CATASTROPHE UPDATE 2023

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Author: Mauro TAMAGNONE

1) Worldwide overview

Property catastrophe insurance rates rose to 20-year highs in the January 2023 renewals, continuing a trajectory that began in 2018. Demand for covers has grown as natural disasters continue to wreak property damage across the world. Natural disasters resulted in global economic losses of USD 275 billion in 2022, of which USD 125 billion were covered by insurance, the fourth highest one-year total.

Beyond the natural catastrophes themselves, other factors such as the impacts of economic inflation and financial market losses have also fed into market hardening.

The insurance rate gains of recent years coincide with a trend period of heightened natural catastrophe activity and elevated losses that started in 2017.

The 2022 insured loss outcome reaffirms a 5–7% annual growth trend in place since 1992, this based mostly on rising severity of losses resulting from primary and secondary peril events.

Today average annual insured losses of more than USD 100 billion are standard. The biggest loss event in 2022 was Hurricane Ian (estimated insured loss of USD 50–65 billion). Other large-loss events were floods in Australia and South Africa, hail in France, winter storms in Europe, and heat waves in Europe, China and the Americas. Rather than the physical destructive force of natural catastrophes themselves, the main driver of resulting high losses are economic growth, accumulation of asset values in exposed areas, urbanization and rising populations, often in regions susceptible to natural perils.

Economic inflation has surged over the last two years, averaging 7% in the advanced markets and 9% in the emerging economies in 2022. Initially sparked by pandemic-induced supply chain disruptions and large monetary and fiscal stimuli, soaring food and energy prices due to the war in Ukraine have compounded inflation pressures.

The effect of high prices has been to increase the nominal value of buildings and other insurable assets, in turn pushing up insurance claims for damage caused by mother nature.

The impact has been most immediate in the construction sector.

Increases in the costs for materials and labour because of shortages thereof have led to higher claims to cover the costs of building repairs. In the US, for example, the aggregate replacement cost of buildings in 2022 had risen by an estimated 40% since the start of 2020.

Rising natural catastrophe losses and shortfalls in industry estimates of those losses point to the need for better understanding of all the risk drivers at play.

The insurance industry has long monitored primary perils but this has not always been the case for secondary perils, the associated losses of which have been rising for many years.

There is a need for greater discipline in the monitoring of the loss-driving secondary peril exposures and industry sharing of related findings. Lack of granular exposure data can also hinder understanding of all present-day risks.

For instance, the increase in built-up land area and changes to the vulnerability of homes to hazards (e.g. more solar panels on roof tops) are difficult to keep track of.

The fast rate of change of such variables necessitates shorter update cycles of data sets and models to mitigate risk accumulation and underestimation of loss trends.

As already said, last year's natural catastrophe-related losses were, once again, high. Driven mostly by extreme weather events, global insured losses from natural disasters were USD 125 billion in 2022, well above the previous 5- and 10-year averages (USD 110 billion and USD 81 billion, respectively, inflation adjusted.

The losses were the fourth highest in any one year since 1970 (see Figure 21) and for first time ever, global insured losses exceeded USD 100 billion two years running (ie, in 2022 and 2021). The insured annual loss totals from natural catastrophes has

surpassed the USD 100 billion-mark five times since 1970, and three times in the past six years (2017, 2021 and 2022).

Economic losses of USD 275 billion point to a still large protection gap, with around 54% of the total losses uninsured. Though still large, this is less than the 61% average protection gap of the previous 10 years. Last year's main events hit areas of relatively higher insurance penetration, attesting to the fundamental value proposition of the industry to making households, businesses and institutions more resilient.

There were many large natural catastrophes in 2022 demonstrating the wide variety of risks across different perils around the world. The different events shed light on the underlying drivers of the long-term trend of rising catastrophe-related insured losses.

Notwithstanding the severity of last year's catastrophes, none of the events were outliers from the perspective of resulting in unprecedented losses. Where there were record losses, these were the result of explainable, and known, risk drivers. The losses were not due to exceptional features of the physical events themselves, but the result of growing exposure values, inflation, insufficient exposure data and other factors. To this end, last year's catastrophe experience reaffirms the challenges the insurance industry and the loss adjusting activity face in keeping up with a fast-evolving risk landscape.

2) Data analysis & processing

The characteristics and formats of the data collected from the various observation sources are anything but homogeneous; this, in turn, makes them difficult to use in their original form.
In particular, since the goal is to obtain as complete and coherent a representation of the atmospheric situation as possible, processing techniques must be adopted so as to assimilate the data, integrating them and making them available in datasets that are both "ordered" and complete.

In meteorology, the term reanalysis, or retrospective analysis, defines the scientific method used to accomplish this processing; it combines simulation models with real observations to generate a synthetic assessment of the state of the atmosphere. The datasets obtained populate a regular grid system, the size and characteristics of which depend on the specific application required.

Radarmeteo, an innovative startup based in Padova (Italy) has developed with AIPAI a new method to re-analyze the datasets concerning meteorology.

In annex I'm pleased to present to our FUEDI partners the release "On the use of weather-climate data in index-based application contexts" which will be an interesting and useful lecture.

SOURCES:

- www.swissre.com/institute/research/sigma-research/sigma-2023