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# Proceedings of the Researchers' Corner for the 18<sup>th</sup> Annual Meeting of the Sponsoring Group Reinsurance 2025

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**Technology**  
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## Foreword

The 18<sup>th</sup> Annual Meeting of the Sponsoring Group Reinsurance [Förderkreis Rückversicherung] was held 4 July 2025 in Niederkassel, near Cologne. Some 90 representatives of the (re)insurance companies involved in the Sponsoring Group took part in the meeting, along with guests. Offered for the eleventh time as part of the Annual Meeting, the Researchers' Corner gave the seven academic researchers at the Cologne Research Centre for Reinsurance an opportunity to deliver a presentation on the research project in which each is involved in 2025.



(Group photo, Cologne Research Centre for Reinsurance, 2025: From left to right: Jörg Dirks, Fabian Lassen, Dr. Frank Cremer, Erik Winkler, Lihong Wang, Ronald Frerich, Adrian Hamm, Benedikt Klapp, Marisa Dicke, Justine Klute. Not shown: Prof. Stefan Materne, Evelyn Hartramph, Prof. Dr. Benedikt Funke, Prof. Dr. Torsten Rohlfs and Prof. Dr. Matthias Wolf.)

Over the course of three sessions, the most important results of the scientific studies by the Cologne Research Centre for Reinsurance were presented and discussed. The heterogeneity of the topics presented reflects the dovetailing of Cologne Research Centre with reinsurance practice.

### **Session 1**

- a) Dr. Frank Cremer (PhD, FCII): International IT security analysis: Comparing enterprise vulnerabilities and risks
- b) Lihong Wang (M.Sc., FCII): Shanghai Insurance Exchange Center (SIEC): Innovation and global influence

### **Session 2**

- a) Justine Klute (M.Sc.): Cat bonds vs. traditional reinsurance – A comparison of market trends and performance
- b) Jörg Dirks (M.Sc., FCII): Loss of biodiversity – How can reinsurers adapt their underwriting?
- c) Adrian Hamm (M.Sc.): The role of the SII review in calculating volatility adjustments

### **Session 3**

- a) Erik Winkler (LL.B, M.Sc.): The marine liability market post-Baltimore – Missed opportunity or used chance?
- b) Fabian Lassen (M.Sc., FCII): Tariff policy and reinsurance: A European view of US trade measures

With the publication series, 'Proceedings of the Researchers' Corner', the Cologne Research Centre for Reinsurance meets the desire for publication of the research results of our researchers along with the related discussions. The titles are reproduced in keeping with the above agenda of the Researchers' Corner for the 18<sup>th</sup> Annual Meeting of the Sponsoring Group Reinsurance.



(Group photo, Cologne Research Centre for Reinsurance, 2024: From left to right: Dr. Robert Joniec, Erik Winkler, Dr. Frank Cremer, Lihong Wang, Tom Dellmann, Justine Klute, Benedikt Specht, Jörg Dirks, Ronald Frerich and Prof. Stefan Materne. Not shown: Evelyn Hartramph, Prof. Dr. Benedikt and Prof. Dr. Jan-Philipp Schmidt.)

A voluntary, anonymous online survey was conducted among those in attendance this year, based on last year's lecture on the forecast of an opioid crisis in Germany (Prof. Frischknecht). The results are presented under the title 'Reinsurance sector executives' willingness to invest personally towards preventing drug-related deaths – A pilot study within the scope of a survey of ESG motivations'.

We would like to express our deep gratitude to the sponsors with whose assistance the activities of the Cologne Research Centre for Reinsurance, and the Annual Meeting of the Sponsoring Group Reinsurance in particular, are possible.

Cologne, July 2025

Prof. Stefan Materne

## **Cologne Research Centre for Reinsurance**

The Professorship for Reinsurance was established in 1988; Prof. Stefan Materne received the first appointment to the professorship. The position was redesignated the Chair for Reinsurance by rectorate decision in 2008. The basis for this was the defined field of instruction and research comprised by reinsurance together with related topics such as alternative risk transfer, captives, insurance-linked securities, etc. In particular, the integration of the Chair for Reinsurance within the Institute of Insurance Studies at the Cologne University of Applied Sciences permits a focus on instruction and research in the field of reinsurance. The focus on the specialisation in reinsurance, in turn, promotes the international reputation of the chair and of the affiliated Cologne Research Centre for Reinsurance.

