life ILS strategies to i) both increase their no-loss net return target year on year and ii) reduce the expected loss whilst tightening terms and conditions.

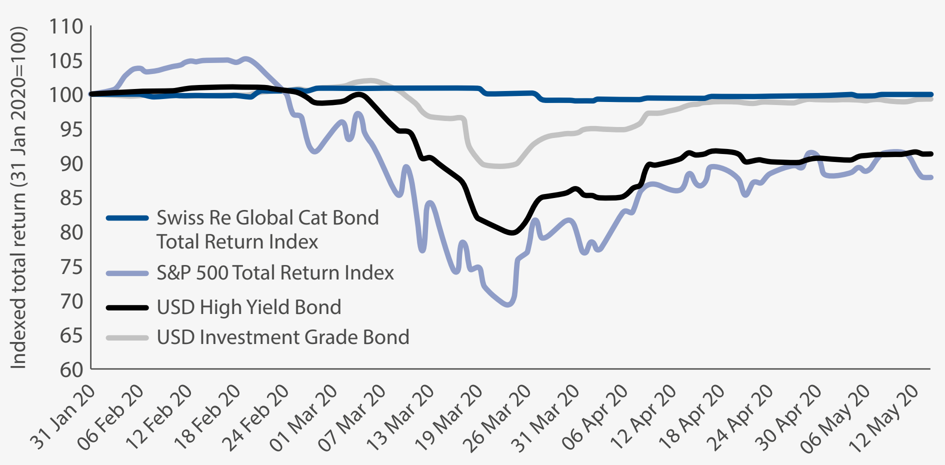
In 2020 the key ILS private placement renewal periods during January, June and July (key renewal dates for US reinsurance) demonstrated the very attractive pricing, terms and conditions which are expected to continue through to the 1 January 2021 renewals.

Property catastrophe reinsurance rates on line rose by an estimated 26% at the 1 June 2020 renewal, according to data from an index tracking average risk-adjusted pricing from Hyperion X Analytics.

Florida was non-loss affected in 2019, however reinsurance market capacity was under pressure due to a combination of the 2020 reinsurance market dynamics and further loss development from 2017/18 events. As a consequence, +20% to +60% rate increases were seen for June and July Floridian renewals. The compounded increases over two renewals now ranges from +40% on typical higher-risk layers to more than 100% on some lower-risk layers.

Renewed reinsurance programmes priced at higher premiums, and in some cases benefited from simplified structures and tighter terms and conditions. The redesigning of reinsurance programmes provided Leadenhall with greater opportunities to deepen relationships with core clients on more favourable terms. Leadenhall, with joint venture partner Mitsui

Cat bond index holds steady amid Covid-19 downturns



Source: Bloomberg

Sumitomo Insurance, was taking a market-leading stance in improving terms and conditions, such as:

- Replacing cascading occurrence structures with fixed retention structures
- Tightening occurrence event definitions
- Enforcing explicit pandemic exclusionary language, where applicable, on new and renewal business

With the hard market conditions, tighter terms and conditions including exclusionary pandemic language on new and renewal business, and side pockets to protect current and potential new investors, Leadenhall has positioned the funds to make the most of the current market opportunity in the non-life space.

Life and alternative credit (Life ILS)

Having managed life ILS since 2010, Leadenhall is one of the longest standing and largest life investors (by AuM) in the ILS sector. Leadenhall's life and alternative credit strategies are primarily exposed to biometric and behavioural risks such as mortality, morbidity and persistency (policyholders lapsing or discontinuing their policies).

These risks are sourced mainly through illiquid private financing transactions, including secured financing opportunities where life actuarial skills and a deep knowledge of the life and health insurance industry act as a barrier to entry. Additionally, those biometric and behavioural risks are not well understood or valued by traditional lenders. Thanks to its size and its ability to design bespoke solutions and provide certainty of execution, Leadenhall continues to be a key port of call for all but the largest life and health insurance related businesses seeking private financing or capital solutions (i.e. those lacking the rating and/ or scale to access public debt markets). Additionally, Leadenhall adds to those private sources of risk through the use of publicly traded life and health ILS bonds.

Authors:

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Joel Milnes, Senior Analyst Business Development

Uncertainties stemming from the ongoing Covid-19 pandemic are resulting in capital-related challenges for life and health entities that could materialise in attractive new investment opportunities for investors. To date, the impact to the key risk components has had a fairly mild effect on returns overall (i.e. a minor income event, and not a capital level event to funds). The situation is being closely monitored and assessed and Leadenhall sees a renewed opportunity to provide parametric based pandemic business interruption solutions.

Whilst the life and alternative credit business is naturally exposed to increases in mortality and morbidity rates, this exposure is mainly to the insured working age population, which has been less impacted by the ongoing pandemic than the general and older age population. In addition, investments are typically structured to attach at levels of mortality and morbidity that are far above those currently being experienced during the pandemic. In the case of morbidity-related covers, the Covid-19 pandemic has led to such investments moving even further away from attachment as a result of non-urgent and elective medical procedures being postponed. Leadenhall's life and alternative credit funds and accounts have to date delivered a positive return to investors during 2020, illustrating the remote nature of the fund's exposures to this pandemic event. One public transaction which features exposures to pandemic risk and infectious disease outbreaks has triggered, but this has had no impact upon the Leadenhall funds as the investment has never been held in the portfolios on account of our assessment of the risk/reward profile.

The Covid-19 pandemic has increased awareness among consumers of the benefits of life and health insurance policies. Existing policyholders are showing a greater propensity to keep their policy in force (i.e. reduced lapse experience emerging on some portfolios) whilst on the new business front increased volumes of new policies are being sold as individuals seek protection against adverse outcomes from infectious diseases. Issuance of new insurance policies is capital and liquidity consumptive for life and health insurance businesses (so-called new business strain) and so these increased new business flows are expected to translate into higher levels of transaction activity. The broad adjustment across all asset markets that took place in March 2020 has also been positive for the life and alternative credit segment, supporting a stronger pricing environment for the flow of new transactions coming to market. The sudden and far-reaching effects of the Covid-19 pandemic across all business sectors is also likely to spur demand for pandemic risk transfer solutions beyond the traditional insurance buyers seeking reinsurance and retrocessional covers.

Whilst the Covid-19 pandemic has not caused a significant strain for the liability side of the balance sheet for life and health insurance businesses, the asset side continues to show strain in particular from the now universal zero-rate environment across developed markets. Capital management actions are expected to come into focus as businesses approach year-end 2020 annual reporting deadlines and transaction activity is likely to follow.

Finally, as traditional investors are finding attractive investment opportunities in the traditional credit markets, Leadenhall expects to be able to continue to deliver attractive investment opportunities with an attractive risk-return profile to its investors, albeit in the context of the near-zero risk-free rates environment.

ILS capacity retracts in H1 2020

Top-tier ILS firms posted one of the steepest drops in collective assets under management (AuM) in recent years during H1 2019, driven largely by delayed reporting of cutbacks as investors left the market after consecutive years of losses, according to research by *Trading Risk*.

The downturn may also reflect Covid-19 withdrawals that occurred due to a flight to liquidity in the initial weeks of the pandemic.

Many cat bond funds in the ILS specialist sector have shrunk by a small amount as investors have cashed in their most accessible ILS assets, while new fundraising has also been hard hit by the lockdown.

Top ILS firms with more than $2bn of AuM reached $67.5bn by July 2020, down 5% from the start of the year – outpacing the 1%-2% half-year downturn recorded over the past year and the steepest slide since Markel Catco's asset base was removed from the records as it went into run-off.

AuM at Stone Ridge Asset Management and Credit Suisse fell by $1bn based on quarterly lagging data, with Nephila Capital shedding roughly $900mn and Securis down $600mn.

RenaissanceRe moved up after raising further capital for its Vermeer Re joint venture in late 2019, based on data available on a quarter lagging basis.

The rest of the group disclosed stable figures or smaller-scale $100mn-$300mn retractions in AuM.

The trend of smaller-scale ILS managers expanding after Hurricane Irma continued, as Hudson Structured Capital Management gained $100mn with two other fast-growing firms nearing the $2bn mark.

ILW specialist Neuberger Berman gained $300mn to reach $1.9bn, while Pillar Capital moved up by $100mn to $1.9bn.

In March, the cat bond segment was hit by some fallout from broader market markdowns as investors cashed out, although the market stabilised after an initial hike in sell offers in April.

However modest, the impact on this segment has been apparent, with capacity among European liquid UCITS funds tracked by *Trading Risk* falling 4.5% to $4.7bn over the half year.

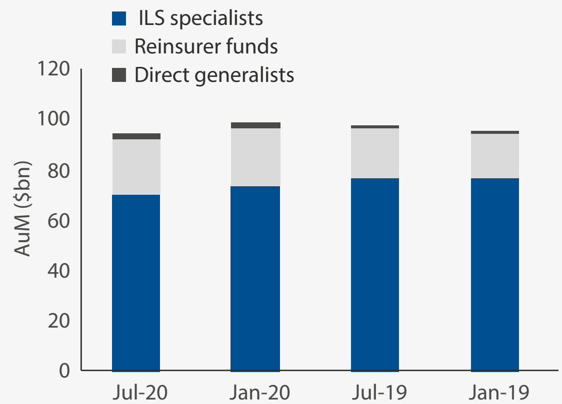
Total ILS assets tracked by *Trading Risk* reached $94bn by mid-2020, comprising $70bn of ILS specialist funds, just under $23bn in reinsurer funds and $1.7bn of allocations from generalist firms that invest directly in the ILS market but which do not offer specific ILS strategies to external investors.

The $94bn pool of capacity will include a level of double-counting of AuM, as some generalist firms buy cat bonds and invest with specialist managers, while other specialist ILS managers such as Stone Ridge and Amundi Pioneer invest large sums with reinsurer managers.

However, to minimise double-counting, ILS funds of funds – which manage a total of $1.7bn – are not tracked in the total group.

For the full listings see page 32-33.

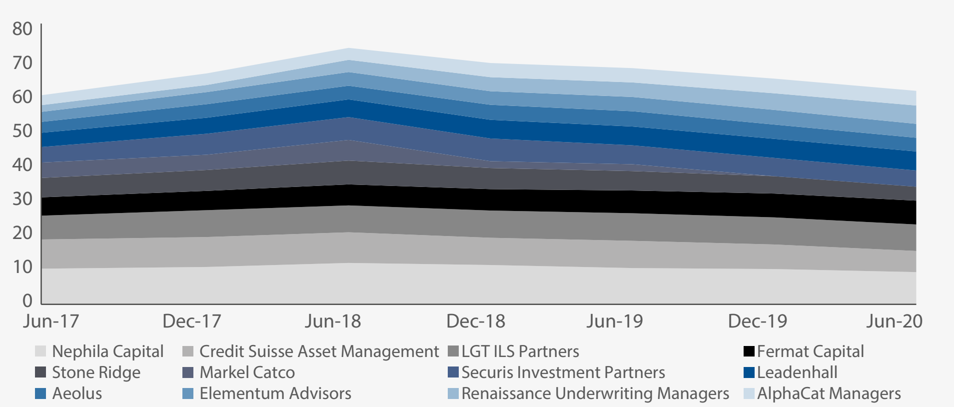
Overall ILS assets stable amid varied results



Source: *Trading Risk*

"Top ILS firms with more than $2bn of AuM reached $67.5bn by July 2020, down 5% from the start of the year"

Top ILS managers AuM



Source: *Trading Risk*

ILS firms reshaping risk appetites

More differentiation is emerging as the market evolves, says Aon Securities CEO Paul Schultz

How has the cat bond market coped amid Covid-19?

The initial impact of Covid-19 temporarily deferred some new transactions, and also prompted outflows from certain investors. Some investors sold in bulk to reallocate to other opportunities away from ILS, with over $400mn of cat bonds offered in the secondary market in April.

At the beginning of Q2, spreads increased to levels reminiscent of 2013 – widening about 10% on average – but over the course of the quarter, as selling pressure abated, secondary spreads rebalanced moderately, although did not reach pre-Covid levels.

The sell-off in March led to a small negative return for Aon's ILS index, but this dip was minimal compared to what was experienced in other markets (see graphic) – the ILS Index saw less than a 1% decrease, highlighting the stability and low correlation of the ILS market. For Q2, the ILS Index has seen a 2.12% return, with a year-to-date return of 2.70%.

A slight widening of issuance spreads did not stop repeat cat bond sponsors from coming back to market in the second quarter, where $2.8bn of Q2 issuances brought the outstanding market to $28.4bn at the half-year point.

Paul Schultz
CEO of Aon Securities

Investors made reasonable requests for future transactions, seeking exclusionary wording around pandemics and more specific definitions of "other perils" on future transactions, to minimise uncertainty. So far, it seems that sponsors have agreed to this request.

We believe the busy pipeline will continue over the next two quarters given the expected maturities of approximately $2bn, and the steady flow of new issuances – despite a brief interruption due to Covid-19 volatility – was a great reminder of the resilience of this market.

How has the rest of the ILS market held up as a diversifying "safe haven" amid Covid-19?

Rather than a non-correlating asset class, we describe it as having low correlation – at the tail events, some correlation emerges.

To comment on the Covid-19 loss impact, we have to look product by product, as the more remote cat bond and collateralised reinsurance layers are well isolated from the impact. The products that have a higher risk-return profile, with an expected loss every five to 10 years – such as retro and sidecars – will pick up some level of the losses we're seeing.

But the more important point is whether investors feel there has been adequate transparency about these risks, and whether they feel they're receiving adequate returns.

How do you expect the ILS market to be reshaped by Covid-19 and prior loss years?

We have started to see a little bit of a difference in how the ILS managers are deploying their capital.

