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LOMBARD ODIER

INVESTMENT MANAGERS

DEBUNKING THE MYTHS OF INSURANCE LINKED SECURITIES

MAY 2017

As a relatively new asset class, a number of "myths" surround Insurance Linked Securities ("ILS"), which are subject to different risks compared to traditional asset classes. Here we seek to debunk some of these concerns.

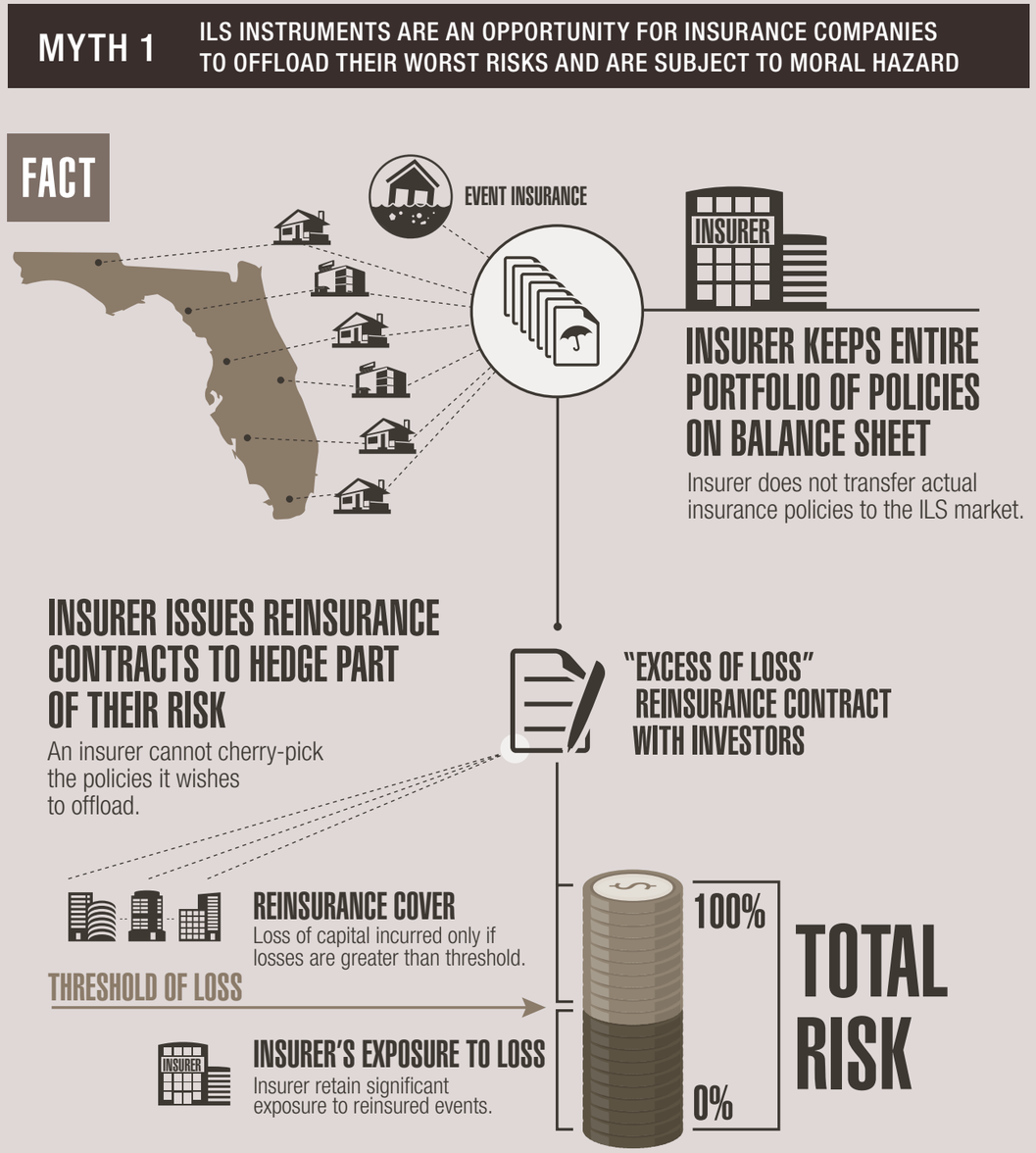
Myth 1. ILS instruments are an opportunity for insurance companies to offload their worst risks, and are subject to the same adverse selection/moral hazard that characterises the mortgage backed securities market

While it is true the ILS market represents a valuable opportunity for insurance companies to hedge part of their risk, in particular in the area of property insurance, the ILS market differs from mortgage-backed securities in at least two fundamental ways.