The Cologne Research Centre for Reinsurance currently employs five academic researchers, three academic project managers and two student assistants and ensures the bidirectional transfer of knowledge between theory and practice. This takes place, firstly, through continuous, bilateral project cooperation as well as an exchange of views with the respective experts in the field, and secondly, through publications by the Cologne Research Centre for Reinsurance and the two major scientific events held each year (Cologne Reinsurance Symposium, Annual Meeting of the Sponsoring Group Reinsurance).

Since 2004, the Cologne Research Centre for Reinsurance has hosted the Cologne Reinsurance Symposium free of charge, an annual event with more than 500 attendees. This event, with its top-flight presenters and international implementation with the aid of simultaneous interpreting, shapes the international reputation of our reinsurance-oriented activities.

The Cologne Research Centre for Reinsurance is fully financed by third-party funds provided from the Sponsoring Group Reinsurance, in which there are currently 84 companies involved. These are risk carriers (with an approx. 85% market share worldwide) as well as cedants and reinsurance-oriented service providers. Whether in the academic world or in the reinsurance market, there is no other institution similar to the Sponsoring Group Reinsurance.

## Sponsoring Group Reinsurance



The Annual Meeting of the Sponsoring Group Reinsurance is held once a year, offering another major scientific event for the Cologne Research Centre for Reinsurance. Participants include representatives of (re)insurance-company members of the Sponsoring Group Reinsurance along with invited guests. *Researchers' Corner*, a lecture event in which the seven current academic researchers of the Cologne Research Centre for Reinsurance present the results of their research, represents another important opportunity for interaction with practitioners.

The solid practical relevance of our research activities is manifested in their full financing by the Sponsoring Group Reinsurance – which is funded by the (re-)insurance industry – and in excellent attendance at the Cologne Reinsurance Symposium and the Annual Meeting of the Sponsoring Group Reinsurance.






We want to thank the Sponsoring Group Reinsurance, the University leadership and administration, ivwKöln [the Institute of Insurance Cologne] and the employees of the Cologne Research Centre for Reinsurance for all their support provided towards research projects and events.

18<sup>th</sup> Annual Meeting of the  
Förderkreis Rückversicherung [Sponsoring Group Reinsurance]  
Researchers' Corner, 4 July 2025

International IT security analysis  
Comparing enterprise vulnerabilities and risks

Dr. Frank Cremer, FCII

Methodology

<p><b>Vulnerability analysis – Outside-inside scans</b></p> <ul style="list-style-type: none"> <li>• Target definition</li> <li>• Information-gathering</li> <li>• Footprinting</li> <li>• Vulnerability scans</li> <li>• Vulnerability analyses</li> <li>• Exploitation</li> <li>• Reporting</li> <li>• Follow-up / retest</li> </ul>			<p><b>Scope of the data set</b></p> <ul style="list-style-type: none"> <li>• The data set comprises 11,000 enterprises</li> <li>• Distribution of enterprise size <ul style="list-style-type: none"> <li>• SMEs 55%</li> <li>• Large medium-sized enterprises 27%</li> <li>• Large enterprises 18%</li> </ul> </li> <li>• Sectors covered <ul style="list-style-type: none"> <li>• IT companies</li> <li>• Energy suppliers</li> <li>• Retail</li> <li>• Other key sectors</li> </ul> </li> </ul>		
					
