Geophysical Research Abstracts,
Vol. 11, EGU2009-4213, 2009
EGU General Assembly 2009

Using Insurance Catastrophe Models to Investigate the Economics of Disaster Risk Reduction and Climate Change Adaptation

N. Patmore, R. Muir-Wood, and C. Herweijer
Risk Management Solutions, United Kingdom (nicola.patmore@rms.com)

Catastrophe risk (cat) models are a form of risk assessment tool used widely by the insurance industry to help price and manage property catastrophe risk, including weather related extremes, earthquake, terrorism and pandemic flu. Today, on the heels of an increased demand for risk information by the public and private sectors, the cat modelling approach is beginning to be applied to inform a broader range of risk management decisions. The key benefits of using these tools is that they provide quantitative, probabilistic risk information in a financial form that can be widely understood and applied by the risk management community.

This presentation focuses on the application of the cat modelling approach to understand the economics of disaster risk reduction and climate change adaptation. The unique structure of a cat model means that it allows the user to quantify the risk-reduction benefits of a range of policy options, such as hard resistance measures (e.g. flood defences), increased building resilience and land-use planning, in an integrated way. When combined with cost data, cat models thus provide a powerful toolkit for assessing the costs and benefits of policy decisions. To illustrate this, we present initial results of a pioneering study with IIASA and the Wharton School which uses a cat modelling approach to update estimates of the benefits of ex-ante versus ex-post risk mitigation actions in the developing world.

We also present an approach for generating 'climate-conditioned' cat models; driving cat models with the outputs from global and regional climate models to quantify the long-term impacts of climate change on extreme climate risks and the risk-reduction benefits of adaptation. We demonstrate this approach by presenting results from a number of recent studies, focussing on a recent project with Lloyd's of London to explore the benefits of adaptation in exposed coastal areas of the US and UK.