Firstly, issuers (insurers and reinsurers) – who look to the ILS market to hedge their risk, do not transfer actual insurance policies to the market participants. Insurers keep the entire portfolio of policies on their balance sheet and enter into a reinsurance contract with investors, to hedge part of their risk. In such a transaction, there is no room for an insurer to cherry-pick the policies it wishes to offload.

Secondly, the contracts underlying ILS transactions are usually structured as "excess of loss" reinsurance contracts. This means insurers retain significant exposure to the reinsured events and remain first in line for potential losses. ILS investors incur a loss of capital only if and when the issuing company suffers losses above and beyond a known threshold. ILS investors are effectively senior to the insurance company in the risk structure.

Together, these features of the ILS market ensure there is a strong alignment of interests between insurers and investors.



Myth 2. The occurrence of a covered catastrophe will automatically lead to the complete loss of capital in the exposed ILS instrument

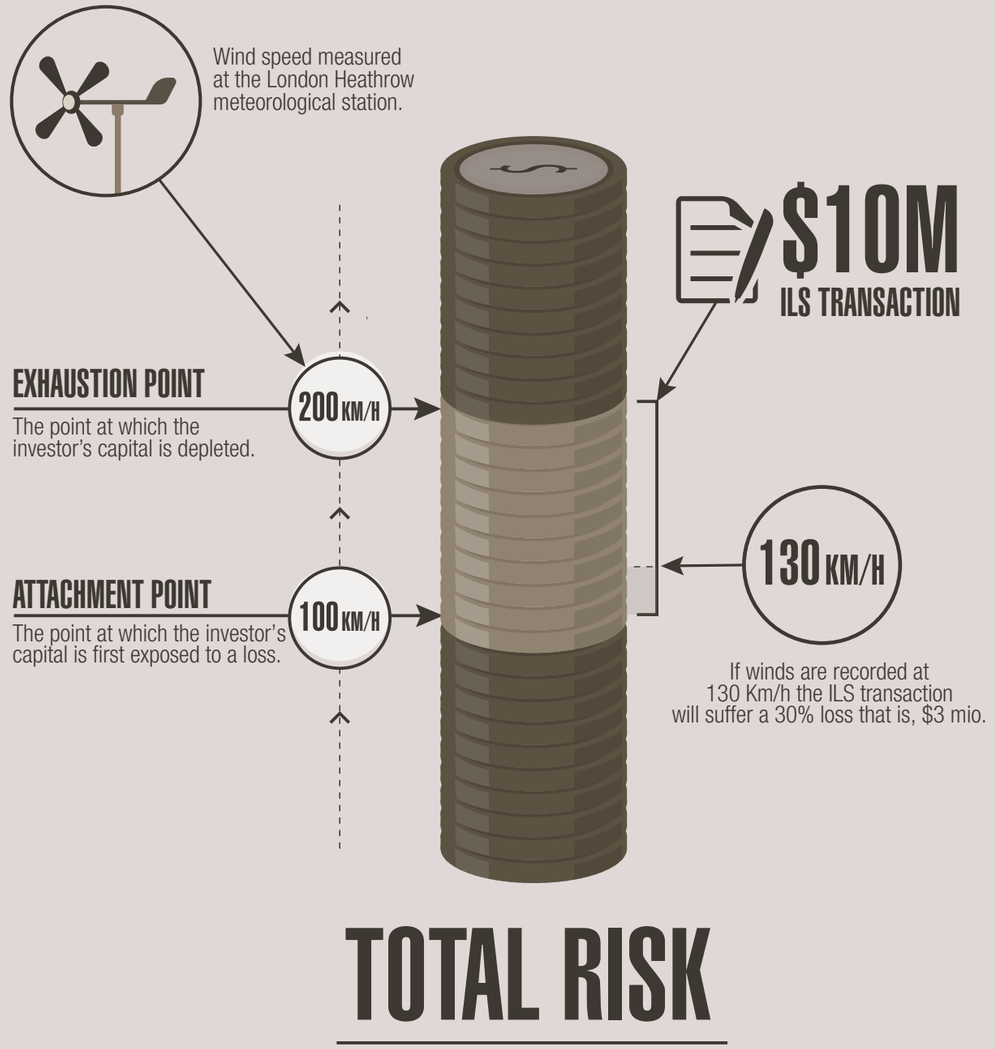
Most “excess of loss” ILS transactions are characterised by an attachment point (the point at which the investor is first exposed to a loss) and an exhaustion point (the point at which the investor’s capital is depleted). In most transactions, losses evolve in a linear fashion between these two points, as illustrated:

Let us use an example to illustrate the point. A USD 10 million ILS transaction is based on a parametric trigger, namely wind speed measured at the London Heathrow meteorological station. The reinsurance contract underlying the transaction specifies an attachment point of 100 km/h and an exhaustion point of 200 km/h. If winds are recorded at 130 km/h, the ILS transaction will suffer a 30% loss.