<p><b>Areas examined</b></p>					
<p><b>Encryption</b> <b>Software risks</b></p>		<p><b>Darknet exposure</b> <b>Provider usage</b></p>		<p><b>Open ports</b> <b>EU compliance</b></p>	
<p><b>Encryption</b></p> <ul style="list-style-type: none"> <li>• e-mail servers <ul style="list-style-type: none"> <li>• Japan, India and LATAM</li> </ul> </li> <li>• Web servers <ul style="list-style-type: none"> <li>• India, LATAM and Africa</li> </ul> </li> <li>• Risk <ul style="list-style-type: none"> <li>• Interception of sensitive data</li> </ul> </li> <li>• Causes <ul style="list-style-type: none"> <li>• Lack of experts</li> <li>• Low level of awareness</li> <li>• Weak regulations</li> <li>• Outdated IT systems</li> </ul> </li> </ul>		<p><b>Darknet exposure</b></p> <ul style="list-style-type: none"> <li>• Leaks <ul style="list-style-type: none"> <li>• LATAM, US and UK</li> </ul> </li> <li>• Risk <ul style="list-style-type: none"> <li>• Phishing</li> <li>• Account takeovers</li> </ul> </li> <li>• Causes <ul style="list-style-type: none"> <li>• Human error</li> <li>• Misconfigurations</li> <li>• SSO credentials and leaks from third-party tools</li> </ul> </li> </ul>		<p><b>Open ports</b></p> <ul style="list-style-type: none"> <li>• LATAM poses the greatest risk here. Open ports are a global problem, however.</li> <li>• Risk <ul style="list-style-type: none"> <li>• Low overcoming of security measures</li> <li>• Cumulative risk</li> </ul> </li> <li>• Causes (economic &amp; geopolitical) <ul style="list-style-type: none"> <li>• Cost and resource pressures</li> <li>• Rapid growth in digitalisation</li> <li>• Cloud and remote work</li> </ul> </li> </ul>	
					
<p><b>Software risks</b></p> <ul style="list-style-type: none"> <li>• All regions considered still have software in use that no longer receives updates. Most commonly used are the following: <ul style="list-style-type: none"> <li>• Microsoft Windows Server 2003 &amp; 2008</li> </ul> </li> <li>• Risk <ul style="list-style-type: none"> <li>• IT security is easily overcome</li> </ul> </li> <li>• Causes <ul style="list-style-type: none"> <li>• Legacy systems</li> <li>• Manufacturer(s) no longer in the market</li> </ul> </li> </ul>		<p><b>Provider usage</b></p> <ul style="list-style-type: none"> <li>• Cloud provider <ul style="list-style-type: none"> <li>• Microsoft</li> <li>• Amazon</li> <li>• Google</li> </ul> </li> <li>• Risk <ul style="list-style-type: none"> <li>• Single point of failure in large-scale attacks</li> </ul> </li> <li>• Causes <ul style="list-style-type: none"> <li>• Market and innovation leadership</li> <li>• IT infrastructure and integration</li> <li>• Availability / security</li> </ul> </li> </ul>		<p><b>EU compliance</b></p> <ul style="list-style-type: none"> <li>• Google Analytics <ul style="list-style-type: none"> <li>• Configurations frequently not GDPR-compliant</li> </ul> </li> <li>• Consent managers <ul style="list-style-type: none"> <li>• Misconfigurations common here as well</li> </ul> </li> <li>• Risk <ul style="list-style-type: none"> <li>• Liability risks / fines / etc.</li> </ul> </li> <li>• Causes <ul style="list-style-type: none"> <li>• Data transmission / tracking &amp; anonymity</li> <li>• Art. 7 GDPR</li> </ul> </li> </ul>	

Results

## **18<sup>th</sup> Annual Meeting of the Sponsoring Group Reinsurance Researchers' Corner, 4 July 2025**

### **International IT security analysis: Comparing enterprise vulnerabilities and risks**

**Dr. Frank Cremer, FCII**

Dr. Frank Cremer works as an academic staff member at the Cologne Research Centre for Reinsurance. He completed his doctorate on various aspects of the topic of cyber (e.g. cyber risks and cyber insurance) under a partnership with the University of Limerick. He works full-time as a reinsurance broker at Aon.



In an increasingly networked and digitalised world, IT systems are exposed to constant threats. Cyber attacks, data leaks, ransomware attacks or the compromise of user accounts can all have serious economic and legal consequences (Cremer, 2024). This brief report provides the written elaboration of a previously held lecture and research project offering an international comparison of IT-security analyses of enterprises.

A regular vulnerability analysis can help companies make and keep their systems resilient, minimise risks and meet the requirements of law (e.g. under the GDPR, the German IT Security Act or sector-specific standards such as ISO/IEC 27001). The vulnerability analysis (also known as a 'vulnerability assessment') is a central element of IT security. It helps systematically identify, assess and prioritise security gaps in IT systems, networks, applications and infrastructure components. The aim is to detect targets of potential attack early on, before external or internal attackers can exploit them. The vulnerability analysis thus forms an important basis for implementing appropriate safeguards and developing a holistic security concept (Aslan et al., 2023).