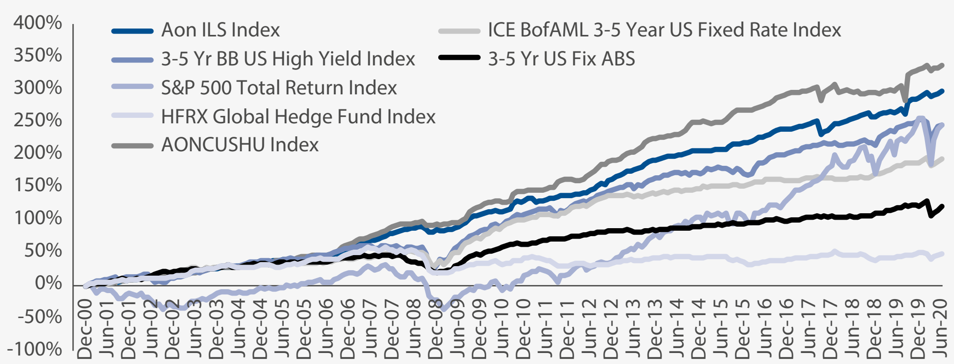
There's somewhat of a "risk-off" mentality, where some ILS managers are pulling back on Florida and cycling out of higher-risk business. Over the next 12-18 months these trends will continue as ILS managers rebalance their portfolios and where they are deploying their capital. But it's not universally true of all ILS managers, and one of the attractive things about the market is the varying portfolios that are being created for ultimate investors.

We think a rotation towards more liquid ILS risks will also develop over time. The way reinsurers buy retro will change, as well. We expect them to make more use of cat bond issuance alongside their traditional indemnity cover.

When ILS capital began heavily investing in Florida four to five years ago, there wasn't necessarily a differentiation in the way they did that – for investors building their portfolio for the first time, it was enough to have diversifying risk.

Now, as the market is larger and more mature, there is more importance placed on how one risk compares to another. You can see some differentiation in the evaluation of underwriting opportunities, where loss events are highlighting the companies' comparative performance.

Aon ILS Index since inception



Source: Aon

Cat bond market surges after Covid pause

Some $6.8bn of new cat bonds were issued in the first half of 2020, as volumes and spreads surged after a pause amid the initial Covid-19 lockdowns.

The first-half new issuance volumes came close to double the $3.5bn prior-year benchmark, making it one of the busiest H1 periods on the cat bond market over the last decade.

Cat bond yields moved back to 2011-2012 levels during the second quarter, according to some estimates, although secondary market spreads abated somewhat after the initial post-Covid-19 spike.

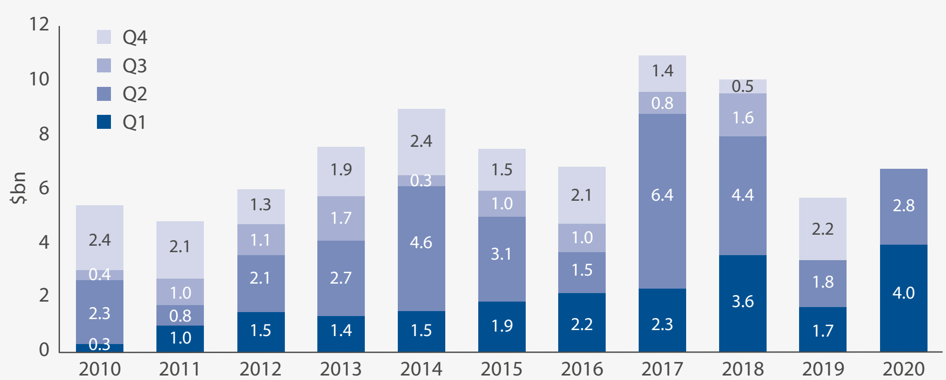
However, with a high level of maturities returning cash to cat bond investors, and $2bn of further maturities due in the second half according to Aon Securities, the market still has some room to go to post overall 2020 growth.

A couple of new cat bond deals were withdrawn by their sponsors as they faced higher premiums, but overall volumes were supported by a mixture of retrocession deals benefiting reinsurers, and reinsurance deals for nationwide US insurers.

This fitted with an expected trend towards greater use of the cat bond market from reinsurers – with their industry loss cat bond structures typically seen as a clean, easily modelled ILS transaction.

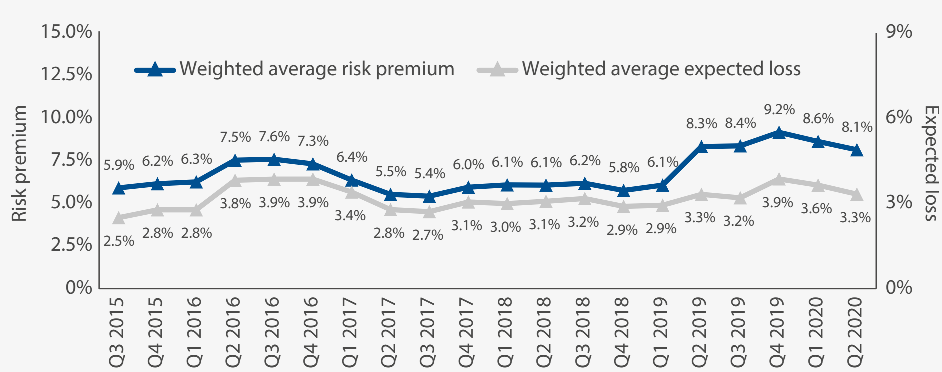
"With a high level of maturities returning cash to cat bond investors, and $2bn of further maturities due in the second half, the market still has some room to go to post overall 2020 growth"

H1 2020 cat bond volumes surpass FY 2019



Source: *Trading Risk*

US wind gross cat bond yields remain in high single digits



Source: Willis Re

Higher margins

In Q1, average cat bond spreads reached 6.5%, with an annual expected loss of 2.4%. Typically, cat bond managers express the potential margin on a cat bond investment in terms of the multiple of insurance premium over modelled losses. For Q1, this produces a multiple of 2.7x.

The multiple moved even higher in Q2 to an average 3.1x, on average spreads of 6.33%. This shows the higher risk-adjusted return on investment available in 2020, as the average margin came to 2.4x in 2019 and 2.2x in 2018.

Yields have risen for both US and non-US cat bonds, according to the Willis Re Securities rate-on-line index. This index shows that US-exposed cat bonds have been offering gross yields of 8-9% on average over the past year, not accounting for expected cat losses.

Meanwhile, another benchmark of ILS rates, the Lane Financial rate-on-line index, suggested that by the end of Q2 the market was back in line with levels last seen in 2011-2012.

Cat bond spreads are almost 75% higher than the spreads that were on offer in 2015 and 2016, the index shows, but they are still 25% below the highs of mid-2008.

Q&A: Dr Ben Fox

The Hiscox ILS portfolio manager says the pandemic has been an important reminder for the industry on the value of clarity in wordings and terms

How do you think post-Covid ILS returns look?

We have seen the pricing environment harden over the past few years driven by a variety of factors including catastrophe losses and trapped collateral, uncertainty around the materiality of the impact from Covid-19, and a recognition that the cost of investor capital has gone up as a result of these factors in a changing macro-economic landscape. We expect this trend to continue through 2021 and we currently estimate that returns are on par at least with those last seen in 2013 if not earlier for new capital looking to be put to work in ILS. However, we understand that for existing investments – once you factor in drag from trapped collateral – overall returns may look less appealing.

This is especially so for those allocations made in inefficient capital structures. At Hiscox ILS we consider our platform to be representative of the more capital-efficient structures in the market and we believe, based on what we hear anecdotally in the market, that our valuations have been amongst the most stable over the past three years.

What lessons will underwriters take forward from the pandemic?

It's relatively easy to monitor the rises and falls in catastrophe pricing, but much less so for contractual elements. It obviously follows that most, if not all, markets will have been tightening up their wordings and ensuring policy language is clear and unambiguous. That said, the majority of our policies are linked to physical damage so with specific respect to Covid-19 we have to await the outcome of the numerous judicial proceedings taking place to gain better clarity, which will take some time.

The pandemic is a reminder of how broad the definition of risk can be and at times our industry can fall prey to oversimplifying what it is we are covering. We tend to focus on hurricanes, earthquakes, flood and severe convective storms when in reality we are selling protection that is potentially much broader in scope. No matter the outcome of the pandemic, this will serve as a painful reminder to both insurers and reinsurers to ensure all parties are clear on what is covered and what is not covered as well as ensuring covered perils are being priced for. A focus on crystal-clear

> *"A central tenet of reinsurance is the ability to construct diverse portfolios"*

exclusions and a reversion to policies being sold on a named-perils basis should become the norm. A central tenet of reinsurance is the ability to construct diverse portfolios whereby catastrophic events only impact a limited, discrete subset of your portfolio. If the ability to build a diversified book of business goes away, then there is a necessary knock-on effect on pricing.

Although currently limited in their proportion of the market, I could foresee an increase in appetite for parametric covers from both buyers and sellers. Unambiguous triggers and fast pay-outs hold tremendous appeal against the current backdrop of Covid-19 uncertainty. One area where parametric solutions are common is in the development space and our funds have supported recent issuances by CCRIF and ARC to name a few. As long as these schemes are well-priced and well-structured we will look to continue supporting them.

Do you think the Florida (re)insurance market has made enough changes to address post-Irma issues?

It's hard to make sweeping market-wide generalisations, but I'd highlight Florida's 2019 assignment of benefits reform bill as a much-welcomed legislative development designed to address some of the causes of claims inflation following loss events in the state. That said, our cedants do not expect a material impact on catastrophe claims from the reform bill going forwards and we have made adjustments accordingly to our internal proprietary view of risk. This segues to a broader point here, which is that investors experienced vastly different performances from their managers through 2017 and in the years since, and I'd expect continued, perhaps even widening, differentiation as lessons learned are internalised and actioned appropriately. For instance, at Hiscox ILS we have benefited from the hard work of our reinsurance underwriting and analytics teams – specifically with respect to Florida and the issue of social inflation – and have halved the number of Florida cedants our investors' capital supports during the mid-year renewals as we continue to pivot our support towards those we consider best in class. These relationships are often well-established and are all highly valued as they afford a level of transparency during uncertain times like these that is simply not available to newer market entrants.

ILS returns promising in H1 despite Covid uncertainty

ILS fund performance fluctuated in the first half of 2020, following a pattern broadly similar to recent years, as strong returns in January and June offset write-downs in March due to the pandemic.

The H1 return on the Eurekahedge ILS Advisers Index reached 0.86% as of the end of June, already closing in on the 0.92% return produced for full-year 2019 after the loss-making 2017 and 2018 years.

The index tracks 33 funds, including private ILS funds and pure cat bond funds.

Private ILS or collateralised reinsurance funds fared particularly well in the first half, producing average returns of almost 1%, while pure cat bond funds delivered around 0.7%. By contrast, in 2019 cat bond funds had outpaced private ILS strategies.

Gains this year could keep ILS benchmarks in positive territory for a second year running, but various natural catastrophes have still affected the market in 2020.

In Australia, wildfires and storms at the start of the year are likely to have impacted some ILS strategies, but returns in January and February were still the strongest in the past four years.

The World Bank pandemic cat bonds were marked down in February, but the greater impact of the Covid-19 pandemic was recorded in March and April.

Private ILS significantly outperformed cat bond funds due to the mark-to-market hit from Covid-19, as investors looked to free up cash and exit the market, but these markdowns were largely unwound in April.

As the pandemic began to dominate the news cycle in March and April, extreme weather hit the US and Australian disaster losses crept up, but the period was still "relatively quiet" in terms of nat cat losses, ILS Advisers said.

In April certain managers reserved for potential BI claims linked to the pandemic. Significant uncertainty remains over the extent to which these could spread to the ILS reinsurance and retro market, with some trapped capital expected as the uncertainty and disputes play out.

In May, the index climbed back into positive territory, and returns surged in June, with the average fund up by 0.67%, despite some managers increasing prior-year loss reserves and setting up side pockets for potential Covid-19 claims.

While uncertainty around the pandemic remains, bullish signs for ILS have nonetheless emerged.

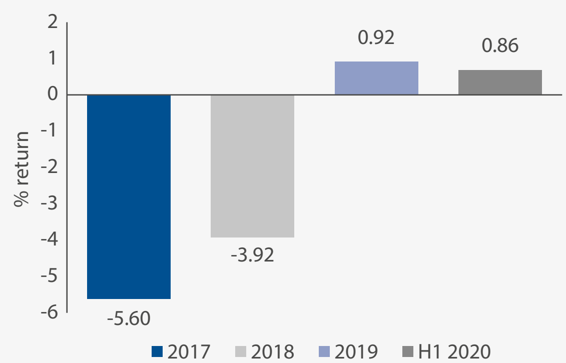
During the second quarter, cat bond volumes leapt 44% year on year, as investors demanded higher returns amid an increasingly hard ILS and reinsurance market.

Eurekahedge ILS Advisers Index 2020

	Pure cat bond funds return	Private ILS funds return
Jan	0.68%	0.54%
Feb	0.25%	0.33%
Mar	-1.39%	-0.10%
Apr	0.23%	-0.47%
May	0.15%	0.10%
Jun	0.80%	0.58%

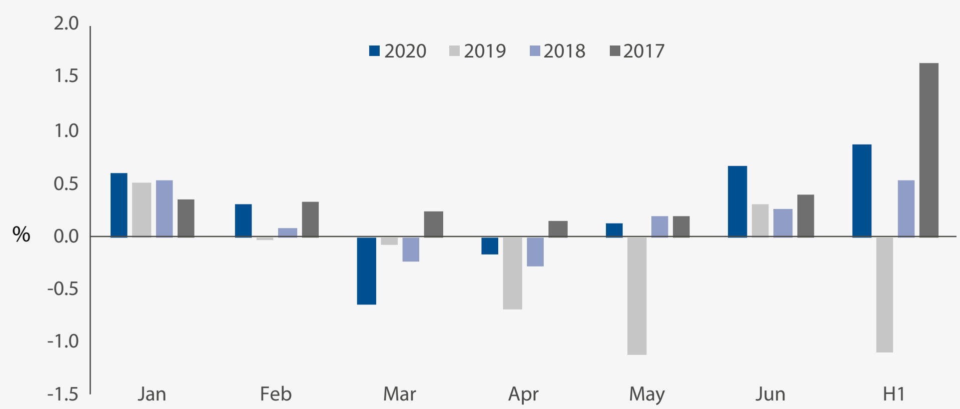
Source: Eurekahedge

H1 2020 gains continue reversing 2017-18 losses



Source: *Trading Risk*

2020 ILS performance robust as Covid spreads



Source: *Trading Risk, Eurekahedge ILS Advisers*

Insurers bear the brunt of 2020 cat losses

The insurance industry could face substantial catastrophe losses in 2020, but the bulk of claims to date have been retained by primary carriers rather than transferring to reinsurers and ILS providers.

