DAV/DGVFM Jahrestagung 2022

(Rück)Versicherung für Risiken am Rande des Radars

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Peter Lutum, Head of Global Reinsurance ERGO Group AG

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Where is the problem?

```
Dim bolTrouble As Boolean

Public Function GetIntoProblemsAsReinsuranceManager(bolTrouble)

    For ReinsuranceProgramme = 1 To n

        If EventLoss > ReinsuranceProtection Then

            If EventLoss_ReturnPeriod > DefinedProtectionLevel Then Exit Function

            If BlameRiskManagementFunction = True Then
                Call FindOutWhatWentWrong
                Exit Function
            End If

        End If

    Next
    bolTrouble = True
    Call FindOutWhatWentWrong

End Function
```

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Reinsurance managers need to ensure Reinsurance Adequacy

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All LoB's / R/I programmes to be considered

What if there are losses / portfolio parts without reinsurance protection?

Is the intended coverage level defined for <u>all perils</u> which may hit the company's portfolio?

That doesn't really help

That helps! Find out **in advance** what **might** go wrong

Reinsurance Adequacy describes an appropriate reduction of loss ratio volatility ('surprises') by reinsurance based on the view of all stakeholders!

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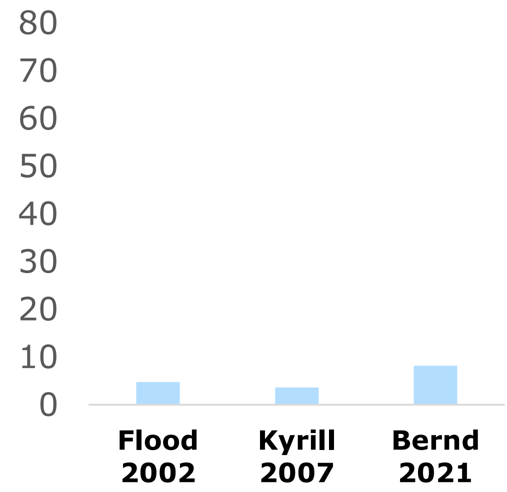
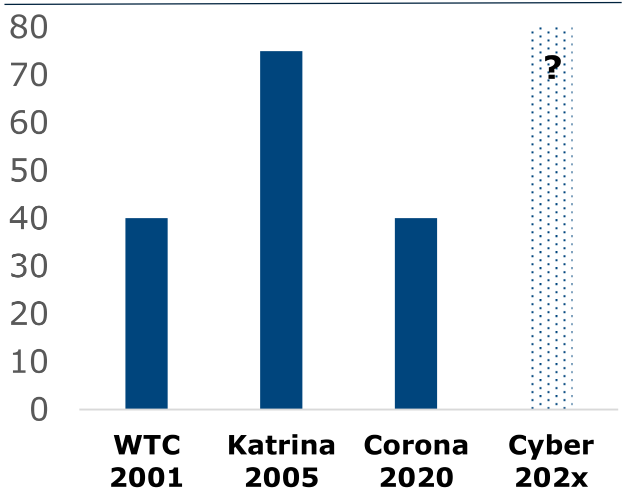
Insured industry losses: Track-record of surprises regarding global events

Top 3 Nat Cat event losses DE
in bn EUR



Selected insured event losses on global scale
in bn EUR



Some of the biggest insured event losses worldwide triggered by causes not (fully) anticipated by actuarial modelling

- Terror as a new severe peril
- Dam failure as severe loss driver
- Severe virus spread
- … ?

Insurance companies have to closely monitor their exposures and try to assess the “unknown” potential loss drivers within their portfolios

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Extraordinary events with astonishing causes – be prepared for the unknown

severe explosions

2001 Ammonium nitrate explosion Toulouse
2005 Bouncefield Oil depot explosion
2015 Tianjin explosion
2020 Ammonium nitrate explosion Beirut
…

Engineering “at the edge” / human error

2009 Kölner Stadtarchiv
2010 Deepwater Horizon
2011 Fukushima
2012 Costa Concordia
2021 “Ever Given” Suez Canal blockade
….