The research investigated vulnerabilities at a total of 11,000 companies worldwide. An outside-inside scan designed to identify and assess security gaps across respondent firms was conducted in cooperation with Cysmo. The data set consisted of 55% small and medium-sized enterprises (SMEs), 27% larger medium-sized

enterprises and 18% large enterprises. The investigation concerned itself with firms from key sectors including IT, energy supply, retail and other critical industries.

The investigation revealed a large number of problem areas with relevance for security; these varied by region:

### 1. Encryption

There were interesting findings in the field of encryption. The investigation found that many companies' e-mail and web servers still relied on outdated SSL/TLS versions, leaving sensitive data vulnerable to interception efforts and failing to prevent 'man-in-the-middle' attacks. The situation is particularly critical in regions such as Japan, India and Latin America, where older-version protocols such as TLS 1.1 and its predecessors are still in wide use. With e-mail servers, use of these outdated standards permits potential interception of e-mails; this poses an elevated security risk, particularly in the aforementioned regions. The use of insecure encryption technologies also creates a high risk potential for web servers – this is true not only of India and Latin America but of many countries in Africa as well. By contrast, the US and the UK fare better in an international comparison, as obsolete protocols are used less often there. But the worldwide spread of weak encryption standards is still a risk that should not be underestimated: It opens up attack vectors that intruders can use to read passwords, manipulate data and gain unauthorised access to confidential information.

### 2. Darknet exposure

Another serious security problem involves the exposure of sensitive company data in the darknet. Companies in Latin America, the US and the UK are particularly affected and report the greatest numbers of leaked e-mail addresses and passwords. Data leaks like these facilitate forms of targeted attack such as credential stuffing, in which stolen access data are automatically tried and abused – a method that is particularly critical for companies that use Microsoft Single Sign-On (SSO). The risk in this context is particularly high in Latin America, followed by Great Britain and Canada. Even in regions with comparatively lower numbers of leaked data sets, growing global connectivity is no guarantee of security. After all, once published on the darknet, access data can be used to wage attacks worldwide. The potential consequences are considerable: Phishing, account takeovers and unauthorised access through reuse of passwords all pose direct risks to the companies affected.

### 3. Open ports

Openly accessible ports also pose a significant security risk – particularly if they afford access to sensitive services such as administrative interfaces or databases. The analysis shows that companies in Latin America are particularly affected: The

highest proportion of publicly accessible services can be found there, including many with potentially critical access. Attackers often automatically scan exposed systems such as these in search of vulnerabilities they can identify and exploit. In the worst case, this can lead to data loss, significant reputational damage or even the complete compromise of the affected systems. This is far from exclusively a regional problem, as open ports present a widespread and dangerous attack vector worldwide.

#### 4. Software risks

An essential aspect of IT security that is often underestimated but essential is the use of outdated software. Many companies are still running operating systems and applications that have not received security updates for years and thus pose a significant risk. Particularly common instances include older versions of Microsoft Windows Server, such as the 2003 and 2008 editions, and outdated Linux distributions such as Debian 5 to 7 or pre-2016 versions of Ubuntu. Systems like these invite attack: Known vulnerabilities can be easily exploited on the one hand, while new zero-day gaps remain completely unpatched on the other. Potential consequences range from a broader attack vector to serious compliance violations – a risk that many companies still accept, even in spite of clear warning signs.

#### 5. Provider usage

The analysis of provider usage illustrates a global dependency relationship on a handful of major providers of the cloud and hosting services. Global providers such as Microsoft, Google, Amazon and Cloudflare are dominant in nearly all the regions and represent central pillars of digital infrastructure. Some regional differences are evident in spite of this global concentration: Amazon has a particularly strong presence in Japan, for example, where providers such as Hetzner hardly play a role. In Latin America, alongside the global players, local providers such as Locaweb are also making a stronger appearance. This concentration of services across a handful of providers poses significant risks – particularly where security gaps or large-scale failures are concerned. If a provider is compromised or experiences a disruption, there can be far-reaching impacts for entire industries or even countries. Dependency on central components of infrastructure thus creates potential single points of failure that can massively affect digital systems' stability and security in the event of an emergency.