All eyes remain on potential further hurricane activity, with the highly active season coming after a string of tornado losses earlier in the year. Meanwhile wildfires have raged in the western US in September.

First-half loss figures hovered around average levels, although the numbers vary depending on the benchmarks assumed.

Swiss Re put insured disaster losses at $31bn, up 35% from the same period in 2019 but well below the 10-year average of around $36bn.

Natural disasters made up most of the insured losses at $28bn, up significantly from $19bn the year before, as man-made losses fell to $3bn.

Aon's Impact Forecasting unit put the loss tally at $30bn, exceeding the 20-year average of $28bn, but coming in 21% lower than the 10-year average of $38bn.

An unusual event may be the most costly to hit the US to date. A massive derecho wind storm that hit Iowa in August caused heavy damage to property and crops. Insured losses are estimated at between $4bn at the low end and $10bn at the high end from that storm alone.

As reported by *Trading Risk*, much of the damage is likely to be retained by insurers, but reinsurers will be watching for potential crop exposure and aggregate erosion.

The August derecho comes after an active tornado season in the US, with Aon estimating at least 10 separate billion-dollar events related to thunderstorms in the first half of 2020, with additional damage in Canada.

For hurricanes, forecasters at Colorado State University and elsewhere have reached a consensus that 2020 will likely be a stronger-than-average year.

Hurricane Isaias made US landfall on 3 August, bringing 85 mph winds to North Carolina and causing estimated losses of $1bn to $4.2bn, according to different assessments.

Around a month later, Hurricane Laura made landfall as a Category 4 storm in Louisiana, and provisional intelligence from market sources points to an all-in insured loss around the $10bn mark, excluding National Flood Insurance Program claims.

Neither hurricane brought anything close to the destruction seen in the aftermath of Irma or Michael, which destroyed swathes of homes in Florida in 2017 and 2018 respectively.

Shifting to California wildfires, 2020 is on course to become one of the worst years in terms of charred acreage, though insured losses have yet to exceed those recorded in 2017 and 2018, when more developed areas of the Golden State were set ablaze.

According to Aon, as of 11 September almost 2.3 million acres had been burnt by some of the most destructive Californian fires since they began in mid-August, although it noted that its list was partial.

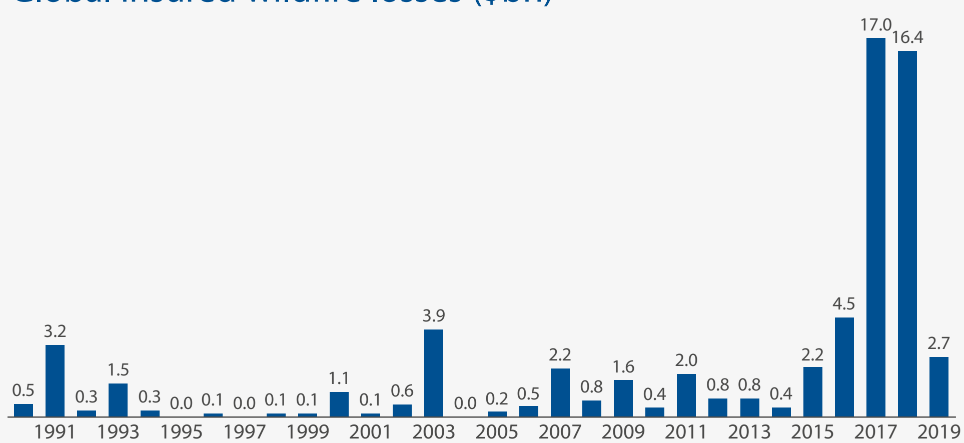
Together, Aon estimates the US fires could lead to over $2bn in claims this year alone.

Meanwhile, the Pacific typhoon season has been active, with 10 named storms in the year to date, three of which have made landfall in the Korean Peninsula since late August, Aon reported.

The most recent of these storms – Typhoon Haishen – formed shortly after its predecessor Typhoon Maysak and followed a similar trajectory, passing through southern Japan on 6 September and heading toward South Korea, Aon said.

Haishen is reported to have caused at least four casualties in those countries, destroyed homes and prompted power outages estimated to have caused economic losses in the "hundreds of millions" of US dollars, according to Aon.

Global insured wildfire losses ($bn)



2020 dollars
Source: Aon

Florida reinsurance rates soar in mid-year renewals

This year's June renewals were a game changer for the Florida reinsurance and ILS markets, with property reinsurance rates jumping by 30%-40% over those seen in 2019.

The huge uncertainty the pandemic has brought to the market, combined with a stronger Atlantic storm season forecast and a tighter retro market, gave an extra boost to rates.

But existing trends such as continued loss development and lawsuit activity related to 2017's Hurricane Irma remained a key underlying driver of change.

This heady mix of factors left reinsurers in relatively strong position to charge more for Florida cover.

Some market sources compared the 2020 mid-year renewal process to the dislocated market after Hurricane Katrina, but rates have yet to reach those levels. Instead, many sources estimated that mid-year renewals took yields closer to 2013 levels (see chart).

Meanwhile, the 2020 mid-year renewals were marked by significant changes in coverage terms as well as pure price, heavily influencing the improved returns available to risk-takers.

Cedants increasingly signed private bilateral deals instead of shopping for cover in the tightening subscription reinsurance market. Separately, carriers changed the structure of the treaties they offered the market, removing features such as cascading triggers and excluding pandemic-related losses.

The shift away from cascading triggers means that reinsurers and ILS managers are less exposed to the aggregate risk of a series of minor storms during hurricane season. Cover designed to trigger from major losses in the final segment of an insurer's reinsurance programme will now stay at those higher-attaching levels rather than "cascading down" if prior storms have used up underlying coverage.

Rate progression

Before coronavirus, the reinsurance market had expected 2020 mid-year renewal rates to come in 10-15% above those seen last year. However, renewals became more challenging closer to the 1 June commencement of hurricane season, and by then sources estimated that average rate change could be 30-40% or more.

However, with more bilateral deals being struck and a wide range of outcomes depending on the degree of risk being assumed, the average outcomes are always difficult to project.

Rate change was starkest on the higher layers of Florida reinsurance programmes, moving up by 40% to 75% year on year from a low base.

Key points

- Covid a major boost to lift rates beyond expected remediation
- Remote-risk Florida reinsurance deals now into double digits, a major hike from low benchmarks
- Overall yields back to ~2013 levels
- A challenging renewal results in more fragmentation and bespoke deals, putting firms that can offer larger deals at an advantage
- Major changes to coverage terms boost yields
- ILS participation shrinks overall

Many of these deals have now moved into the double-digit range in terms of absolute rate on line (RoL).

This means that risk-takers are being paid a coupon in the teens on risks that on a modelled basis are expected to take a full loss every 100 years or so.

At the other end of the scale, the bottom layers of Florida reinsurance programmes now pay 40% RoL or more, and rates may have moved up by around 20% from 2019.

Supporting prices further, a reduction in cascading structures in treaties drove up demand for reinstatement premium protection (RPP), which help to cover insurers' costs of reinstating coverage after an initial loss.

Several years ago, RPPs might have been charged as flat rates on line that matched the underlying layer to be reinstated, but now the loading varies from a high single-digit up to 20% add-on above the original premium.

Participation shift

ILS markets previously took a high share of these RPP covers, but lower capacity from ILS managers contributed to the tighter market and rising rates.

The ILS sector was expected to lose some market share in Florida in 2020 compared with last year, with its slice of the action sitting around just under 20%, according to *Trading Risk* analysis.

Floridian ILS writers Nephila, Aeolus, Elementum, Credit Suisse, Securis and other smaller players participate across a range of business in the state, some historically at lower layers and others at the top of programmes.

Meanwhile, opportunistic players such as Berkshire Hathaway and DE Shaw were said to have grown their participation in the market.

Traditional reinsurers Munich Re and Swiss Re also lifted their market share, but one buyer suggested that rather than focusing on overall growth, they may have consolidated their Florida presence with larger deals on a smaller number of programmes.

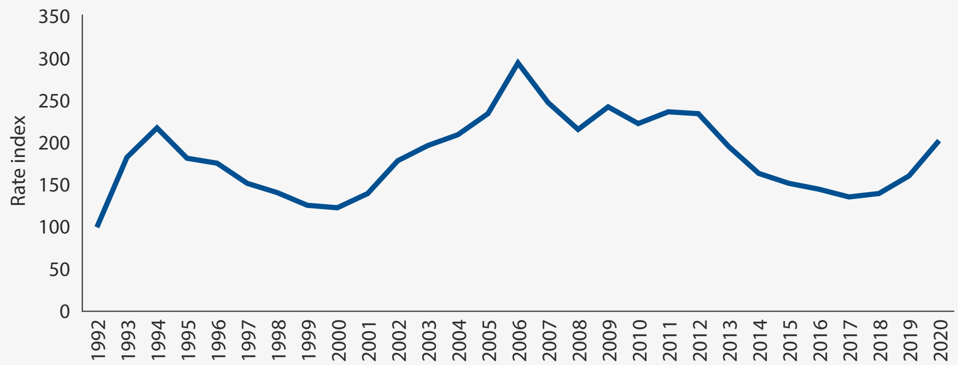
Calm before the storm?

The trend represented a "flight to quality" that took place across the board as reinsurers and ILS managers sought to trade with favoured Floridian insurers.

The state's insurers are struggling with increased losses from non-hurricane events and high levels of claims litigation.

Credit risk concerns have led some Florida reinsurers to demand upfront premium payment from cedants, which could prove to be the "nail in the coffin" for some struggling insurers, one source said.

Florida rates return to ~2013 era



Hyperion X property cat reinsurance RoL index at 1 June (average of pricing, risk-adjusted)
Source: Hyperion X Analytics

Some consolidation had already appeared in the primary market ahead of the mid-year renewals, and as a result more business is expected to return to Florida's state-backed insurer Citizens.

In the near term this could somewhat subdue reinsurance demand in Florida, as Citizens has higher levels of surplus than private insurers in the state.

Evidencing that, the state-backed firm cut its reinsurance limit by 30% year on year in the latest renewal cycle, saying at the time it had decided "not to chase the market" by locking in unnecessary cover at elevated rates.

Meanwhile the prospect of a serious hurricane – or a series of them – striking the Florida panhandle this year hangs like a Sword of Damacles over primary carriers still grappling with loss creep from Irma.

Managing any potential hurricane strike amid the pandemic would be an additional challenge, as cat modelling firm RMS has warned that a major hurricane making landfall in the US during lockdown could cost 20% more than normal.

But at least in terms of the renewal, the pandemic has helped bring Florida reinsurance rates back to an acceptable level in the eyes of many reinsurers.

Outlook

Outside the unique environment of the Sunshine State, US nationwide insurers also faced rate increases of 5%-20% in mid-year renewals, according to Willis Re, with Australian catastrophe buyers also paying single-digit increases.

Rising yields from these less volatile markets may be an even stronger indicator that reinsurance rates will continue improving into 2021, some market participants suggest.

Indeed, amid Q2 results season, many (re)insurer CEOs said they could see rate momentum continuing for some years, citing low investment yields, dislocated retro markets, Covid-19 uncertainty and casualty loss inflation as the driver for change.

"This confluence of factors has resulted in material rate increases that will impact almost all lines for an extended period," said RenaissanceRe CEO Kevin O'Donnell.

Sunshine State reinsurance

- The 1 June renewals are a key date for ILS funds and reinsurers, as Florida insurers are heavily reliant on reinsurance
- Florida insurers ceded $5.1bn of premium in 2019, according to AM Best estimates
- -ILS providers took about an 18% share of premiums ceded by the state's top 10 insurers in 2019, according to *Trading Risk* analysis

Pandemic risk: will ILS have a role in future solutions?

Pandemic deals don't offer the same diversification benefits as nat cat investments, but buyer demand is growing

Governments around the world have bankrolled enormous support packages to combat the financial hit from the Covid-19 pandemic, but the insurance industry is now grappling with the question of how it can provide better protection for future epidemics.

It is clear to see that the pandemic has greatly increased demand for specific pandemic cover, and in the US and UK, industry bodies are debating new public-private partnerships for business interruption (BI) cover in particular.

However, despite this sharp increase in demand for pandemic cover from cedants, ILS investor demand for pandemic risk is likely to remain limited post-Covid-19 outside dedicated life ILS strategies, according to market participants who spoke to *Trading Risk*.

Dirk Lohmann, head of ILS at Schroders, told *Trading Risk* that while demand for pandemic cover will be "extraordinarily high" after Covid-19, (re)insurance supply is very unlikely to meet all of this extra demand.

Investor appetite for the risk is limited because pandemic deals "clearly don't offer the same diversification benefit as nat cat", he said, pointing to the financial market stress witnessed over the course of the ongoing coronavirus pandemic.

Karsten Bromann, managing partner at Solidum Partners, agreed.

"The main reason for this cautious outlook is to a lesser extent Covid-19 itself, but the fact that pandemic cover deals will always tend to fully correlate both with each other and with the rest of the economy and hence will be added to portfolios only as minor additions."

A wide range of lines of business have been impacted by the pandemic, but property BI and pure mortality risk deals are the main areas of exposure for ILS markets.

They have very little exposure to other types of cover such as event cancellation policies, which Swiss Re has predicted in the future will be completely reshaped or offered with pandemic exclusions as reinsurers have realised the correlations that are possible within a global portfolio.