However, not all ILS instruments are the same. A notable exception to this general rule are Industry Loss Warranties (ILWs). As their name implies, ILW transactions are a type of ILS structured around the losses of the entire insurance industry, tied to a specific geographical area, and are usually binary in nature. For example, an investor may enter into an ILW for USD 5 million worth of coverage. The contract specifies a trigger of CHF200 million worth of hail damage in the motor and residential lines of business for the whole insurance industry in Switzerland. If this level of damage is reached, the capital at risk in the transaction is lost.

MYTH 2 THE OCCURRENCE OF A COVERED CATASTROPHE WILL AUTOMATICALLY LEAD TO LOSS OF CAPITAL IN THE EXPOSED ILS INSTRUMENT

FACT MOST ‘EXCESS OF LOSS’ ILS TRANSACTIONS ARE CHARACTERISED BY AN ATTACHMENT POINT AND EXHAUSTION POINT



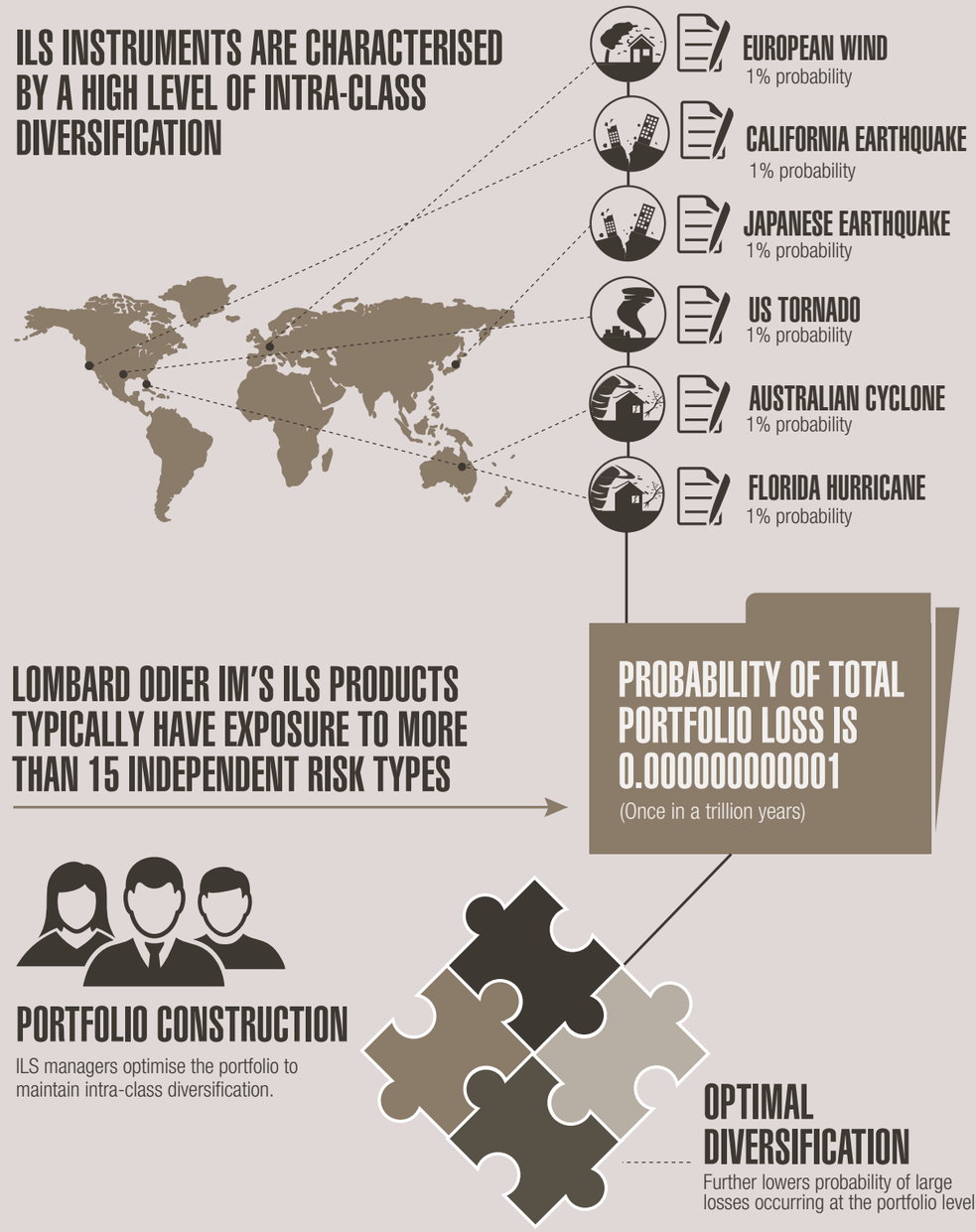
Myth 3. It is likely a portfolio of ILS instruments will be faced with a loss of 100% of capital

To the contrary, in our opinion, such a scenario is extremely unlikely. Unlike other asset classes, where individual securities within the asset class tend to move in a single direction, ILS are characterised by a high level of intra-class diversification. As an illustration, one can build an ILS portfolio by selecting assets linked to independent events such as a Japanese earthquake, California earthquake, European wind, US tornadoes, Florida hurricane, and Australian cyclone. If each of the six events covered has a 1% probability to occur, the probability of a total portfolio loss is 0.000000000001, or once in a trillion years.