#### 6. EU compliance

Finally, the analysis examines the topic of EU compliance, particularly against the backdrop of use of Google Analytics and consent-management systems (CMS). It is one of the most widely used tools in the world for web analytics, yet misconfigurations of Google Analytics that fail to meet the requirements of the General Data Protection

Regulation (GDPR) are widespread, especially within the EU. This is particularly striking in countries such as Poland, where incorrect integration of the tool regularly violates applicable regulations on data protection. Dealing with consent-management systems poses considerable shortcomings as well: Heightened levels of inadequate consent processes and technically incorrect implementations have been found in the Netherlands, Italy and Sweden. Violations like these not only can lead to severe fines but also have a lasting impact on users' and business partners' trust. A lack of EU compliance in the use of digital technologies for tracking and consent poses a serious risk to enterprises and far exceeds purely technical considerations.

The aforementioned findings offer a brief overview of international security risks in digital infrastructure – from outdated encryption to leaked access data to open ports, outdated software, dependencies on cloud providers and violations of compliance in the EU. These findings shine a light on key vulnerabilities and regional differences, particularly with Latin America, but parts of Europe and Asia are repeatedly highlighted as well.

The significance and generalisability of the analysis are difficult to pinpoint, however. As the findings stem from data gleaned from 11,000 enterprises distributed around the world, there are significant limits to the validity of the statements. Even if the identified vulnerabilities are highly relevant from a security standpoint, the analysis is a snapshot that does not necessarily reflect the structural state of entire regions or sectors of the economy. Many of the risks identified – such as the use of outdated encryption or software – are well-known and widespread, but their specific nature varies greatly by industry, company size and approach to IT governance.

Overall, the analysis reveals a globally diversified risk profile, with each region subject to its own vulnerabilities. Generally speaking, though, companies do well to regularly assess these threats and to take steps to mitigate risk – through technical updates, heightened employee awareness or more discerning selection and control of third-party providers. In times of increasing digitalisation and regulation, a robust and holistic approach to managing cyber risk is indispensable.

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## Discussion

- What are the risks of issuing general security assessments based on such a small sample of 11,000 companies?

The main problem with assessments based on a small sample is the risk of distortions and wrong conclusions. Individual firms might exceed or fall short of the industry average due to extenuating circumstances or specific security strategies. Hence, the analysis might overstate or understate significant risks.

Moreover, a small sample cannot adequately reflect conditions specific to certain regions, technologies or sectors. Because the outcome is a snapshot that is neither comprehensive nor representative, it must be interpreted with caution to prevent incorrect decisions around IT-security strategy.

- What is the significance of context (e.g. industry, company size, region) for assessing vulnerabilities such as outdated software or open ports?

Context is a critical part of interpreting vulnerabilities. An outdated operating system in a small, in-house network of a medium-sized firm creates a risk profile different to the same vulnerability in an international financial-service provider. Security standards and regulatory requirements also vary by industry (e.g. health care vs. eCommerce) and region. The analysis reveals technical deficits, but in many respects it is still too general. In the absence of context, one runs the risk of incorrectly prioritising risks or deriving incorrect steps.

### References

- Aslan, Ömer, et al. "A comprehensive review of cyber security vulnerabilities, threats, attacks, and solutions." *Electronics* 12.6 (2023): 1333.
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Please contact Frank Cremer ([frank.cremer@th-koeln.de](mailto:frank.cremer@th-koeln.de)) with any questions or comments.

18. Jahrestagung des Förderkreises Rückversicherung  
Researchers' Corner am 4. Juli 2025

Shanghai Insurance Exchange Center (SIEC)  
Innovation and Global Influence

Lihong Wang, M.Sc. / FCII / NUWM of Lloyd's

Introduction

The Shanghai Insurance Exchange Center (SIEC), founded in 2016 by the CBIRC with RMB 2.235 billion (EUR 286 million) capital, is a digital-first insurance marketplace based in Shanghai. It aims to modernize insurance services, promote digital integration, and become a global insurance hub aligned with China's Belt and Road Initiative. SIEC actively shapes global insurance markets through innovation and international partnerships.