However, within the life ILS market, extreme mortality or pandemic risk is one of the main types of deals that managers invest in – but until now buyers have been relatively limited and mostly from the life (re)insurance market.

But with Covid-19 providing an economic case for a range of businesses to buy cover, London-based Leadenhall Capital Partners hopes that demand for mortality protection will expand to industries such as airlines.

The manager, which offers both life and non-life ILS strategies, has started marketing parametric pandemic covers for non-Covid-19 risks that would pay out based on mortality rates.

The firm thinks that, at this time, investors would set a floor of around 5% to accept remote pandemic risk, and if buyers want cover that responds to the level of deaths that have occurred with Covid-19, the price could rise to 7-10%.

World Bank's pandemic bond critiqued

Outside the private life reinsurance market, one landmark pandemic deal that the ILS market had already been involved in was the World Bank's $320mn pandemic bond.

This deal triggered a partial payout to the Bank due to the coronavirus pandemic, and although this payout may have put some critics' opposition to the deal at ease, some still question its efficacy and believe future deals need to be much more transparent and rapid.

Bromann said that while the deal's trigger mechanism and specific payout requirements made the transaction quite complex and slow to respond to the pandemic, the alternative options also have their drawbacks.

"Simpler parametric models might struggle to adequately represent the reality of an outbreak, and indemnity-based transactions need an acceptable and objective definition of 'loss'," he explained.

Asked whether he thinks we could see similar pandemic cat bonds being launched in the near future, perhaps on a larger scale, Lohmann said he doesn't believe there is a large amount of appetite in the cat bond market for this type of product.

Trigger coverage

Scott Rybny, a partner at law firm Morgan & Akins, said pandemic insurance triggers must be carefully defined.

He said insurers should pay close attention to how they will define "occurrences" as well as a trigger event.

"The occurrence issue, while separate from the trigger is nonetheless related to it," he said. "Consider this: if a state (or local) government declares a pandemic over, but six months later the same virus resurfaces in numbers sufficient for the government to declare it a pandemic again, will that constitute a separate occurrence such that insurers could be on the hook a separate time?"

With regards to the numerous public-private partnership proposals that are being floated, Rybny said insurers are "understandably leery" of these partnerships considering the efforts of the US federal government to sidestep the almost $12bn it reportedly owed health insurers under the Affordable Care Act.

"That is not to say that a public-private partnership intended to fill the pandemic coverage gap is unworkable. One possibility could be to have the government provide the cover with the insurance carrier functioning as a third-party intermediary," he explained.

Public-private partnerships

It is clear that the insurance industry does not have the resources to absorb the losses of a pandemic of this magnitude – be it Covid-19 or a future global pandemic – and it is acknowledged that a high level of support from governments would be required.

But public-private partnerships to offer pandemic cover are not going to be a quick fix, with differing opinions within the industry on how far insurance providers can get involved and a tug of war over different solutions.

In the US, the government has proposed a Pandemic Risk Insurance Act (Pria) backstop scheme which, similar to existing schemes for terrorism insurance, would involve the federal government acting as a backstop reinsurer for the private insurance market.

In May, the Pria draft legislation was amended to lift federal liability for pandemic BI losses to $750bn, with a $250mn trigger.

"There's a real need to set an arm's-length price" John Seo, Fermat Capital

But others suggest that a scheme more similar to the US flood insurance programme, where insurers are involved more as administrators with more limited risk-bearing capacity, would be a better outcome.

The National Flood Insurance Program has relied on private reinsurance and ILS capacity in recent years, receiving a payout to help cover Hurricane Harvey losses in 2017, and could provide a model for future ILS coverage of a pandemic BI facility.

In this vein, a trio of US insurance associations have put forward proposals for a Business Continuity Protection Program, which would create a government-led support programme for pandemic BI cover backed by voluntary insurance and reinsurance participation.

The three insurance industry associations argued that this structure is better suited to insuring pandemic risk than the Pria proposal.

Specifically, they said that following the formula of the terrorism insurance backstop, as Pria would, does not square with the nature of pandemic risk, which is fundamentally not insurable due to it not being localised.

"The risks are too fundamentally different in nature and scope," the insurance industry associations said in a joint statement.

Earlier this year, Fermat co-founder John Seo noted on a *Trading Risk* webinar that the ILS market could help governments establish a price for pandemic risk facilities.

Seo said (re)insurance capacity and ILS participants could help governments determine the right price to charge corporations to opt into a pandemic scheme.

"There's a real need to set an arm's-length price. [The exposure is] so large that governments can't consider offering a backstop for free."

Indeed, potential pandemic costs are so huge that insurance cannot possibly bridge a "coverage gap", said Bromann, as no industry or group of investors "can inject enough money to make up for such losses and restore the previous situation".

"Societies and governments need to prepare for future such events with the development of response plans that aim at minimising the short-term negative consequences and preparing as-fast-as-possible recovery."

US schemes for public-private pandemic insurance facilities

Scheme	Backed by	Scope of industry involvement
BCPP	US insurance industry bodies	Insurers administering policies for businesses opting into govt-backed scheme which could buy external reinsurance
PRIA	Federal govt	$750bn of government reinsurance on insurer's liabilities
BIP/ Pandemic Re	Chubb	Insurers take 6-12% part-share of up to $15bn initially for a widespread small business facility, charging premiums to cover their share of losses; set up govt reinsurance entity for voluntary medium/ large business cover with insurers taking up to $15bn initially

Source: Trading Risk

Diversifying within ILS

"How much diversification should I consider seeking within an ILS portfolio?" *Trading Risk* looks at the options available

A key question of any ILS client is how much to diversify their allocation to the asset class.

ILS already diversifies an investor's wider portfolio but, within that allocation, there are still many decisions to be made on instrument type and peril, risk levels and counterparties.

Combining an investor's targets and requirements with various diversification measures means the final profile of an ILS investment looks different for every client, says Raffaele Dell'Amore, senior analyst at Siglo.

That being said, new investors tend to have an increased level of comfort in their initial ILS investment if a degree of liquidity is provided, which can be more easily achieved by focussing on peak perils.

This also reduces model risk, as peak perils are well-studied, notes Dell'Amore.

Mercer also sees new investors opting for peak perils, although the firm typically advises investors to design mandates that are flexible enough to allow their manager to pursue the best opportunities, which change over time.

"This usually means that portfolios have a bias to peak perils, which usually have the best expected returns, but also comprise the largest part of the ILS opportunity set," explains asset class specialist Robert Howie.

Peak property catastrophe perils remain the most accessible area for investors, according to Amit Patel, who is senior vice president, quantitative and insurance strategies at Aksia.

"Ultimately, we want to build a balanced allocation to ILS across perils, regions, and efficiency of access point for the risk in question. [For example] insurance versus reinsurance, peak versus non-peak [risk] in the context of collateralised versus rated balance sheets," he says.

Key points

- Diversification within ILS can help control tail risk
- Peak cat perils remain the most scalable
- Diversification likely more suitable for experienced ILS investors
- Advisers warn against over-diversification as ILS is already non-correlated

However, Patel adds that LPs should be positioning for the next three to five years, because there is room for similar avenues of growth in other areas, as the industry faces technology-enabled and efficiency-related (expense and capital) disruptions in accessing risk.

"Covid-19 has tested the purported diversification benefits for multi-line carriers, which may accelerate the transfer of other types of risk into capital markets."

> *"By focusing on peak perils the model risk is reduced"*
> *Raffaele Dell'Amore*

Tail risk control

Allocating to other perils – particularly those that are less well modelled – for the sake of diversification is not advisable, managers agree, pointing to the ILS asset class's overall non-correlation to the wider capital markets.

However, if a client has a low tolerance for idiosyncratic risk – social, policy and counterparty risk –the benefit of diversifying the risk of the portfolio in controlling the tail is important and so a more worthwhile endeavour, says Mark Wilgar, investment director at Cambridge Associates.

Ultimately it depends on whether the investor has access to enough resources to understand and monitor different segments of the ILS market they choose to allocate to – and scale to access these efficiently, explains Wilgar.

"'Alternative' asset classes are havens for innovative strategies and structures and there is always an element of trial and error when accessing a new or less familiar segment of the insurance market," he says.

"Any investor looking to access new risks should try to have a good understanding of this and ensure they are compensated for any uncertainties and anyone taking the risk on their behalf is well aligned so equally as focussed on this."

Beyond pure peril coverage, investors might also think of diversification within an ILS portfolio in terms of instrument type – more liquid cat bonds or private instruments – and risk levels.

Investors may also consider life ILS risk as a means of diversification, Siglo says.

These pay very attractive risk premia and are not directly exposed to any type of non-life related peak perils.

However, this type of diversification usually comes at a price of reduced liquidity at portfolio level, given that this type of ILS investment has multi-year tenors as opposed to the typical one-year terms in the non-life market segment, Dell'Amore adds.

Japanese investors move slowly but surely towards ILS

Japan's zero interest rate policy has led investors to beat a path to ILS as they seek opportunities with higher returns, but recent catastrophe losses have spooked some investors.

However, what looks to be a stepping-back may just be a lull as investors rework their investments to give ILS "a second chance", some argue.

"That is causing what easily looks like a pullback, but it is short term and short lived," noted Fermat Capital Management co-founder John Seo.

"Fund distributors that had a reasonable loss experience in 2017-19 are sticking with their current managers and adding more ILS managers and fund product."

Some investors have "paused" to better understand the dynamics associated with claims developments, added Lorenzo Volpi, managing partner at Leadenhall Capital Partners.

"The challenge with ILS is that performance in the asset class is quite dispersed from manager to manager," explained Rossen Djounov, head of Asia at GAM Hong Kong.

Suited to the low-digit target returns of Japanese pension funds and offering non-correlation and diversification benefits, ILS has had steady growth in the country.

Securis Investment Partners estimates that around 200 defined benefit pension schemes, with assets in excess of 50bn yen ($470mn), have invested in the asset class, pumping in $7bn-$8bn.

The average pension fund allocation to ILS is 5-10% of a portfolio, which is much higher than elsewhere.

"I know some pension funds who allocated more than 20% to ILS," said Securis co-head of global investor relations Yuko Hoshino.

Changing dynamics

Meanwhile, there are hopes that accelerating rates could draw investors back into the market for 2021, as Japan's Government Pension Investment Fund moves to allocate 5% of its enormous $1.4tn portfolio to alternatives which could result in ILS mandates.

Meanwhile, Toyota Motor Corporation Pension has substantially expanded its allocation to alternatives, which include insurance-linked securities, according to sources and local media reports.

The Japanese fund reviews its high-level asset allocations every five years, and it has lifted its alternatives target to 20% of the fund this year – or around $1.5bn - from 14% in 2015, according to a Nikkei newsletter.

The fund has entered the ILS space since its last asset review in 2015, although it is not known which manager holds the mandate.

However, the large keiretsu Mitsui went as far as to wind down its allocations to unknown ILS funds, citing "miserable results," though other sections of the organisation maintain their own ILS platforms (with one of its asset management subsidiaries offering a cat bond fund as well as its holding of Leadenhall).

As well as pension funds willing to make large allocations, the investment arms of the top Japanese insurers and other asset managers have their own offerings within the industry.

Tokio Marine Asset Management has $725mn of ILS assets while Sumitomo Mitsui Asset Management runs a cat bond fund with assets under management of $134mn.

Life insurer subsidiary T&D Asset Management in 2016 set up a cat bond fund – the Living Earth Strategy Fund – which feeds into a Securis fund and has around $120mn in assets.

Covid bounce

But if recent catastrophe losses led investors to take a break, market conditions resulting from the pandemic may encourage investors to re-examine ILS.

ILS managers report more enquiries from Japan since the pandemic started and additional investments.

"ILS is going to be an important part of [investors'] illiquid assets because they are typically the least-correlated assets to capital markets. That has been proven by this market," said Hoshino.

"Overall I think we can expect that investors will increase allocation to alternative assets going forward.

Japanese-backed ILS managers

Company	ILS assets	Notes
Leadenhall Capital Partners	$5.6bn	Now majority-owned by MS&AD. Range of non-life and life ILS strategies
Tokio Marine Asset Management	$725mn	Largely a cat bond strategy
Sumitomo Mitsui Asset Management	$105mn	Advised by Mitsui Sumitomo Insurance; cat bond fund
Eastpoint Asset Management	$50mn	Backed by Asuka Asset Management. Cat bond focus

Source: *Trading Risk*

PGGM adds reinsurance partners as US pensions switch managers

Trading Risk rounds up recent investor entries and mandate wins within the sector

Dutch pension fund PGGM has added two new reinsurance partners – Swiss Re and PartnerRe – to the list of managers overseeing its EUR6bn ($6.7bn)-plus ILS portfolio.

At EUR50mn-EUR100mn, the PartnerRe stake – via a vehicle named Huygens – is one of the smaller allocations within PGGM's existing ILS mandates.

The initial amount deployed through Swiss Re was between EUR100mn and EUR250mn, but a second deal between the two took the total to $500mn. The two vehicles provide PGGM with access to US and global catastrophe risk written by Swiss Re.

PGGM generated a 6.3% net return from its ILS portfolio in 2019. After hitting its target to deploy 2.5% of total assets in the (re)insurance sector, the firm has kept expanding in line with underlying portfolio growth.

In the US, Bermudian firm Aeolus took top-up mandates from a couple of state schemes. The Indiana Public Retirement System doubled its stake with the firm, committing an additional $50mn, after previously revealing that it had awarded a $100mn new mandate to Hudson Structured Capital Management last year.

The Arkansas Teacher Retirement System approved a further $30mn investment in Aeolus at the end of 2019 to take advantage of expected increased returns and to replace trapped capital, it said.

As of year-end 2019, the pension fund's Aeolus Keystone Fund investment totalled $286.3mn, while an investment in Nephila's Rubik Holdings reached $44.4mn.

Meanwhile, the Florida State Board of Administration (SBA) has pushed forward with its plan to scale up insurance investing and, while its Q2 2020 mandates have focused on distressed opportunities, further ILS expansion could follow next year.