> **“In reality, Lombard Odier IM’s ILS products will typically have exposure to more than 20 independent risk types, further lowering the probability of large losses occurring at the portfolio level. The investment process, in particular the portfolio construction techniques used, explicitly seek to achieve optimal portfolio diversification by reducing the probability of large losses occurring.”**

MYTH 3 IT IS LIKELY A PORTFOLIO OF ILS INSTRUMENTS WILL BE FACED WITH A LOSS OF 100% OF CAPITAL

FACT



Myth 4. In recent years, there has been an increasing number of natural disasters such as hurricanes, tornadoes, floods and hail storms

In our opinion, this is a fallacy created by a combination of the 24-hours global news cycle, improved reporting technology, and the ever-increasing monetary cost of catastrophes.

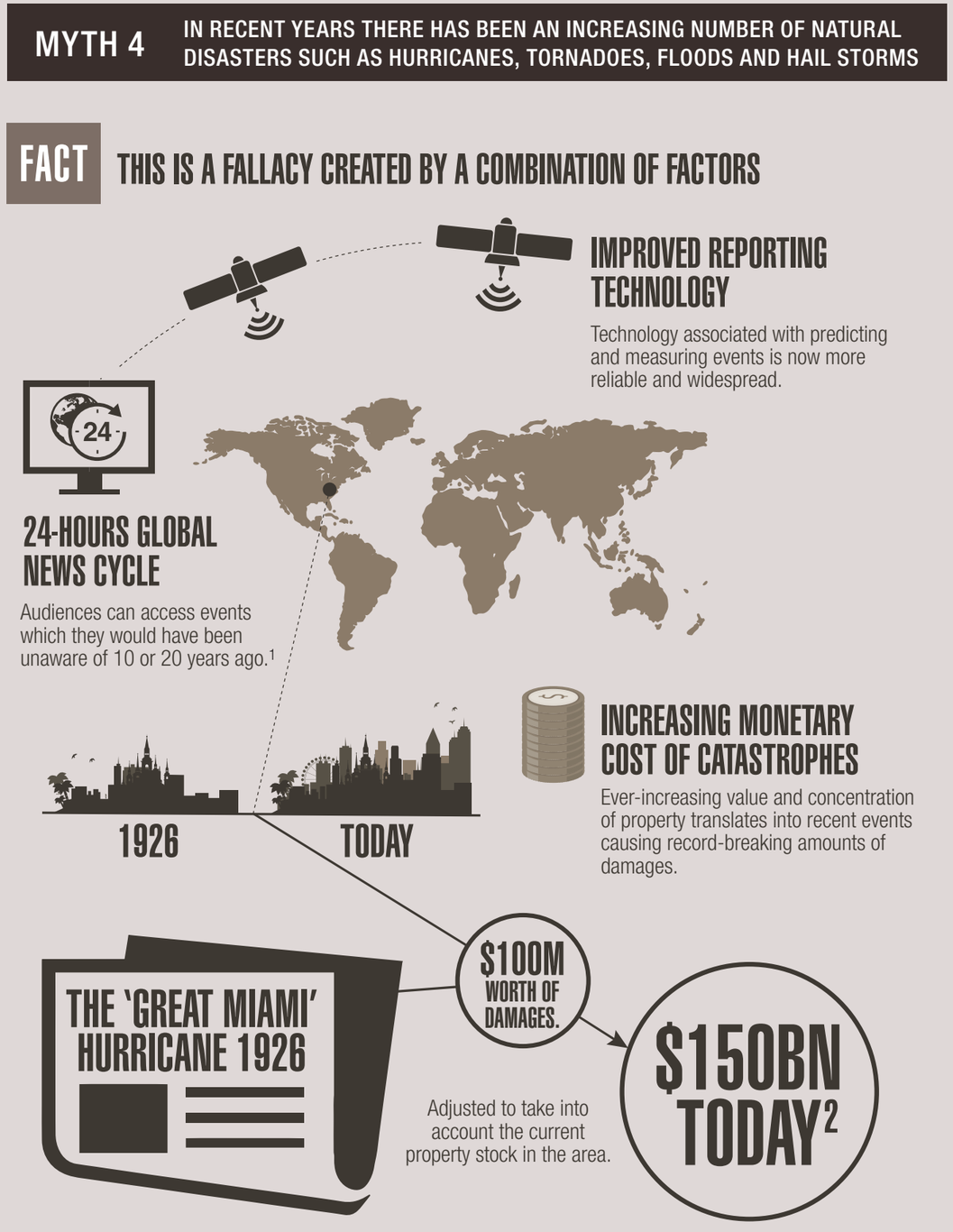
There is a very persistent interest in the public for news coverage of severe weather, as well as other forms of natural disasters.[3] As a consequence, and with the advent of the 24-hour global news cycle, the audience can access coverage of events which they would have been unaware of 10 or 20 years ago. Undoubtedly this has contributed to higher levels of awareness among the public and the perception of increased event frequency.

