



Insured exposure development for estimating the financial consequences of windstorm risk in Europe

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Disasters or extreme events such as windstorms can be detrimental to people and the built environment. Direct losses to structures and indirect losses such as interruption to businesses can severely impact a country's economy. A comparative and quantitative assessment of the financial effects of such severe events requires a representation of the totality of insured property in a country.

This paper presents advancements in the RMS® Europe Windstorm Industry Exposure Database (IED), part of the 2011 RMS® Europe Windstorm Model release for estimating the financial risk from windstorms in Europe. The IED is a macro-scale econometric model that lists, for a particular class of property (e.g. residential, commercial, industrial, agricultural) and location (postcode or CRESTA zone), the insured number of properties and their associated coverage value (building, contents, and time element (e.g. business interruption)). The IED supports a variety of applications across the whole of the insurance operation, such as supplementing incomplete exposure information, assisting with post-event loss estimates, or structuring and supporting risk transfer transactions.

The 2011 version of the IED covers a complex region of 15 countries with unique geographies, different currencies and languages, a multitude of inconsistent data sources and vintages, and varying market expectations. These challenges require increasingly innovative and accurate modelling approaches. RMS adopts different techniques depending on data availability in each country, ranging between top-down and bottom-up methods. The top-down approach estimates exposures at national level and then distributes values down to postcodes using socio-economic attributes that correlate with the location and value of buildings. The more granular bottom-up approach, which is gradually replacing the top-down method, uses individual parameters and assumptions at the highest possible geographic resolution – ideally incorporating information regarding individual buildings. However, data gaps sometimes require a hybrid solution of both top-down and bottom-up methods. Remote sensing data aids in understanding and validating the detailed geographic breakdown of exposure.

RMS calibrates the final IED by comparing countries against one another to understand the relationships with independent and consistent inter-country metrics such as GDP, purchasing power, and population. Such checks are vital considering the heterogeneous data sources and methods used in a pan-European exposure development. These processes and associated challenges are illustrated with practical examples from the development and validation of the model.