The SBA oversees the Florida Retirement System's $148bn defined benefit fund, which had deployed just under $740mn in the ILS asset class at the end of 2019 after adding four new managers last year, according to updated board materials.

Senior investment officer Trent Webster told *Trading Risk* that the organisation intended to ramp up insurance investing in 2021, depending on market conditions.

"Right now insurance is quite attractive compared to what it had been three to five years ago," he added. "We want to be allocating capital where capital is leaving the market."

Pension funds with $250mn+ in ILS

Pension fund	Domicile	Current ILS allocation ($mn)	ILS as % of total portfolio	Strategies/managers employed
PGGM	Netherlands	6,700	2.4%	Fermat, LGT, Nephila, Elementum, Munich Re, New Ocean, AlphaCat, RenaissanceRe, PartnerRe, Swiss Re
RBS	UK	1,330	2.3%	Nephila and Leadenhall
Future Fund	Australia	1,141	1.0%	Elementum Advisors (A$100mn 2015); Hiscox Re Insurance Linked Strategies (undisclosed sum in 2016)
Canada Pension Plan Investment Board	Canada	>907	0.3%	Fermat, Nephila and RenRe. Acquired Ascot in 2016 and Wilton Re in 2014
Pennsylvania Schools (PSERS)	US	803	1.4%	Nephila ($250mn 2011), Aeolus ($200mn 2012), RenRe ($200mn 2015)
Florida Retirement System	US	740	0.5%	RenRe, Nephila, Pillar Capital, Aeolus Capital and CSAM/ILS P&C legacy fund
AP2	Sweden	686	1.7%	Fermat, Credit Suisse ILS, Elementum
Teacher Retirement System of Texas	US	600	8.3%	Not known
AP3	Sweden	600	0.9%	In-house and external allocations
MLC	Australia	560	1.0%	Appointed Mt Logan Jan 2018, replaced Nephila with AlphaCat Managers in 2015
Abu Dhabi Investment Authority	Middle East	550	0.1%	Allocated to around five ILS firms throughout 2019
State of Michigan Retirement Systems	US	538	0.8%	6% of SMRS Real Return & Opportunistic Fund at 31/12/17
Railpen	UK	462	1.5%	Credit Suisse ILS
Maryland State Retirement and Pension System	US	<400	0.2%	Nephila Capital, HSCM Bermuda, ILS Property & Casualty
West Midlands Pension	UK	397	2.0%	Markel Catco, Credit Suisse, Coriolis
PK SBB	Switzerland	384	2.1%	Not known
The Coca-Cola Company	US	346	5.4%	Securis (non-US focus) and one other (US focus)
Arkansas Teacher Retirement System	US	331	1.9%	Aeolus, Nephila
IBM UK	UK	291	2.5%	Nephila and Securis
MassPRIM	US	250	0.3%	Aeolus ($100mn), Markel Catco ($150mn)

Source: *Trading Risk*

Lloyd's progresses ILS reform plans

Lloyd's of London has been working on major redevelopment initiatives over the past year and ILS aspects of its plans are now nearing fruition.

With more than 330 years of history behind it, the Lloyd's market has a unique place in the (re)insurance world: it specialises in unique, hard-to-place specialty risks.

It is also a major catastrophe writer as a collective of smaller "syndicates", as individual risk-taking businesses are known.

Lloyd's is also known as an expensive place to do business with limited access points for investors.

Under CEO John Neal, the insurance marketplace has been working on a series of reforms as part of its "Future at Lloyd's" strategy to improve digital processes and create efficiencies in risk placement and claims handling.

On the capital side, Lloyd's wants to make it simpler to invest in the market and offer new structures to access risk.

As part of these plans, Lloyd's said it has applied for approval from the UK financial services watchdog, the Prudential Regulation Authority, to set up a new protected cell company. It is understood this could offer an alternative route into the market for investors.

It is understood this could offer an alternative route into the market for investors. The existing way is to set up a corporate member structure, which allows investors to effectively take an equity stake in a Lloyd's syndicate's business, but the vehicles are complicated and costly to set up and have an indefinite life.

Other initiatives that the Corporation has been working on include overhauling the "lead-follow" practice of underwriting, whereby some syndicates sign up to support deals on the same terms set by the "lead" underwriter that has already priced the risk.

This could lay the ground for other ideas the Corporation has raised, such as trying to set up new tracker products and funds to help attract new investors.

Planned reforms

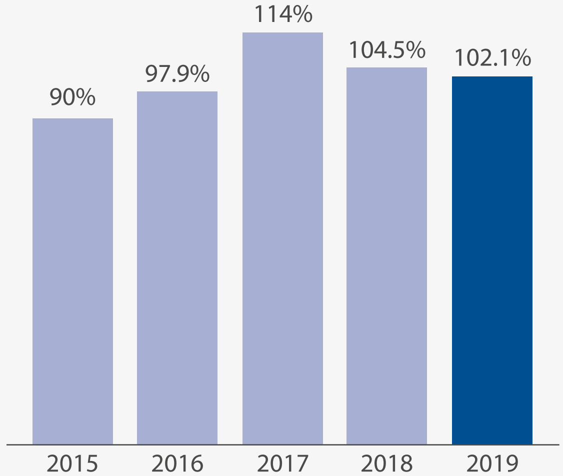
It also hopes to introduce new ways for investors to enter and exit the market on shorter timeframes than the standard three-year system of accounting that exists at Lloyd's.

Under this system, each underwriting year is left open for losses to develop over three years before the portfolio result is declared. That year is then "reinsured to close" by the following year's syndicate – i.e. the 2017 year would have closed at year end 2019, with the 2020 portfolio taking on the risk of further claims development for a premium.

Lloyd's capital ambitions:

- Simpler, nimbler capital rules and processes (such as varying investment durations, capital withdrawal) to increase the ease and cost-effectiveness of navigating Lloyd's for capital providers
- Complementary structured investment opportunities (such as ILS cell structures, follow-only and tracker products), providing capital providers with new ways to participate in the market
- A central capital platform that increases the ease of matching risk and capital and provides greater transparency of performance and risk

Lloyd's combined ratio



Source: Lloyd's

Already this year, two new ILS-focussed follow syndicates have been set up: Nephila Capital got approval to form a new syndicate that will take specialty risks, Syndicate 2358. Brit is also fundraising for a new follow-only syndicate, after setting up a Lloyd's fund at the end of 2019 – following its peer Beazley's establishment of its "Smart Tracker" syndicate. Brit already had a quasi-follow-only syndicate, but the new initiative is designed to be highly automated and lower-cost.

In 2019, Lloyd's CEO John Neal told *Trading Risk* that he believed one-year timeframes would be an early focus for encouraging more ILS participation in the market.

"We see it as a priority to encourage ILS [at Lloyd's]," he said. He pointed out that Lloyd's currently has about 5% of the £800bn global commercial, corporate and specialty (re)insurance market.

The target is to double that. "If you follow the logic through then in time why shouldn't we be 10% of the world's ILS market?" he asked.

ILS at Lloyd's

Just two ILS managers currently operate syndicates at Lloyd's: Credit Suisse-backed Arcus 1856 and Nephila's Syndicate 2357.

Securis previously operated a special purpose arrangement (SPA) to underwrite excess and surplus business, alongside a fund that backed other syndicates, but shut both down in 2018, citing low returns for the move.

But the lure of setting up a stall in the London market undoubtedly remains for other ILS firms, especially as many consider whether to set up their own rated platforms. Lloyd's offers an array of licences enabling syndicates to write both excess insurance and reinsurance business in the US market, and its central fund structure also gives syndicates strong leverage.

Another plank of the Lloyd's reforms has been to set up "syndicate in a box" launches, which are more streamlined entry points to the market. As yet, no ILS firm has made use of these vehicles.

But in 2019, Neal highlighted the syndicate-in-a-box concept as an approach that could work well for ILS firms.

To be approved in a timeframe that could be as short as 90 days, a business objective would have to be very specific. "Its performance needs to be adding value to the market as a whole," he explained.

Lloyd's already has a stronger cat bent than a traditional insurance company, which could be an issue for ILS expansion. "There is only so much cat you could accept. It needs the market to grow broadly and not just in one direction," Neal said.

Alongside its focus on technological and structural reform, Lloyd's has also been pushing to improve underlying performance – as some lines of business have been persistent loss-makers for the market – with a top-down remediation drive on low-performing business.

As Lloyd's also takes a strict line on growth and is not looking to grow substantially in 2021, this may limit options for fresh capital looking to come into the market.

Ways into the market

Personal investors in the market are known as "Names" and their right to provide capital to certain underwriting syndicates is enduring and tradeable in annual auctions.

While originally they had unlimited liability, most now underwrite through limited liability corporate entities, and their interests at Lloyd's will be looked after by so-called members' agents.

In 2015, a Harvard University endowment fund allocated to Lloyd's members' agent Hampden Group to invest in various syndicates.

An associate of Hampden, Helios Underwriting, is the only listed company that allows for direct investment in a variety of Lloyd's syndicates.

According to Alpha Insurance Analysts, 20 of the 84 Lloyd's syndicates were open to third-party capital at the start of 2020, along with 12 of the 15 limited tenancy/ SPA vehicles.

The Association of Lloyd's Members website puts Names capital support at £2.9bn, versus overall capacity of £30.6bn in 2019.

Some degree of Lloyd's business will already be in all ILS investor portfolios – as ILS funds will be providing reinsurance and retro to their catastrophe books.

But investing directly at syndicate level offers a different proposition for investors than participating in reinsurance or catastrophe quota share sidecars.

It is closer to an equity investment, not just limited to underwriting risk, and covers a gamut of insurance risk.

The capital they pledge to support their risk-taking can also take a variety of forms, allowing for another income stream from the same capital pool, in contrast to the ILS world that sees collateral pledged to cash trust funds.

New study adds to data on rising hurricane intensity

A new study using satellite data has added to evidence suggesting that hurricanes are more likely to develop into intense storms in a warming future world.

Scientists in the US have identified a global rise in major tropical cyclones over a 39-year period from 1979-2017 after incorporating satellite data into existing records.

Models have consistently linked increasing hurricane intensity to a warming world, but confidence in the connection has been compromised by difficulties in detecting significant intensity trends, write Kossina, Knapp, Olanderc and Veldenc in the *Proceedings of the National Academy of Sciences*.

Instrumental records of tropical cyclone intensity are diverse and generally unsuitable for global trend analysis, they explain.

To address this, a homogenised data record based on satellite data was previously created for the period 1982-2009. For the 28-year period, the data showed increasing global tropical intensity trends, but it was not statistically significant at the 95% confidence level.

The scientists extended the data period to 39 years from 1979-2017 and said that statistically significant increases in the number of Category 3-5 storms were identified.

Between the early and latter halves of the period, the major tropical cyclone exceedance probability rose by about 8% per decade.

In terms of location, the greatest changes were found in the North Atlantic, where the probability of major hurricane exceedance increased by 49% per decade. However, cyclone activity trends in this region are linked to changes in local weather patterns such as the Atlantic Multidecadal Oscillation (AMO), whereby warmer sea-surface temperatures led to a more active phase of cyclone activity which could last for 20-30 years.

The scientists said their study would not attempt to disentangle the influence of factors such as man-made warming or AMO patterns and other shorter-term weather patterns in the results.

Large and significant increases were also found in the southern Indian Ocean while more modest increases were found in the eastern North Pacific and South Pacific, and there was essentially no change found in the western North Pacific.

The results of the research boost confidence in projections of higher tropical intensity under continued warming, the scientists say.

Identifying changes in risk and determining causal factors is a critical element for taking steps toward adaptation, they continue.

"[Tropical cyclones] have become substantially stronger, and... there is a likely human fingerprint on this increase," the paper concludes.

These insights are in line with US Geophysical Fluid Dynamics Laboratory research predicting that a two-degree increase in global temperatures will cause a 1-10% rise in the likelihood of intense storms – which could lead to an even larger percentage increase in the destructive potential per storm.

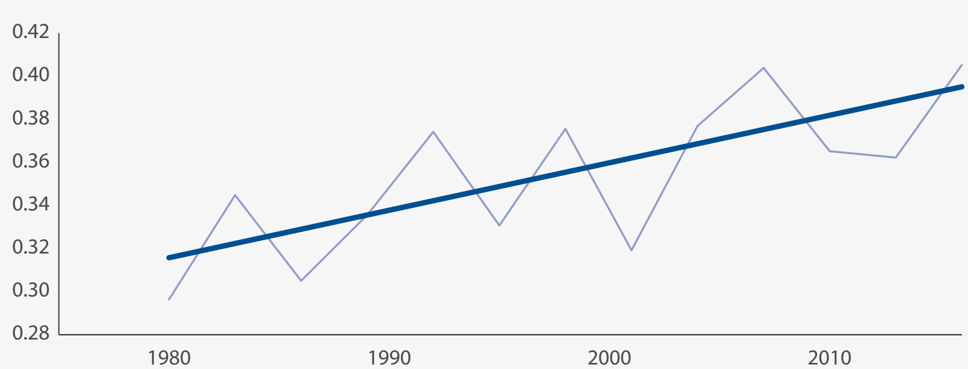
Meanwhile, a National Oceanic and Atmospheric Administration summary notes that some studies suggest it is not the levels of warming alone that will impact how much more destructive hurricanes could become by 2100, but the difference in warming between Atlantic and tropical sea-surface temperatures.

Since Atlantic sea warming is not projected to be much different from the tropics, this has a big difference on the outlook and may imply much lower increases in intensity.

In contrast, in 2015, Philip Klotzbach from Colorado State University and Christopher Landsea from the US National Hurricane Center published a paper in the *Journal of Climate* noting a decreasing trend in the global frequency of Category 4-5 hurricanes.

For more on climate change research, see the H1 2020 edition of the ILS Investor Guide.

