Engineering Risk Analysis Group
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MSc thesis

Risk Assessment and Underwriting Recommendations for Flood-prone Construction Projects

Kai Krug, August 2014

Background

No other natural hazard occurs as frequently, as widely spread, or causes as much damage throughout the world as flood. Especially in the case of large construction projects with very high investment sums, clients seek insurance cover to reduce their financial risk. In order to provide insurance contracts for such highly individual projects, the insurer has to perform a comprehensive risk assessment to determine an adequate insurance premium.

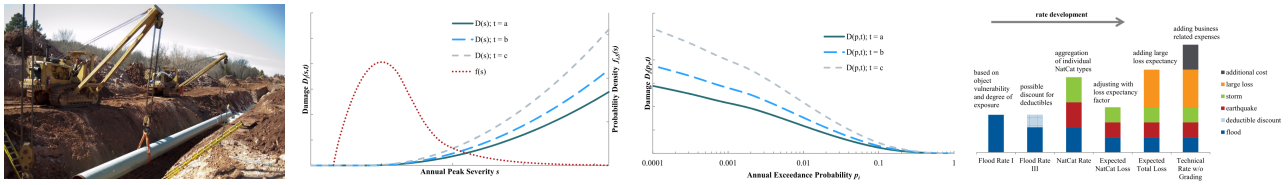
increasing number of flood events, coastal storm surge, river flood, coffer dam for site protection

Methodology

To improve the quality of Munich Re's flood risk assessment for large construction projects, the construction claims data from the past 10 years has been analyzed and the current pricing process has been reviewed. Furthermore, a methodology to model the expected losses based on hazard composition, vulnerability, exposure, a time variable for the construction progress as well as insurance specifics (deductibles, loss limits) has been developed.

Results

The analysis of Munich Re's construction claims data shows that flooding acts as a major loss driver, especially for road/railroad/pipeline construction. Determining the expected losses based on a pure modelling approach has only a limited applicability in practice due to incomplete information and time constraints. The current pricing method, a compromise between an experience and a modelling approach, revealed a number of shortcomings which have been addressed.



pipeline construction site, expected loss calculation, pricing process

In cooperation with Munich Re, Münchener Rückversicherungs-Gesellschaft AG

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