Additionally, the technology associated with predicting and measuring catastrophic events has evolved markedly over the last century and is now far more reliable and widespread. Satellites, Doppler radars and un-manned drones are just a few of the technological advances that mean more events are being reported, including some that would otherwise remain unnoticed, for they occur in deserted regions.

Finally, we have witnessed a formidable accumulation of wealth during the last decades. This evolution is particularly striking in high-risk metropolitan and coastal areas where demographic changes have led to an ever-increasing concentration of property. This evolution translates into recent catastrophes causing record-breaking amounts of damages.

The “Great Miami” hurricane of 1926 is thought to have caused approximately USD 100 million worth of damages at the time. It is estimated that, when adjusted to take into account the current property stock in the area, the exact same physical event would result in damages in excess of USD150 billion.[4] Fortunately, the evolution of total insured value is at the core of the insurance business, and form an integral part of the models used to price ILS.

[3] Two Decades of American News Preferences, Michael J. Robinson, the Pew Research Center
[4] http://www.hurricanescience.org/history/storms/1920s/GreatMiami/



[1] Source: Climate Change 2014, Synthesis Report, Intergovernmental Panel on Climate Change.
[2] Source: https://www.tropicalstormrisk.com/docs/NormalizedHurricane2008.pdf

Myth 5. Global warming will cause increasingly frequent and strong hurricanes

This is a hotly debated topic within meteorological sciences and no scientific evidence has emerged yet to support this claim. As the Intergovernmental Panel on Climate Change summarises it in its latest report[6] "There is low confidence that long-term changes in tropical cyclone activity are robust, and there is low confidence in the attribution of global changes to any particular cause."

The meteorological science involved is complex, but one can summarise the current findings[7] as follows: most scientists expect fewer hurricanes characterised by a slightly increased wind intensity (+2-11%) and potentially higher damage from storm surge due to heightened sea levels.

The combined effect of these two offsetting factors (less frequent hurricanes, higher wind speed) is uncertain. What is known though, is that such an evolution will take decades, if not centuries to have a meaningful effect on the insurance industry. As the majority of ILS instruments vary in maturity from one to four years, we do not consider global warming to be a significant threat to ILS investors. There are in any case a number of periodical meteorological phenomena such as the El Niño–Southern Oscillation (ENSO) or the Atlantic Multidecadal Oscillation (AMO) that have a much greater impact on hurricane activity.

[6] Climate Change 2014, Synthesis Report, Intergovernmental Panel on Climate Change
[7] Effect of remote sea surface temperature change on tropical cyclone potential intensity, Vecchi, Gabriel A. and Soden, Brian J., Nature, December 2007, 450

[5] Effect of remote sea surface temperature change on tropical cyclone potential intensity, Vecchi, Gabriel A. and Soden, Brian J., Nature, December 2007, 450

Myth 6. Reinsurers have an informational advantage over ILS portfolio managers when it comes to catastrophe modelling