Major storms lift share of overall hurricane activity



Rolling three-year data showing fractional proportion of global major hurricane estimates to all hurricane estimates
Source: Proceedings of the National Academy of Sciences

What would it cost: US severe storms

Nebraska, located in the heart of so-called "Tornado Alley" stretching from South Dakota to central Texas, is particularly vulnerable to tornadoes and severe thunderstorms.

On Easter Day in 1913 a sequence of tornadoes left over 130 dead, while in 1975 an Omaha tornado killed three and damaged up to 5,000 properties. On 22 May 2004 no less than 17 tornadoes rolled across the state, including the devastating 2.5 mile-wide Hallam twister.

The National Oceanic and Atmospheric Administration has so far recorded 1,067 preliminary tornadoes this year, versus 1,520 in 2019. Meanwhile, Swiss Re estimated that severe convective storms – encompassing tornado, hailstorms and straight-line winds – caused insured losses of over $21bn in the first half. This was the highest since the first half of 2011, when losses from this peril alone were $30bn.

To shed more light on the peril, *Trading Risk* asked modelling agencies to estimate the cost of a 1-in-50-year and 1-in-100-year storm event in Omaha, Nebraska.

Omaha

AIR Worldwide experts, led by manager Harry White, modelled a severe thunderstorm in Douglas County, the county home to Omaha.

The firm modelled a macroevent comprising several wind, hail, or tornado events.

For a 1-in-50-year event, the loss to insured properties in Douglas County is $1.2bn.

CoreLogic, led by Tom Larsen and David Smith, narrowed in on the city of Omaha, which is about 140 square miles – less than 0.2% of Nebraska's total territory. A 1-in-50-year all perils event came in at half of AIR's figure at $637mn in insured loss.

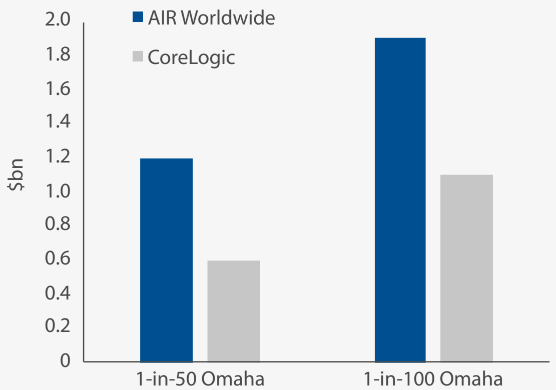
A hailstorm with the same probability would cost insurers $548mn, while a straight-line winds event would cost insurers $32mn and a tornado just $28mn.

For a 1-in-100-year event, the total loss to insured properties in Douglas County is $1.9bn, according to AIR.

CoreLogic's estimate of insured losses for an all perils event in Omaha is less at $1.05bn. Hailstorm losses are estimated at $909mn, straight-line winds at $43mn and tornado at $135mn.

Hailstorms drive the bulk of the losses for severe convective storm in the US generally, says CoreLogic.

Omaha tornado modelled losses



Sources: AIR and CoreLogic

The modeller notes the 1975 Omaha tornado resulted in damage costing between $300mn-$500mn, which in 2020 terms translates to $2bn, which far exceed the losses in the firm's modelled 1-in-50 or 1-in-100 event scenarios for tornado.

Given Omaha's size, the 1975 event remains an extreme and unlucky hit, the modeller says.

"This event was well beyond the risk management horizon that many companies use to manage their capital reserves," the modeller points out.

Tornado Alley

AIR also modelled potential losses across a broader area to incorporate Tornado Alley comprising Texas, Louisiana, Oklahoma, Kansas, South Dakota, Iowa and Nebraska. This resulted in property losses of $1.8bn of which over 96% would be insured for the 1-in-50-year event.

The largest portion of the event's insured losses across the US come from residential lines ($990mn), whilst $726mn come from commercial. The remaining losses are assigned to auto.

For a 1-in-100-year Tornado Alley event, property losses rise to $2.1bn of which 95% are insured.

Some $1.4bn of the event's insured losses across the US come from residential lines and over 85% of the losses for this event are assigned to Nebraska.

The catastrophe bond market would not see any principal reduction from either event.

ILS market primer: from disaster frontline to pension portfolio

What is the insurance-linked securities (ILS) market? As the name suggests, it consists of financial instruments that provide insurance cover.

But don't conflate this industry with a standard burglary or fire insurance product. If you're investing in the ILS market, your risk antennae instead need to be tuned to the kind of natural disaster that might take over CNN screens – US hurricanes or Japanese earthquakes, for example.

The ILS market first emerged in the mid-1990s but it wasn't until after the 2008 financial crisis that it began to take off.

This surge was driven by its major selling point as a source of diversifying, or non-correlating risk – acts of God that won't be triggered by financial market turmoil.

The ILS market has largely made its home within the reinsurance sector – a wholesale industry that provides insurance to insurers to help them bear claims when disasters produce a spike in losses.

The ILS sector is sometimes labelled the "alternative" reinsurance market, and contrasted with the so-called "traditional" reinsurance market, which refers to rated balance sheet companies

Why ILS?

- Diversification from financial market risks
- Catastrophe models provide a framework for analysing risk and quantifying exposures
- Purer access to insurance risks – avoiding investment exposure on the balance sheets of major (re)insurers
- Cushions against inflation risks, as premiums include a floating rate return from cash pledged against insurance liabilities
- Short-term liabilities (largely one- to three-year contracts, some tradeable)

ILS primer: Market timeline

1996 – George Town Re, widely cited as the market's first cat bond, is launched by St Paul Re, followed a year later by the first Residential Re deal from USAA and a Swiss Re deal

1997 – Nephila Capital, which is now the industry's largest asset manager, is founded

2005 – The hurricane season of Katrina, Rita and Wilma sets off a spike in reinsurance rates and a spate of new start-ups

2008 – Lehman Brothers collapses – it had managed collateral for four cat bonds that defaulted – cat bond structures shift to invest collateral largely in Treasury money market funds

2011 – A heavy international loss year produces three full cat bond defaults due to the Japanese earthquake and US tornadoes

2017-18 – Hurricanes, wildfires and typhoon make 2017-18 the ILS market's biggest loss years to date such as Swiss Re or Munich Re, to cite two of the longest-standing industry brands.

That's because the emergence of ILS market asset managers has given investors an alternative entry route into reinsurance risk, instead of just buying equity.

However, since its early days, any simplistic distinction between the two segments has eroded as the ILS segment has broadened and melded into the wider reinsurance markets.

For one, many traditional reinsurers have set up asset management platforms to compete with ILS managers, while a number of ILS managers have set up or are closely tied to rated reinsurance vehicles, giving them more freedom to take on a broader range of underwriting risks.

In recent years, the ILS market has expanded into segments such as marine and energy and aviation reinsurance. It has also delved into catastrophe-exposed property insurance, a step down the business chain. And for a select group of managers, life (re)insurance risk is a major part of their business.

Despite its blurring boundaries, ILS still offers investors a distinct route into taking reinsurance risk while skirting the equities market.

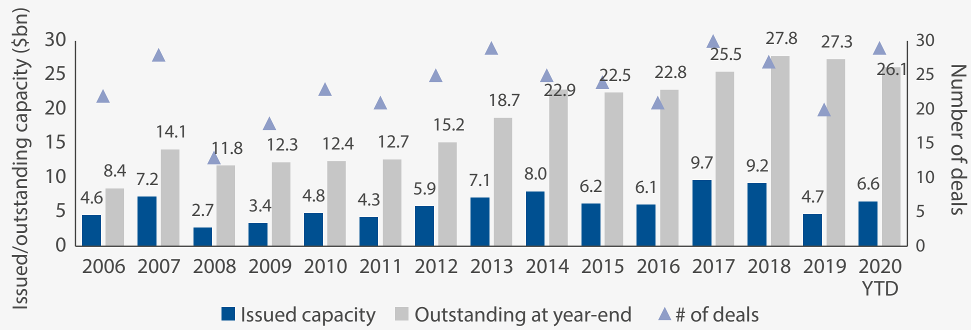
Perils: US risks dominate

The ILS market portfolio is heavily skewed towards the US, led by tropical storm/hurricane risks. Other major perils are US earthquake and Japanese earthquake, with small elements of European wind or Australian catastrophe.

That's because these are historically the most lucrative products for reinsurers. Florida, in particular, is their peak zone of exposure, meaning more capital must be held against these potential liabilities, attracting higher rates in turn.

They are also the most well-studied risks, with third-party statistical models available to help quantify hurricane exposures.

Non-life catastrophe bond capacity issued and outstanding by year



Source: Willis Re Securities Transaction Database as of 30/7/2020. Aggregate data exclude private ILS deals

This combination of higher rates and strong data laid the foundation for ILS managers to target catastrophe risks in their early days, since for their pension fund capital providers, hurricane risk was a minor source of diversifying income to their own peak peril of equity market risk.

As ILS managers grabbed more market share in the property catastrophe market, the ensuing competition eroded much of the premium previously attached to hurricane risk.

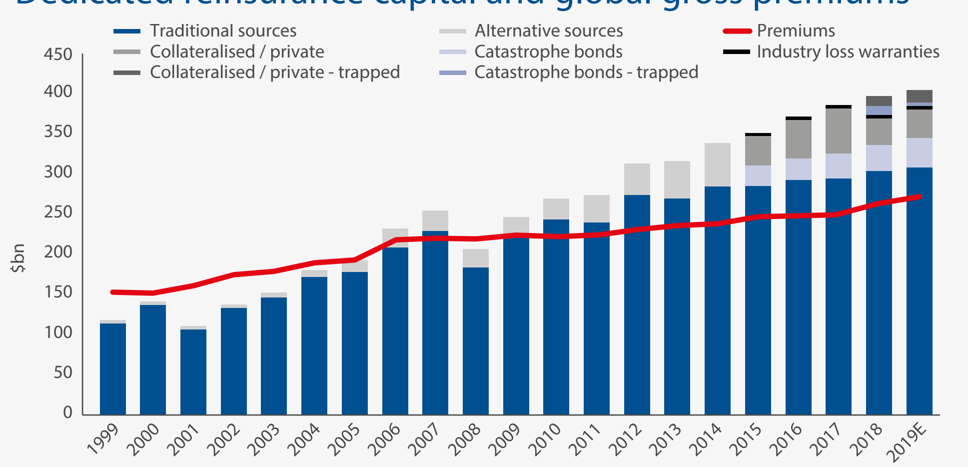
However, it remains the market's peak exposure with a corresponding price advantage compared to the types of catastrophe business that diversify a reinsurer's portfolio.

Continental European catastrophe margins are often said to be little better than break-even, which is one of the reasons why ILS market participation in this sector is relatively limited – cash collateralising limit for such margins would be highly inefficient.

Outside the catastrophe bond market, however, ILS managers are likely to be exposed to a wide range of catastrophe risks beyond the specific perils that are discussed here.

They typically offer "all natural peril" catastrophe cover, which may involve exposures that are unmodelled or less well-modelled – such as wildfires or floods.

Dedicated reinsurance capital and global gross premiums



Source: Hyperion X, Swiss Re Sigma, Artemis

Sizing up the market

Estimates vary, but ILS makes up around 15% of overall reinsurance capital at $93bn, according to figures from Aon.

But what exactly does the ILS market's of capacity represent? There are several distinct segments within this total.

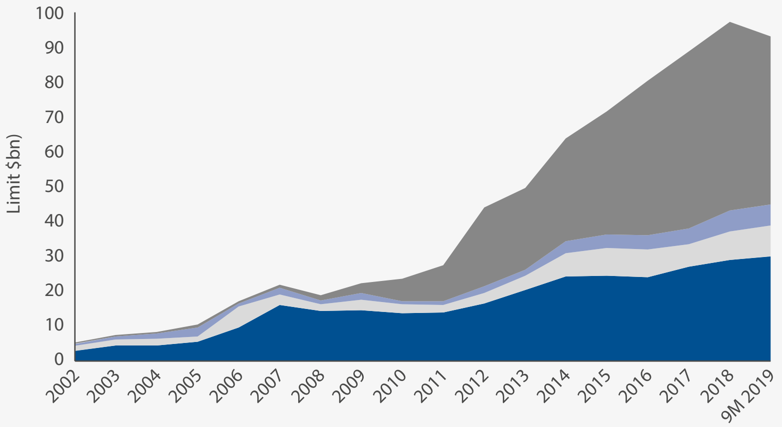
The catastrophe bond market attracts a wide range of investors looking for liquidity, although it typically presents a lower risk, lower return opportunity within the ILS world.

The niche industry loss warranty market is also relatively

What is a cat bond?

A cat bond transaction involves a sponsoring insurer paying investors a premium for reinsurance cover against defined catastrophe losses. If a cat bond triggers, investors' capital is used to reimburse a sponsor's losses. There is no requirement for insurers to later repay such sums to investors. However, if no qualifying event occurs, then investors recoup their capital at the end of the transaction (typically three to four years).

ILS market components



Source: Aon Securities Inc

Catastrophe bonds

The most liquid section of the ILS market. Reinsurance in tradeable form, typically providing slightly narrower terms of cover for specified perils.