Core Platform Functions

Comprehensive Insurance Trading:

- Catastrophe coverage, major tenders

Blockchain Reinsurance Platform ("Baojiao Chain"):

- Transparent and secure

Insurance Asset Registration:

- RMB 4.19 trillion registered

Digital Health & Pension Platforms:

- Coverage across major Chinese cities

NEV Insurance Platform:

- Solving electric vehicle coverage gaps

Source:  
 • Shanghai Insurance Exchange Center. [www.shie.com.cn](http://www.shie.com.cn)  
 • China Banking and Insurance Regulatory Commission (CBIRC)  
 • Industry reports on blockchain in insurance and digital asset markets  
 • Insurance Exchange Chain Technique Framework White Paper (1 Sep 2017 by SIEC)

NOTE:  
 CBIRC: China Banking and Insurance Regulatory Commission  
 Exchange rate: 1 EUR = 7.8 RMB (June 2025)



Source: Shanghai Insurance Exchange Center (SIEC)

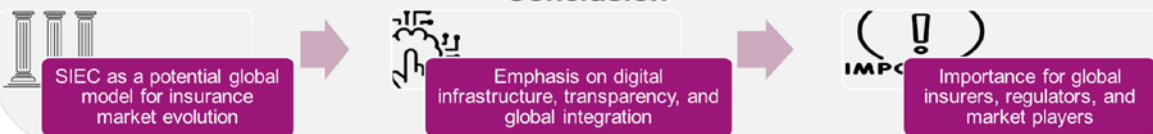
Highlights

**Digital Innovation:** SIEC leverages the Baojiao Chain blockchain for transparency, efficiency, and security, enabling real-time transactions and AI-driven analytics within an open API ecosystem serving insurers, brokers, and regulators. Through the digital innovation, SIEC can scale its product offering to millions of people and business efficiently.

**Global Influence:** SIEC has facilitated some cross-border reinsurance deals, including AXA Hong Kong and AXA Tianping, and launched an international reinsurance platform with standardized global rules. It has also established agreements in sectors like aviation and green shipping, attracting global insurers such as AXA and Hannover Re to operate in Shanghai's Lingang Free Trade Zone.

**SIEC Vs Lloyd's**  
 Unlike Lloyd's of London's legacy, capital-intensive market model with extensive global licenses, SIEC distinguishes itself through its digital-first, blockchain-enabled, capital-light structure. While SIEC is not a "specialty" insurance marketplace as yet, it serves both commercial and policy needs for China, a better Public-Private Partnership.

Conclusion



# **18<sup>th</sup> Annual Meeting of the Sponsoring Group Reinsurance Researchers' Corner, 4 July 2025**

## **Shanghai Insurance Exchange Center (SIEC): Innovation and global influence**

**Lihong Wang, M.Sc. / FCII**

My name is Lihong Wang; I have been a part-time researcher at the Research Centre for Reinsurance, Cologne University, since 2010, with a focus on emerging trends and market dynamics in global insurance. In my full-time role, I work at International Risk Solutions, a Lloyd's Broker with offices in London, New York, Fort Lauderdale, Cyprus, and Bermuda. I'm delighted to be here today to present on an emerging insurance and reinsurance hub in China — the Shanghai Insurance Exchange Center (SIEC).

As a Lloyd's Broker and a non-underwriting working member (NUWM) of Lloyd's, this topic is of particular interest to me — especially as we consider how this new digital platform compares with the traditional Lloyd's market structure.

### **I. Introduction to the SIEC**

Established in 2016 by the China Banking and Insurance Regulatory Commission (CBIRC) with a capital base of RMB 2.235 billion (EUR 286 million), the Shanghai Insurance Exchange Center was envisioned as a digitally native, policy-aligned platform. It serves as a marketplace to modernise China's insurance sector and align with broader state strategies such as the Belt and Road Initiative.

From the beginning, SIEC was designed to promote:

- Market transparency and digitalisation;
- Scalable infrastructure for public-private insurance projects;
- A centralised registry for insurance capital and transaction data.

## II. Core platform functions

SIEC performs several foundational roles in the Chinese and regional insurance ecosystem:

- **Comprehensive Risk Trading:** Facilitates disaster and infrastructure risk placements, often backed by local government entities.
- **Reinsurance via Blockchain (Baojiao Chain):** Enables transparency and auditability using a secure, proprietary distributed ledger.
- **Insurance Asset Registry:** As of 2025, more than **RMB 4.19 trillion** in insurance assets have been digitally registered.
- **Digital Health & Pension Platforms:** Operational across major Chinese cities, addressing demographic challenges and ageing populations.
- **New Energy Vehicle (NEV) Insurance Platform:** Responds to coverage gaps in China's rapidly growing EV market — a national strategic focus.

As SIEC continues to evolve, additional lines such as agriculture, green shipping, and AI liability are expected to emerge.