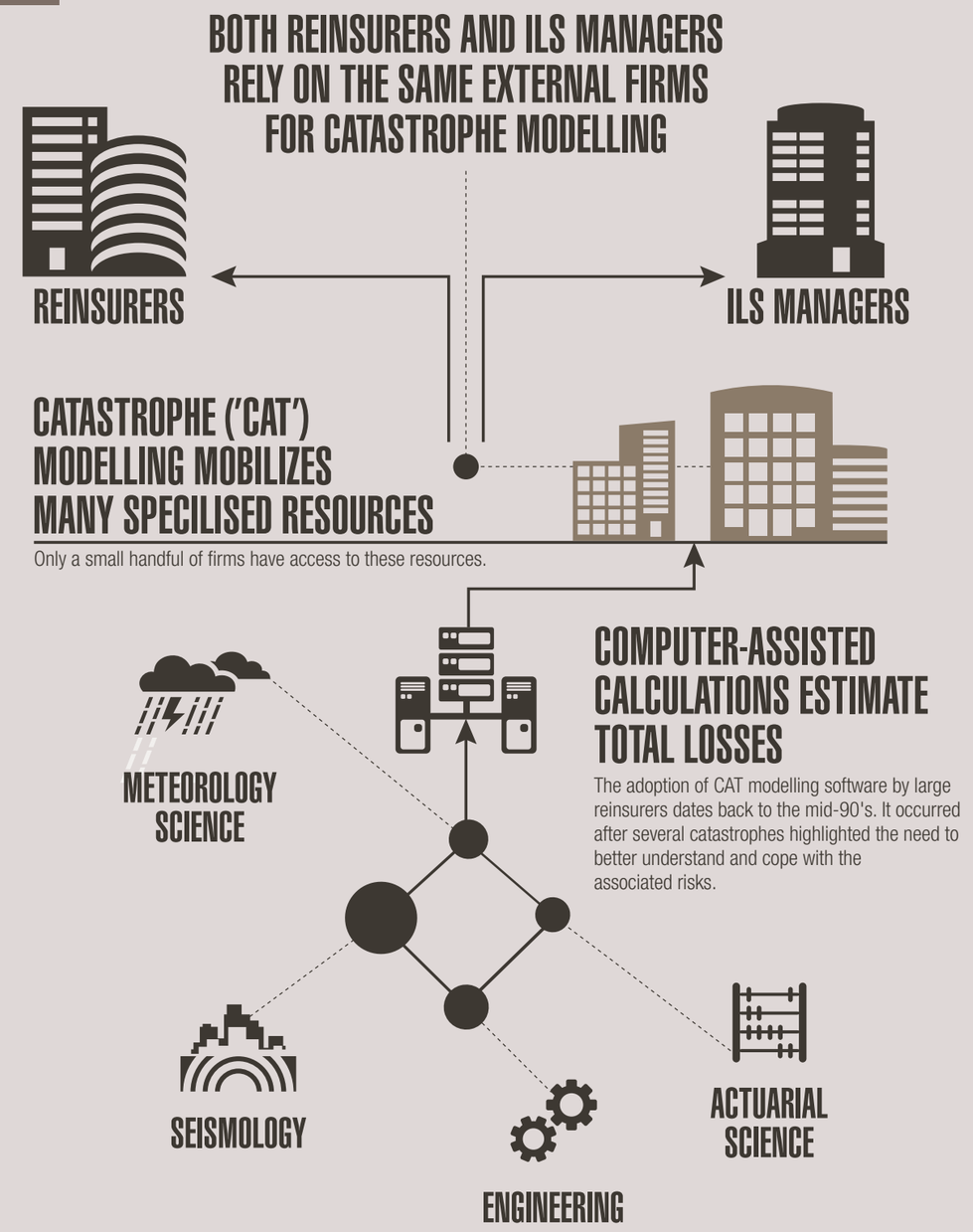
It is a well-guarded fact, but both traditional reinsurers and ILS managers rely on the same external firms to provide catastrophe modelling software for a quantitative assessment of the risks embedded in transactions.

Catastrophe ("CAT") modelling is the process of using computer-assisted calculations to estimate the losses that could be sustained due to a catastrophic event such as a hurricane or earthquake. CAT modelling draws from actuarial science, engineering, meteorology, and seismology and therefore mobilises a tremendous amount of specialised resources, which only a small handful of firms have access to.

The adoption of CAT modelling software by large reinsurers dates back to the mid-90's. Very much like the birth of the ILS markets, it occurred after several major natural catastrophes highlighted the need for the reinsurance industry to better understand and cope with the risks associated with large-scale natural disasters.