Collateralised re

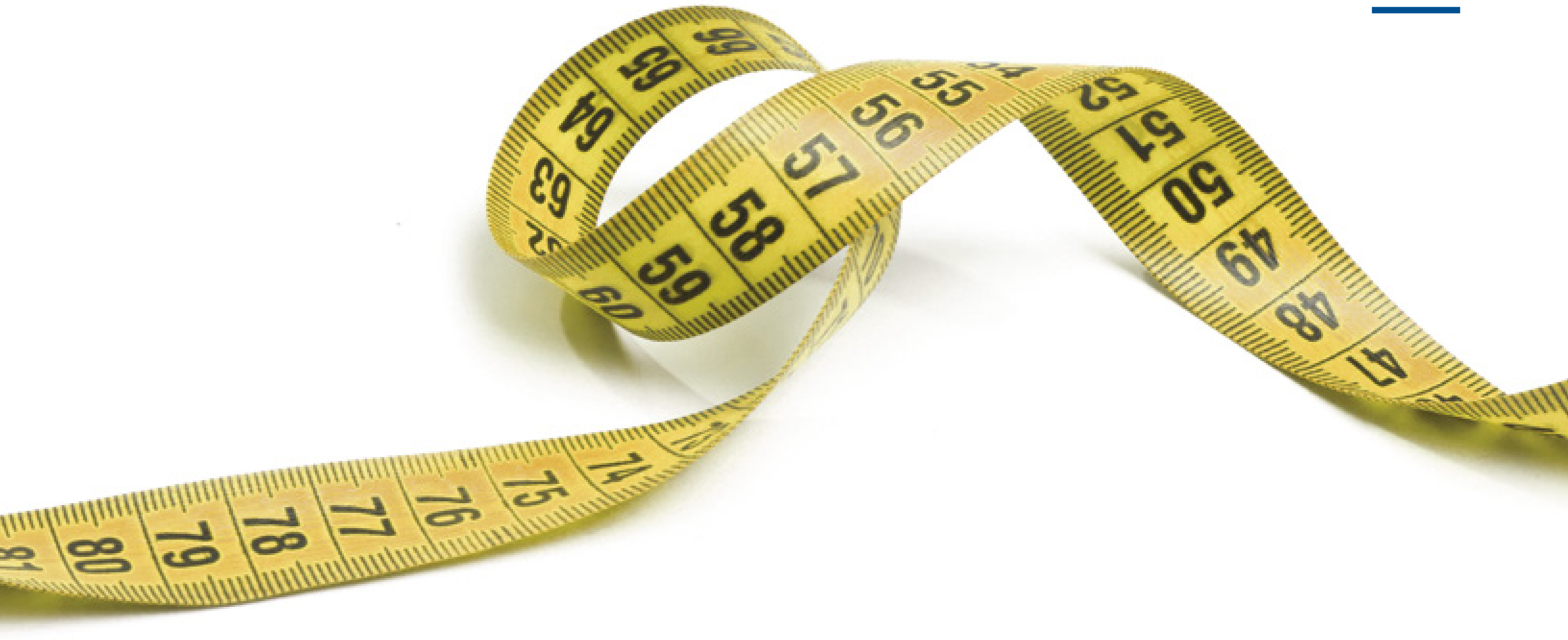
Effectively just traditional reinsurance contracts, providing indemnity cover for a buyer's losses, across a broad range of perils. ILS managers pledge cash collateral to back their liabilities, hence the name.

Industry loss warranty

Contracts that trigger not on a buyer's actual losses, but on the insurance industry's overall loss from specified disasters, e.g. a $5bn Florida hurricane.

Sidecar

Vehicles run by reinsurers in parallel to their balance sheets. Typically involve a reinsurer ceding a share of a set portfolio of risks to investors (via "quota share" reinsurance). Some are "market-facing", akin to a fund, where a reinsurer writes a specific portfolio for the vehicle.



commoditised and easier to access, with a variety of risk-return options.

In contrast, the collateralised reinsurance segment is more specialised and difficult to access, but also provides a range of risk-return targets.

Finally, other small niches such as retro business can provide higher-octane strategies, while sidecars offer the chance to leverage off rated balance sheets and may introduce a range of diversifying risks.

Weighing up returns

So far during its short history the ILS market has delivered strong returns for investors, although margins have softened significantly in recent years.

Before 2017-18, the market's most difficult years had been 2011 and 2005, as a result of the Tohoku earthquake in Japan and Hurricane Katrina, respectively. These were both testing, but by no means worst-case, catastrophe scenarios for the largely Florida-exposed market.

Even 2017, with its trio of hurricanes, could have been much worse had Irma taken a less favourable track over Florida.

There are a couple of benchmarks of returns that are often cited within the industry, although neither is without its limitations. The Eurekahedge ILS Advisers tracks the performance of 34 ILS funds all equally weighted, which cover a wide range of strategies from high risk-return retro vehicles down to low-risk cat bond-only funds. Its worst year to date was 2017, when it lost 5.60%.

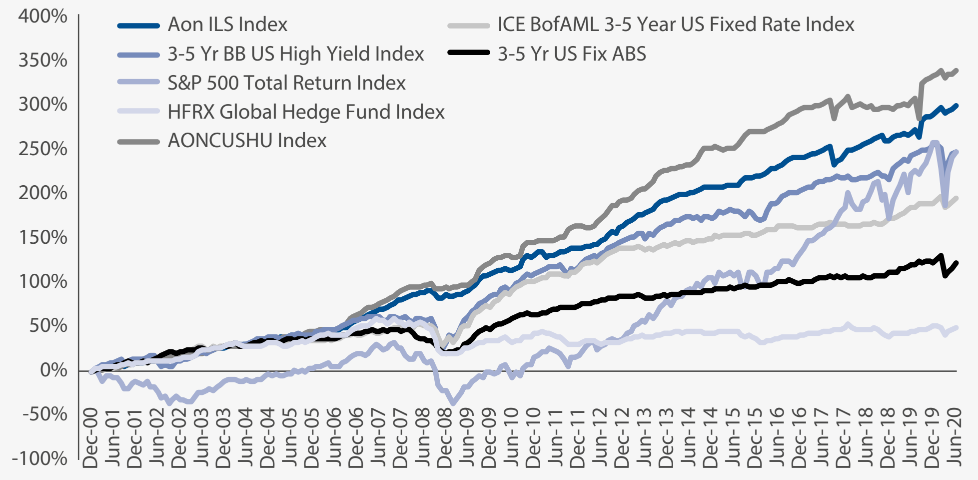
Meanwhile, the Swiss Re Cat Bond Total Return index – which solely tracks performance of the cat bond segment – returned 4.43% last year.

Quantifying risks

Cat bond investors are typically given the "expected loss" of a deal to measure their risk levels, a figure that expresses the likelihood of capital loss in any given year. For example, a 1% expected loss means investors could lose that amount of their principal in any year – or looked at another way, is roughly similar to the prospect that a 1-in-100-year disaster would wipe out all their capital.

Cat bond spreads are often cited as a multiple of the deal's expected loss, which is an easy way of referencing the margin of premium earned in relation to potential losses. Typically, cat bonds in the 1-2% expected loss range now offer investors around a 2x multiple (or spreads of 2-4%), depending on the risk profile.

Aon All Bond index versus financial benchmarks



Source: Aon

Manager list

Manager by type	Total AuM in ILS $mn (estimated)	Notes	ILS strategies	Established in ILS	Base
Specialist ILS manager					
Nephila Capital	9,500	Acquired by Markel in Q4 2018	Various multi-instrument funds and single-investor mandates, also invests in weather	1998	Bermuda
LGT Insurance-Linked Partners	7,800	Former Clariden Leu ILS team moved to Swiss manager in 2012. Team of 50 (20 portfolio managers; 30 support staff). Manages own rated reinsurance carrier Lumen Re	Various funds and bespoke mandates	2005	Switzerland
Fermat Capital Management	7,000	Independent ILS manager	Cat bond focus	2001	US
Credit Suisse Asset Management	6,200	AuM as of March 2020	Various funds with different risk levels; two associated rated platforms	2003	Switzerland
Leadenhall Capital Partners	5,552	Now majority owned by MS&AD – group took over ownership from MS Amlin subsidiary in Dec 2018	Non-life and mortality funds, life/non-life mandates	2008	UK
Renaissance Underwriting Managers	5,387	AuM Figs exclude RenRe share	Medici cat bond fund; Upsilon funds write collateralised re/retro including aggregate; DaVinci takes quota share focused on cat reinsurance book and new PGGM joint venture Vermeer writes high-layer US business	1999	Bermuda
Securis Investment Partners	4,770	Northill Capital owns majority stake	Life, non-life and mixed strategy funds	2005	UK
AlphaCat Managers	4,300	Affiliate of AIG's Validus reinsurance business, AuM includes $100mn from parent; from end Q1 disclosure	Runs a lower-risk and higher-risk fund, BetaCat cat bond tracker fund and direct mandates	2008	Bermuda
Elementum Advisors	4,100	Independent manager; sold 30% stake to White Mountains in May 2019	Multi-instrument funds	2009	US
Stone Ridge Asset Management	4,090	AuM cited for public funds as current size of private funds not disclosed	Cat bond and sidecar funds	2013	US
Aeolus Capital Management	4,000+	Began as private reinsurer; transformed into fund manager in 2011. Now majority owned by Elliott Management	Retro and collateralised re	2006	Bermuda
Schroder Secquaero	2,618	Fully owned by Schroders since July 2019	Six funds: two cat bond; three multi-instrument of which two include life risk, one life fund. Four segregated mandates	2008	Switzerland
Hudson Structured Capital Management	2,100	Independent manager led by Michael Millette; backing from Blackstone	Reinsurance AuM listed; transport fund not included. Firm AuM $2.4bn. Flagship ILS strategy invests across cat, life/health, casualty, insurance distribution/services and other risks via ILS and debt/equity instruments. Catastrophe opportunities fund; $55mn InsurTech venture fund	2016	US/Bermuda
Amundi Pioneer Investments	1,950	Amundi subsidiary offers one ILS vehicle and invests multi-strategy funds in ILS	Pioneer ILS Interval fund and others; invests in cat bonds, sidecars and other instruments	2007	US
Neuberger Berman Insurance-Linked Strategies	1,900	Acquired by Neuberger Berman from Cartesian Capital in Nov 2018	Focus on natural catastrophe risk via ILWs, cat bonds and other ILS	2009	Bermuda
Pillar Capital Management	1,900	Management-controlled; part-owned by TransRe	Collateralised re focus but invests across retro, ILWs and cat bonds. Runs two co-mingled funds and multiple fund-of-one mandates	2008	Bermuda
Scor Investment Partners	1,700	Asset management affiliate of reinsurer established 2011	Multi-instrument	2011	France
Twelve Capital	1,550	Spun out from Horizon21; team in ILS since 2007	Cat bond and multi-instrument ILS funds (insurance debt fund not tracked)	2010	Switzerland
Hiscox Insurance-Linked Strategies	1,500	Hiscox-owned asset manager; Hiscox capital $55mn	Two co-mingled diversified funds; single-investor funds; one insurance sidecar	2014	Bermuda
Swiss Re	1,470	Reinsurer offering quota share sidecars	Internal ILS portfolio of +$500mn (not tracked). Sector Re/Viaduct sidecars		
New Ocean Capital Management	1,300	Subsidiary of reinsurer Axa XL which bought out minority partners in Nov 2018	Pantheon Re quota share cat sidecar; Daedalus algorithmic strategy and one JPY cat bond fund alongside managed accounts.	2014	Bermuda
Axa Investment Managers	1,040	Affiliate of insurer; invests third-party funds only	Various funds and mandates	2007	France
Axis Ventures	1,000	Reinsurer subsidiary; also oversees $600mn Harrington Re joint venture not tracked here	$1.0bn for property cat support; largely private sidecars	2014	Bermuda
Mt Logan (Everest Re sidecar)	800	Includes some Everest Re capital	Quota share of Everest Re book	2013	Bermuda
Coriolis Capital	765	Bought by Scor Investment Managers in 2019	Multi-instrument including weather	2003	UK
Kinesis Capital Management	750	Lancashire subsidiary established mid-2013	Kinesis Re I vehicle writes multi-class reinsurance and retro. Wrote $340mn limit	2013	Bermuda
Tokio Marine Asset Management	725	Asset management arm of Tokio Marine Group	Largely ILS/cat bonds		Japan
Munich Re	685	Significant internal cat bond fund – not disclosed	Eden and Leo Re sidecars = $685mn	2006	Germany
Aspen Capital Markets	650	Reinsurer subsidiary	Runs managed accounts, commingled funds and sidecars including Peregrine		
Arch Underwriters	600	Underwrites for rated $1.13bn casualty-focused Watford Re, not tracked here	Also manages $500mn third-party capital	2014	Bermuda
TransRe Capital Markets	500	Reinsurer subsidiary	Pangaea Re and other sidecars		