› **Insurance companies have to closely monitor their exposures and try to assess the “unknown” potential loss drivers within their portfolios**

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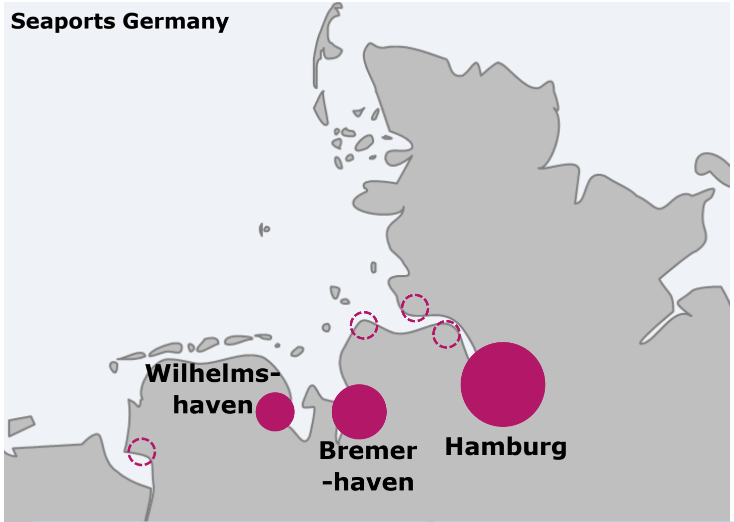
Research needed for assessing storm surge correlations within the north sea



Storm surge usually not insured in standard property covers (VGV / VHV, Gewerbe, Industrie)

Insurance Companies may have concentrations and accumulation risks regarding marine / storage and other property insured

ERGO Center of Excellence in Insurance

Eine Einrichtung der TUM gefördert von der ERGO Group

Ausschreibung für eine Praxis-Masterarbeit
im Bereich Finanz- und Versicherungsmathematik:
„Natural Catastrophe Modelling for Marine insurance“

Insurance companies buy natural catastrophe reinsurance cover to be protected against perils like storm, flood and earthquake. In severe events, these perils trigger significant insured losses in a wide geographical area at the same time. The necessary protection decisions of the management of insurance companies are supported by outputs from vendor models of specialized NatCat modelling companies such as RMS or AIR or by own internal models.

Storm surge ("Sturmflut") as a peril is not an insured peril for the standard property insurance policies in Germany (e.g. "Wohngebäudeversicherung") and hence assessed as a side peril only without detailed analysis on its accumulation impact. However, Storm surge is insured in the United Kingdom as well as in Marine insurance ("Transportversicherung") where loss or damage of ships, cargo, terminals and goods in various storage locations is covered.

ERGO is one of the leading Marine insurers in Germany with insured values in Hamburg, Bremerhaven, Emden, Rotterdam and Antwerp and at various other locations along the North Sea coast. Unfortunately, there is no explicit stochastic NatCat model available to determine the loss accumulation potential arising from extreme storm surge events affecting several locations. In order to understand the occurrence probability and loss potential of a worst-case scenario for such events, the K.A.R.L. ("Köln.Assekuranz.Risiko.Lösungen") solution models a 200-year metrological storm surge event combined with a catastrophic failure of coast protection measures. However, it remains challenging to accurately specify dependencies between losses in different locations in an accumulation scenario and the marginal distributions of coast protection failure events (as no such event has been observed historically).

The aim of this Master thesis is to use methods from the field of multivariate extreme value theory in order to model the exposure of ERGO's Marine portfolio in a storm surge accumulation scenario. Data on the underlying portfolio and insights into the current modelling approach will be provided.

Classically, the analysis of extreme flood events has given rise to the mathematical field of extreme value theory (EVT). For the problem at hand, the methodology of EVT will be used to analyze both the underlying marginal distribution of water levels for extreme storm surge events and the dependence of such events at different locations along the North Sea coast. Sources regarding the methodology include:

https://www.groups.ma.tum.de/mathfinance/ergo-center-of-excellence-in-insurance/stellenausschreibungen-und-masterarbeitsthemen/masterarbeiten/praxis-masterarbeit-natural-catastrophe-modelling-for-marine-insurance/

› Reinsurance mangers have to push for internal assessment and external research whenever it is unclear if accumulations may surprisingly trigger high event losses for the company

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Reinsurance = Procurement and Peak Risk- & Exposure- Management

Internal Stakeholders

- Board members
- Business managers
- Capital management functions
- Risk management department
- …

Reinsurance Manager

Reportings

- ORSA, RSR / SFCR
- Internal Risk Report
- (Group) Actuarial Function report
- ….

