

Insurance Linked Securities: Riders on the storm

A report published in the journal 'Science' predicts that the strongest Atlantic hurricanes might double in frequency. BRAVE Partners considers what this means for the cat bond market.

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Global warming

Al Gore was awarded a Nobel Prize for his work highlighting the issues around global warming, including his film: 'An Inconvenient Truth'. Whilst there are still some who deny global warming as a phenomenon, it is pretty much agreed as a scientific fact. However there is still much debate on the effect of global warming.

Hurricanes and global warming

At a cursory glance, global warming should increase hurricane activity. The devastating destructive power of hurricanes is fuelled by the energy pool of warm water. Hurricanes usually lose their power quickly over land. Warmer water means more fuel and larger, more destructive hurricanes.

However, like much in science, things are not as simple as they might seem. In Albert Einstein's immortal words: "everything should be as simple as possible, but only that simple" or; in the words of the physicist Richard Feynman when asked to explain in just one minute what he had done to win the Nobel Prize: "Buddy, if I could explain to you in just one minute what I have done, it would not be worth the Nobel prize."

Wind shear

Global warming not only heats the Atlantic Ocean, it also increases wind shear in the zone off West Africa where hurricanes form. Wind shear is the change in speed or direction of wind over a relatively short distance or time period. Vertical wind shear is the most commonly described form. Those who are keen sailors, with a penchant for racing – like BRAVE partner Christopher Cloke-Browne, will be particularly familiar with the concept. Setting the sails to maximize the speed of a yacht is critically dependent on getting the

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main sail adjusted for the wind shear. The mainsail can be set with a greater or lesser twist to it so that the sail is at different angles at different altitudes. This is to account for the different wind directions at different altitudes – all this in just 5ft from sea level. The impact across the nine miles, or so, of vertical height of a typical hurricane is much greater.

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The impact of global warming on hurricane activity

For some time the BRAVE partners have believed that the competing impacts of global warming on hurricane formation would lead to larger numbers of more powerful hurricanes. A report published in the Scientist journal now seems to provide some more robust, academic support for this theory. The BRAVE Partners' theory is based on the simplistic view (hopefully not too simplistic for Albert...) that the increased ocean temperatures would increase hurricane formation and strength. However, the increased wind shear would increase the destruction of hurricanes in formation. This predicts that there would be more hurricanes forming than today, but more hurricanes being destroyed in formation. The result: the ones that do form in the future are likely to be more powerful.

The impact of larger, more powerful hurricanes on cat bonds

The impact of global warming on cat bonds and other insurance linked securities is more subtle than a straightforward increase in hurricane activity. These bigger hurricanes are not only better (at destroying property), but also different. Hurricane Katrina had effects that were not foreseen and certainly not predicted in the industry standard natural catastrophe models (AIR, RMS and Eqecat). The levies in New Orleans broke and the town was flooded. This flooding significantly increased both the damage and disruption caused by the hurricane.

Hurricane Ike caused the third most destructive hurricane to make landfall in the US. Ike did not make a major "strike", (ie hit a densely populated area with high value properties) like Katrina or Andrew. In contrast, the sheer size and power of Ike, combined with subtle effects created by the exact point of landfall and size of the hurricane, meant that it caused damage in four states as it travelled north. Previously hurricane damage had been rare even a few tens of miles inshore because the power of hurricanes usually diminishes rapidly over land.

The changing face of hurricane risk

Larger hurricanes appear not to be bigger versions of the same thing. These massive storms now appear to have different damage profiles to the smaller ones. In short, larger storms can produce disproportionately more damage than smaller ones as they create destruction from sources that cannot be generated by less powerful storms.

Key factor in successfully taking hurricane risk

The key factor in successfully taking hurricane risk is to be specific on the risk taken. This comment is more subtle than it seems. Specificity not only arises from having a clear view of the area and buildings on which an investor or underwriter is taking risk. It arises from having a clear idea of the set of events that can generate a loss.

The \$100bn question

The BRAVE partners have been offered risk on a \$100bn trigger industry loss warranty (ILW) several times. Each time the partners have declined. There are only three things that are known about a \$100bn natural perils loss in the USA:

- It has not happened.
- It will happen.
- I have no idea what will cause it.

An ILW has a digital pay out. In other words, if the trigger event happens, in this case a \$100bn industry loss from a natural peril in the USA, then the investor suffers a total loss of their investment. Some refer to investing in catastrophe risks as gambling. At BRAVE Partners we defer from this opinion as we view well underwritten natural peril risk as controlled, but the analogy is perhaps fair on \$100bn USA ILWs.

Contained risk

Natural catastrophe risk can be contained. This is done by taking risks which are high enough such that there are only a few events that can cause the loss, but are not so high as to be purely speculative as to whether they can happen or not. Ultimately these speculative “end of the world” events tend to be underpriced, the whole thesis of Nassim Taleb’s Black Swan strategy.

A \$20bn industry loss in SW USA

Something like, a \$20bn industry loss occurring in the SW United States is one example of the type of risk that BRAVE Partners believes is contained. This event has certainly happened, so it is known what causes it – a large hurricane striking an area of dense population.

However, a \$20bn loss is high enough such that there are only a reasonably limited set of events that can cause that much damage. The hurricane has to be large enough to create significant damage and it

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“Alligators don’t buy insurance”

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Partner
BRAVE Partners LLP

has to follow a track on which there is sufficient insured property to create the claims to generate the loss. As BRAVE partner, Richard Enos, puts it: "Alligator's don't buy insurance".

BRAVE Partners services

BRAVE Partners believes that investors in natural catastrophe risk must carefully analyse the losses that can happen in the risks that they take. The increasing number of very large hurricanes has changed the face of natural catastrophe risk. Investors are not protected by taking very remote risks in terms of the absolute loss size. Large hurricanes seem to create large losses in unpredictable ways. Investors are better protected by taking specific risks where the losses can only be caused by a hurricane of at least a particular size taking a particular track.

BRAVE Partners can advise investors seeking to take natural catastrophe risks on the different opportunities and entry points to the market.

Interaction

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- Global warming does appear to be changing the nature of hurricane risk.
- However, the changes in hurricane risk are subtle and unpredictable.
- BRAVE Partners LLP can advise investors seeking to take natural catastrophe risk on the different opportunities and entry points to the market.

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