MYTH 6 INSURERS HAVE AN INFORMATIONAL ADVANTAGE OVER ILS PORTFOLIO MANAGERS WHEN IT COMES TO CATASTROPHE MODELLING

FACT

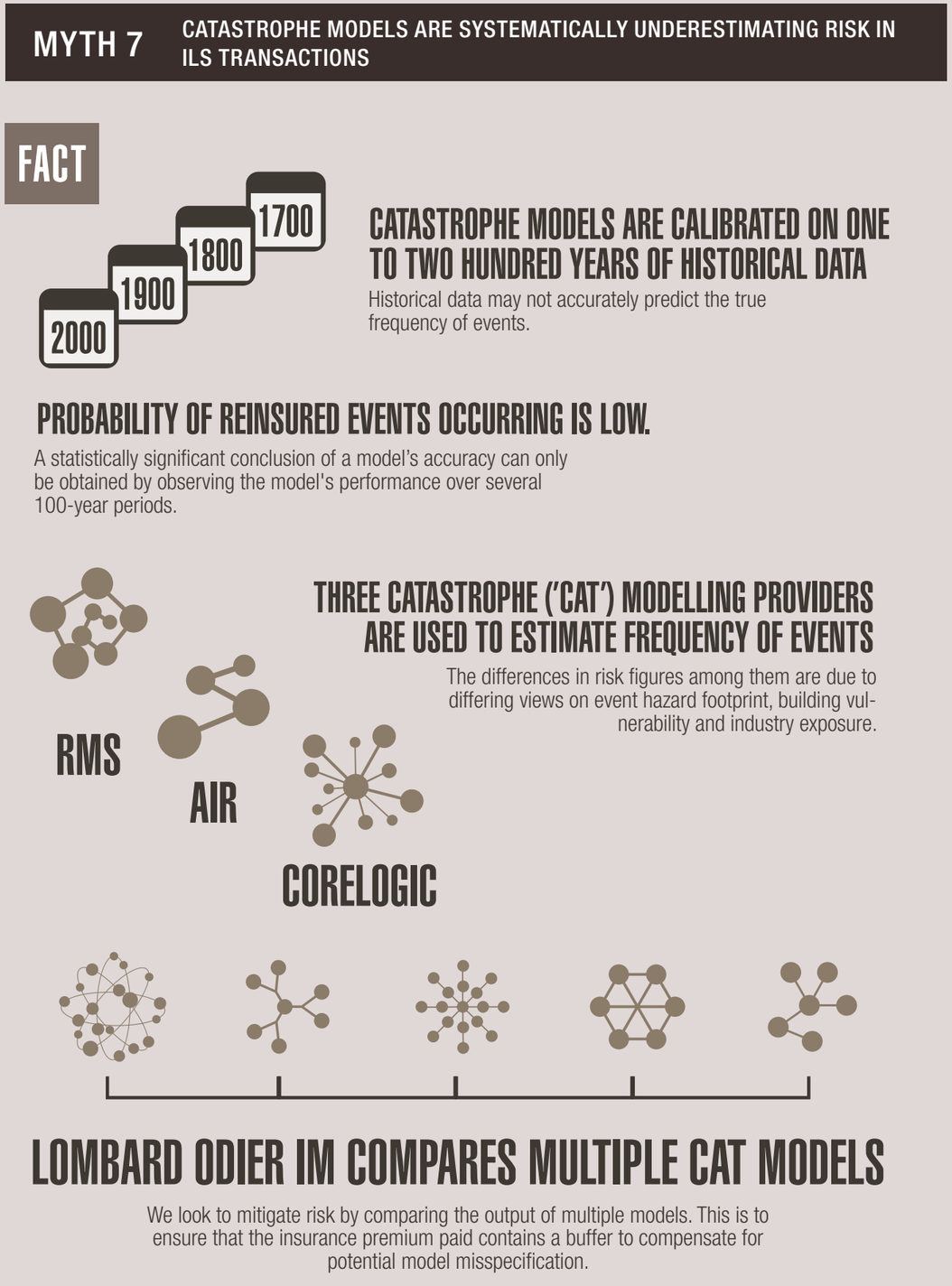


Myth 7. Catastrophe models are systematically underestimating risks in ILS transactions

Reinsured events are by definition extreme. The probability of occurrence is low, ranging from once in twenty to perhaps once in two hundred years. As such, models calibrated on one to two hundred years of historical data may not accurately predict the true frequency of events. This may result in either under- or over-estimation of risks. A statistically significant conclusion of a model's accuracy could only be obtained by observing the model's performance over several 100-year periods.

There are three major CAT modelling providers (RMS, AIR, CoreLogic) currently used in the reinsurance industry to estimate the frequency and severity of natural events. The differences in risk figures among them are due to differing views on event hazard footprint, vulnerability of buildings and industry exposure. CAT modelling firms typically use the same public historical events databases, as well as their best estimate of current industry exposure to calibrate their models. CAT models are adapted frequently, and each new piece of meteorological, scientific or economic data susceptible to affect the outcome of a model is usually incorporated quickly.

"At Lombard Odier IM, we seek to mitigate this risk by comparing the output of multiple models and by ensuring that the insurance premium paid in the context of an ILS transaction contains what we perceive as a sufficient buffer to compensate for potential model misspecification. In addition, we believe that working with CoreLogic eliminates the adverse selection bias introduced by the legitimate desire of insurers to select the one of RMS or AIR whose modelling results will make the risk of the pre-modelled transaction appear more benign."