- Ensure Reinsurance Adequacy
- Optimise capital efficiency & fungibility
- Enable diversification effects / achieve lower reinsurance prices
- Minimise reinsurance margin outflow
- Anticipate new, critical risks
- Ensure knowledge exchange

Renewal Process	Meetings
1. Renewal lessons learned 2. Data collection & analysis 3. Risk modelling & structuring 4. Compilation of Renewal Submission per programme 5. Negotiation & Placement	• Spring meetings with reinsurers • Corporate planning / reinsurance demand analysis workshops • Monte-Carlo summit (Sept.) • Baden-Baden summit (Oct.) • Negotiations (direct & via Broker)
Process to be finalised and documented before 1/1	

Reinsurance Market

› **Constant “trade-off” between trying to achieve best terms and conditions and setting the right signals within the company regarding risks which may be assessed as critical by reinsurers in the future**

ERGO Global Reinsurance Strategy demonstrated significant benefits compared to former “silo” covers

>30
Reinsurance contracts

2018

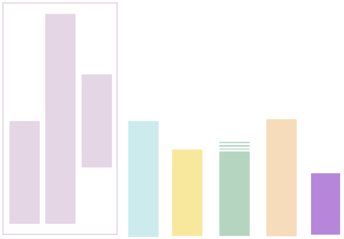
6
Reinsurance Group Covers

2021

ERGO Germany P&C Reinsurance

+
ERGO Poland P&C Reinsurance
ERGO Greece P&C Reinsurance
ERGO Austria P&C Reinsurance
ERGO Baltics P&C Reinsurance

ERGO Group Covers



Global Reinsurance Strategy - characteristics

- **Traditional reinsurance**: International entities cede 70%-100% of the risks to ERGO Vers in Düsseldorf, protected by broad Group Covers (“Retro-model”)
- **Capital Relief Transactions**: Quota share cessions in some cases to support Capital Management targets of the Group

Tangible quantitative and qualitative benefits

- **Significant cost savings**
- **Bundling of negotiation power** on an international scale
- **Broad reinsurance contract wording**
- **Analysis of risks** and respective conversations with reinsurers ensure early **steering impulses**
- **Enhanced knowledge exchange** regarding the portfolio and loss development

ERGO implemented it’s new Reinsurance Strategy within 3 years

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Success factors for comprehensive reinsurance protection

Data quality, transparency, Underwriting discipline	**ERGO Global Reinsurance mission: Compile the best reinsurance submission in Europe** • Information package to the reinsurers for the 6 Group Covers 2022 consists of 700 pages of Excel-Spreadsheets (as .pdf-printout with small font) and 54 Nat Cat data tables (EDM's, RDM's, AIR Input files, AIR CLF's, ELT's,….) • Setting of early signals within the company – e.g. regarding de-risking necessity & explain the progress to R/I'ers
Bundle / Cross selling	**Create bundles which fit into reinsurers' risk appetite** • Find the right balance between diversification (covers as broad as possible) and complexity / reinsurance underwriting constrains (e.g. extensive mixture of short-tail & long-tail / standard covers and special lines might not work well)
Partnership & active marketing	**Foster strategic partnerships** • Seek for long-term relationships / avoid extensive changes within the reinsurance panel • Seize every opportunity to discuss the submission data and the underlying portfolio aspects • Manage and try to anticipate expectations of the reinsurance market
Innovation & digitalisation	**Lean back-office processes and international cooperation** • Automatisation of data-flows and contract wording compilation & signing for 3500 pages p.a. • Efficient interfaces with stakeholders and seek for optimisation regarding reporting processes • Joint team effort on an international basis ("Committee of Reinsurance Managers")

We are committed to achieving reinsurance excellence and make as much risks as possible (re)insurable
Actuaries needed to tackle the future challenges on the global insurance and reinsurance markets

Kontakt & Haftungsausschluss

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