Manager by type	Total AuM in ILS $mn (estimated)	Notes	ILS strategies	Established in ILS	Base
Peak Capital (formerly Lutece)	>500	Acquired by Peak Re in May 2020 from BTG Pactual Asset Management	Initially a focus on retrocession	2018	Bermuda
Plenum Investments	440	Independent asset manager	Main focus on cat bonds, also manages insurance bonds and life settlements, long only strategies	2010	Switzerland
PG3	410	Family office; largely family funds, may take third-party capital	Non-life and life reinsurance; legacy, life settlements and other insurance finance strategies	2008	Switzerland
Tangency Capital	400	Independent manager set up by trio of reinsurance execs	Quota share retrocession portfolio	2018	London
Invesco	375	Mutual fund manager; runs ILS vehicle and invests via multi-strategy funds	OFI Global Cat Bond Strategy open to external investors	1997	US
ILS Capital Management	350	Independent ILS manager backed by Don Kramer	Specialty focus	2014	Bermuda
Brit (Sussex)	300	Brit Insurance sidecars	Sussex market-facing, Versutus quota share	2018	UK
PartnerRe	259	Reinsurer offering quota share sidecars	Lorenz sidecar of largest accounts $195mn; new 2019 sidecar global cat risk, Torricelli, $67mn		US
Azimut Investments	240	Luxembourg affiliate of Italian asset manager Azimut Group. Another subsidiary Katarsis Capital Advisors also advises the fund	One cat bond fund plus one multistrategy fund including small longevity exposure	2008	Luxembourg
Leine Investments	200	Reinsurer Hannover Re has seeded the fund with $200mn	Cat bonds and collateralised re	2013	Germany
Merion Square	150	Joint venture between Rewire Holdings and life settlements investor Vida Capital		2019	US
Pimco	150	Previous cat bond investor; launched ILS strategy in 2019	Collaborates with Allianz	2019	US
Lombard Odier	110	Swiss private bank launched ILS fund in 2016	Cat bond funds	2016	Switzerland
Sumitomo Mitsui DS Asset Management (Tokyo)	105	Advised by Mitsui Sumitomo Insurance	Also manages $500mn third-party capital	2014	Japan
Lodgepine Capital Management	100	Markel subsidiary; insurer allocated up to $100mn seed funds	Retro initially; may expand into specialty non-cat risk later	2020	Bermuda
Tenax Capital	58	Fosun bought majority stake in July 2019	Cat bond funds	2017	London
Eastpoint Asset Management	50	Backed by Japanese manager Asuka Asset Management	Cat bond focus	2012	Bermuda
Blue Capital Management	30	Sompo International subsidiary; funds in run-off	Collateralised reinsurance (regional focus)	2012	Bermuda
Entropics Asset Management	25	Independent ILS manager	Cat bond focus	2015	Sweden
Context Insurance Strategies	not disclosed	Independent firm set up by ex-Magnetar reinsurance execs Andrew Sterge and Pete Vloedman	Sub-adviser to mutual fund investing in liquid ILS and insurance debt/equity	2018	US
Solidum Partners	not disclosed	Independent ILS manager	Cat bond and multi-instrument funds	2004	Switzerland
Markel Catco	in run-off	Markel subsidiary placed in run-off 2019	Retrocession writer	2011	Bermuda
TOTAL	**92,454**				
ILS fund of funds					
K2 Advisors	915	Hedge fund of funds manager; $11.6bn AuM	Invests with multiple ILS funds; buys cat bonds directly	2003	US
ILS Advisers	240	Part of Hong Kong-based investment manager HSZ	Fund of funds; index tracker fund tracking ILS Advisers index	2014	Bermuda
GT ILS fund	230	Texas-based firm offering ILS fund of funds solution	Securis and others		US
City National Rochdale	190	City National Bank-owned adviser targeting HNW clients	Allocates to NB Re and Stone Ridge	2017	US
Altair Reinsurance Fund	78	Operated by wealth adviser First Republic Securities	Feeds into Hudson Structured ILS funds	2018	US
AIM Capital	20	Finnish fund of funds manager	AIM Insurance Strategies fund	2011	Finland
TOTAL	**1,673**				
Multi-strategy investors active in ILS; but not offering external ILS strategies					
AP3	560	Swedish pension fund. Invests directly and with funds	$541mn (5bn kronor) "other" assets as of end 2018		Sweden
Quantedge	450	Hedge fund with $1850mn overall AuM	Invests in cat bonds, collateralised re, sidecars, ILWs	2013	US
Baillie Gifford	175	Diversified Growth Fund invests in ILS	Buys ILS directly. Also held stake in listed ILS funds Catco/DCG Iris		UK
Ontario Teachers' Pension Plan	300+	Invests via third party ILS managers and internal team	Stakes in DaVinci Re, Catalina	2005	Canada
Aberdeen Asset Management	25	8% of £427.5mn Diversified Growth fund at end Q1 18; reinvested $33mn in Catco post-loss			
DE Shaw	not disclosed	Has $40bn+ total AuM; ILS holdings not disclosed	Writes collateralised re/retro	2007	US
Man Group	not disclosed	Invests in cat bonds via Man AHL Evolution Frontier fund			
New Holland Capital	not disclosed	Hedge fund of funds manager for Dutch manager APG			US
One William Street	not disclosed	$4bn alternatives manager	Hired Al Selius to build ILS portfolio	2020	US
Tiaa-cref	not disclosed	Manages $800bn overall AuM	Buys cat bonds directly		US
TOTAL	**1,510**				

Source: *Trading Risk*

Infographic

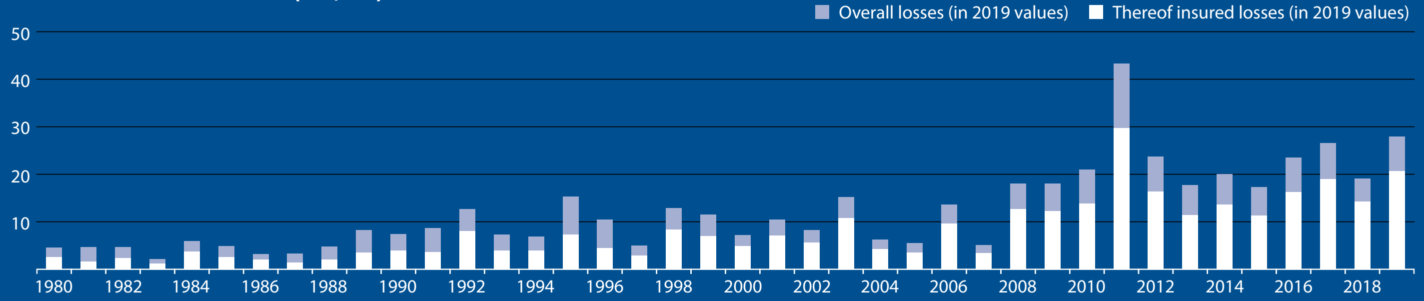
Inside Tornado Alley

20 Modelled annual aggregate **losses may approach $20bn on average**, according to KCC, larger than hurricane and earthquake combined

Nearly a **third** of all average annual reported tornadoes occur in the states of **Texas**, **Oklahoma**, **Kansas** and **Nebraska**, all states that are within the "**Tornado Alley**."

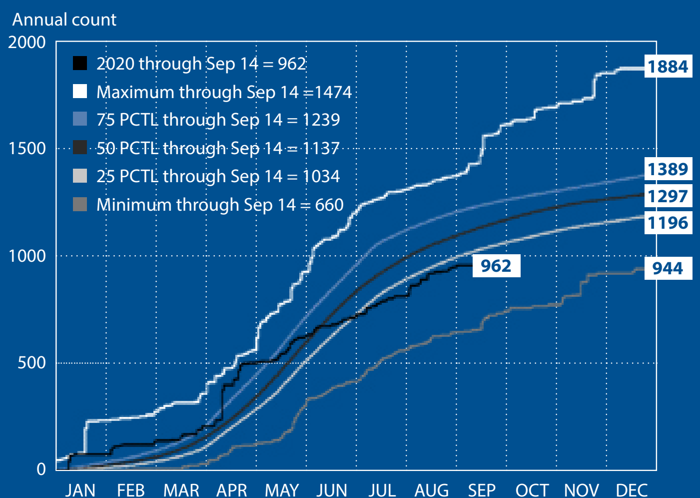
Convective storm events in the United States 1980 – 2019

Overall and insured losses (US$ bn)



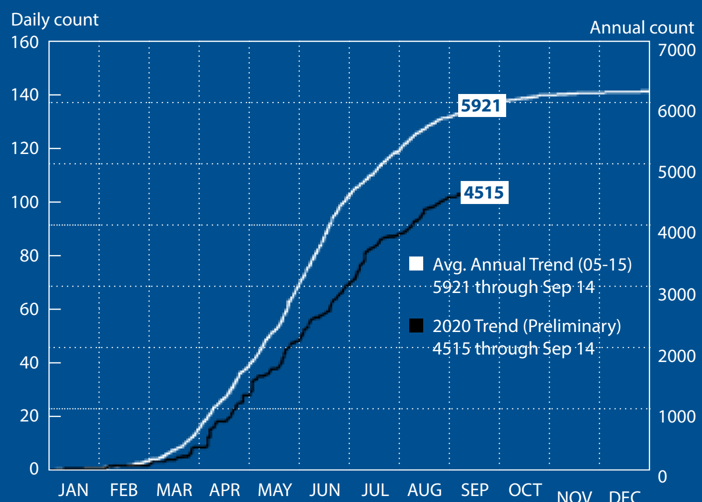
Source: © 2020 Münchener Rückversicherungs-Gesellschaft, NatCatSERVICE – as at August 2020

US inflation adjusted annual tornado trend and percentile ranks



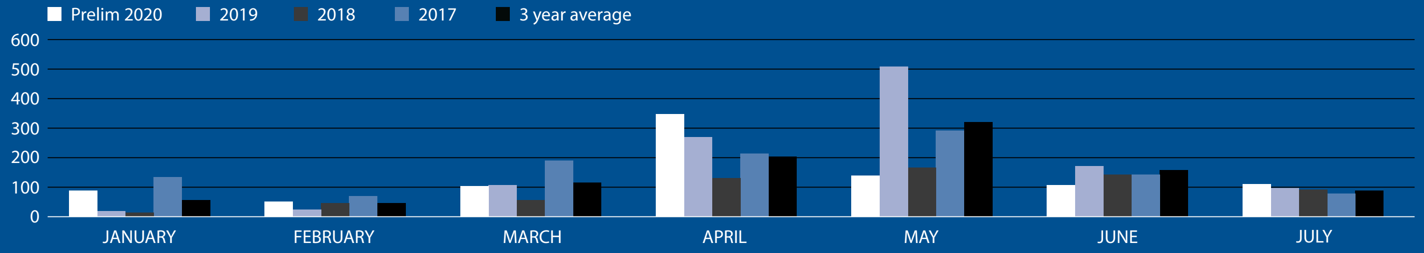
Source: National Weather Service Storm Prediction Center, as at September 14 2020

US hail reports: daily count and running annual trend



Source: National Weather Service Storm Prediction Center, as at September 14 2020

After April spike, 2020 tornado activity lags average



Source: NOAA, Preliminary data only is available for 2020 and NOAA cautions on comparing this to prior-year

GLOSSARY OF TERMS

Key phrase	Definition
Aggregate exceedance probability (AEP)	Probability of total annual losses of a particular amount or greater
Alternative risk transfer	Transferring risk through methods other than traditional insurance or reinsurance, for example utilising capital markets capacity through the issuance of insurance-linked securities
Attachment point	The point at which excess insurance or reinsurance protection becomes operative; the retention under an excess reinsurance contract
Attachment probability	Likelihood of losses exceeding the attachment point over the course of a one-year term
Administrator	Assumes all operating and reporting protocols for a special purpose insurer/entity
Basis risk	Risk that losses in a non-indemnity trigger differ from indemnity losses
Capacity	The largest amount accepted on a given risk or, sometimes, the maximum volume of business a company is prepared to accept
Catastrophe bond	Securities that transfer catastrophe risks from sponsors to investors
Cedant	Party to an insurance or reinsurance contract that passes financial obligation for potential losses to another party
Collateralised reinsurance	Reinsurance contract that is fully collateralised to the limit
Earned premium	The portion of premium (paid and receivable) that has been allocated to the (re)insurance company's loss experience, expenses and revenue
Excess of loss	System whereby a (re)insured pays the amount of each claim for each risk up to a limit determined in advance, while the (re)insurer pays the amount of the claim above that limit up to a specified sum
Exhaustion probability	Likelihood of losses exceeding the exhaustion point, causing a full loss on a reinsurance layer
Expected loss	The expected loss is the modelled loss within the layer divided by the layer size
Extension period	Time period after the scheduled maturity used to calculate losses for events which took place during the risk period
Extension spread	Spread paid during the extension period (typically a reduced rate from the initial risk spread)
Gross premiums	Premium before subtracting direct costs
Indemnity trigger	Type of trigger that most closely resembles the traditional market ultimate net loss cover, and offers ceding insurers (a.k.a. sponsors) the ability to recover based on actual losses
Industry loss index trigger	Type of trigger where payouts are determined by a third party estimate of industry losses
Industry loss warranty (ILW)	Form of reinsurance or derivative contract that covers losses arising from the entire insurance industry rather than a company's own losses from a specified event
Incurred losses	The total amount of paid claims and loss reserves associated with events from a particular time period
Insurance-linked security (ILS)	Financial instruments whose value is affected by an insured loss event
Limit	The maximum amount of (re)insurance coverage available under a contract
Loss ratio	Incurred losses divided by earned premiums (earned premiums include reinstatement premiums)

Key phrase	Definition
Modelled loss trigger	Type of trigger where payouts are determined by inputting event parameters into a predetermined and fixed catastrophe model to calculate losses
Net premiums	Premium less direct costs
Quota share	Reinsurance where the cedant transfers a given percentage of every risk within a defined category of business
Occurrence exceedance probability (OEP)	Probability that any single event within a defined period will be of a particular loss size or greater
Parametric trigger	Type of trigger where recoveries are triggered by a formula that uses measured or calculated parameters of an actual catastrophe event (e.g. wind speed, magnitude of an earthquake)
Peril	A specific risk or cause of loss covered by an insurance policy
Probable maximum loss (PML)	The anticipated maximum loss expected on a policy
Profit commission	A provision that provides the cedant a share of the profit from business ceded
Proportional reinsurance	System whereby the reinsurer shares losses in the same proportion as it shares premium and limit
Rate on line	Reinsurance premium divided by reinsurance limit
Reinsurance	A transaction whereby the reinsurer, for a consideration, agrees to indemnify the ceding insurer against all or part of the loss which the insurer may sustain under a policy or policies that it has issued
Reinsurer	Company that provides financial protection to an insurance company
Reset	Adjusting a layer of a multi-year catastrophe bond to maintain a bond's probability of loss at the level defined at issuance
Retention	The net amount of risk the ceding company keeps for its own account
Retrocession	A transaction whereby a reinsurer cedes to another reinsurer all or part of the reinsurance it has previously assumed
Risk period	Time period for which a reinsurance agreement covers events taking place
Sidecar	A structure to allow investors to share in the profits and losses of an insurance or reinsurance book of business
Special purpose insurer/ entity (SPI/SPE)	A company created by (but not owned by) a (re) insurer for the purpose of raising capital for a specified programme
Treaty	An agreement between a cedant and a reinsurer stating the types or classes of businesses that the reinsurer will accept from the cedant
Underwriting profit	Earned premium minus incurred losses and incurred commissions (earned premiums include reinstatement premiums)
Variable reset	Adjusting a layer of a multi-year catastrophe bond up or down within a pre-defined range of probability of loss, with a corresponding update in risk spread
Vendor models	Software that estimates expected loss and probability of occurrence for specified exposure sets and predefined peril scenarios. The three largest vendors by market share are AIR Worldwide, Risk Management Services and Eqecat
Written premiums	Premium registered on the books of an insurer or a reinsurer at the time a policy is issued