Myth 8. Since there has not been a major catastrophe in a long time, it is bad timing to enter the ILS market now

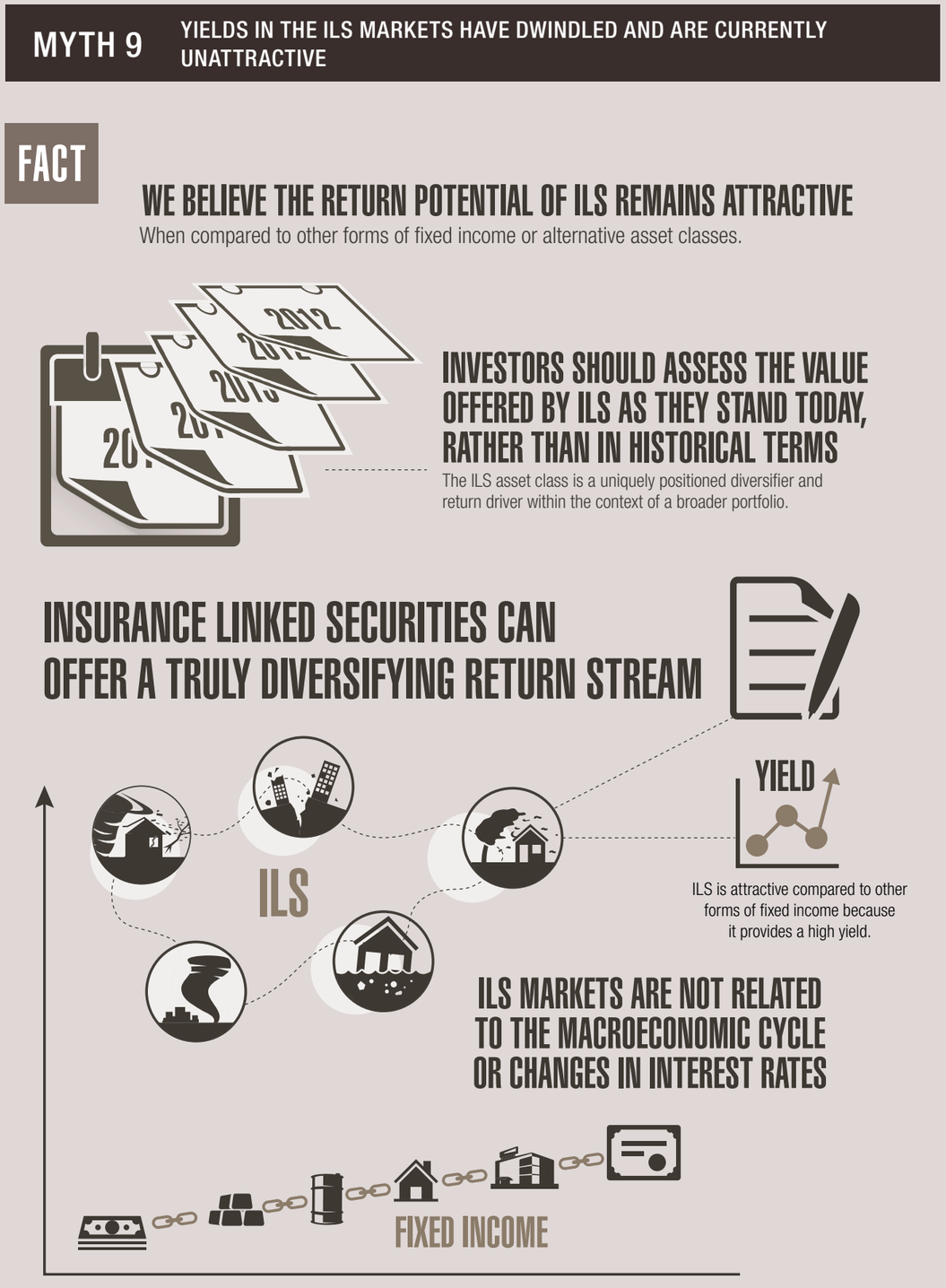
Each catastrophic event is independent from the last. Intuitively, many may think that because a hurricane has not made landfall in the US for over a decade, one is more likely to do so in the coming years. Statistically though, that is not the case. While we routinely work with the probability of natural disasters occurring, it is in our opinion that the actual occurrence of natural disasters is unpredictable, and consequently that the asset class cannot be timed.

As an illustration, ask yourself when tossing a fair coin which has shown heads 10 consecutive times, what is the probability for heads on the eleventh throw? Remember it is a fair coin, therefore, the probability is still 50%. Just because the coin has landed heads side up 10 times, does not mean it won't do so again on the eleventh.

Myth 9. Yields in the ILS markets have dwindled and are currently unattractive

We believe investors should assess the value offered by ILS as they stand today and in the context of the wider global financial market risks and returns, rather than in historical terms. In our opinion, the return potential of ILS remains attractive on a relative basis, in particular when compared to other forms of fixed income or alternative asset classes.

Moreover, exposure to ILS offers a truly diversifying return stream that is not related to the macroeconomic cycle or to changes of interest rates – in contrast to other high-yielding asset classes such as high-yield bonds, secured loans, or emerging market debt. This makes the ILS asset class a uniquely positioned diversifier and return driver within the context of a broader portfolio.



IMPORTANT INFORMATION