## III. SIEC's Growth Projections and Outward Expansion

The Shanghai Insurance Exchange Center (SIEC) is rapidly transitioning from a domestic infrastructure platform to one of international relevance. In the coming years, participation is expected to exceed 150 insurers (from approx. 15 currently), including domestic players, joint ventures, and state-affiliated entities. The contracts on the platform are set to grow from the current 10,000 to around 50,000 in five years' time.

This growth is driven by regulatory alignment, real-time access to centralised data for pricing and underwriting, and close integration with China's national priorities—such as NEV insurance, digital health, and Belt and Road initiatives. These factors make participation commercially attractive and strategically aligned.

SIEC is also developing new product lines, including climate-linked insurance, digital pension platforms, and cover for emerging tech risks such as AI liability and cybersecurity. These innovations support both domestic needs and global trends.

On the international front, SIEC has already facilitated reinsurance transactions with global insurers such as AXA and Hannover Re. The Lingang Free Trade Zone further supports foreign market entry, offering operational and regulatory flexibility.

Supported by blockchain infrastructure (Baojiao Chain) and open APIs, the platform offers transparency, automated processing, and real-time capital tracking. This combination of digital scale, policy support, and market access makes SIEC an increasingly compelling hub for both Chinese and international risk capital.

#### **IV. Highlights**

One of the most defining characteristics of the Shanghai Insurance Exchange Center is its **digital-first innovation model**. The platform enables seamless onboarding of insurers and brokers, facilitates efficient risk transfer, and supports real-time tracking of policies throughout their lifecycle. Its architecture is designed to provide regulators with direct access to live data flows, enhancing oversight, compliance, and systemic monitoring. Furthermore, the platform-wide integration of APIs and blockchain allows for extensive automation, improving both operational efficiency and auditability across the ecosystem.

In terms of **global influence**, SIEC is positioning itself as more than a domestic platform. It is gradually emerging as a potential international standard setter in blockchain-based risk infrastructure. Agreements in green shipping, disaster risk, and digital health sectors demonstrate early steps toward interoperability with global insurance and reinsurance partners. These initiatives show how SIEC is aligning itself with transnational policy goals, such as environmental sustainability and digital public health.

When comparing **SIEC to Lloyd's**, some key differences become apparent. SIEC operates with significantly less private capital input, functioning instead as a majority state-run platform. Its design reflects a public-private partnership model, with risk-bearing and regulatory roles often shared between commercial insurers and government agencies.

While Lloyd's has long been synonymous with speciality and complex risk underwriting, SIEC targets broader commercial and public-sector insurance at scale. Its structure is capital-light, blockchain-enabled, and deeply integrated with national policy agendas. Although SIEC does not yet rival Lloyd's in speciality lines, it serves a distinct purpose in addressing China's domestic needs and advancing the digital transformation in the insurance sector.

#### **V. Recommendations and Conclusion**

The Shanghai Insurance Exchange Center (SIEC) has the potential to serve as a global model for digital insurance exchanges, particularly in emerging markets that are seeking to expand their insurance penetration while maintaining regulatory

coherence. Its infrastructure—built from the ground up to be digital-first, blockchain-enabled, and API-connected—offers a new benchmark for operational efficiency, transparency, and scalability.

As the platform continues to grow in scope and influence, international market participants—including brokers, managing general agents, reinsurers, and regulatory bodies—should pay close attention to its development. For some, this may mean direct engagement or collaboration; for others, it may involve adapting internal strategies in anticipation of a changing competitive landscape. Either way, SIEC's rise signals that a new phase of digitally coordinated risk markets is no longer speculative, but already underway.

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## Discussion

- How is Lloyd's reacting to this market?  
SIEC is aiming at scales but is not as strong as Lloyd's at speciality insurance underwriting and transactions.
- Is there real money in the game?  
Yes. NEV insurance, disaster pools, and public-sector tenders involve meaningful capital—and real claims settlement.
- Is it truly comparable to Lloyd's?  
Functionally, no. Lloyd's is a private marketplace; SIEC is part public, part private, serving broader state functions. Structurally, however, there are parallels — in aggregation of capacity and risk delegation.
- Where does the risk land?  
There are insurers, such as PICC, Ping An, etc., which are the carriers. For projects such as EVs or infrastructure, risk may be split: partly held by commercial insurers, partly absorbed by state-backed reinsurance funds or government guarantees.
- Will participation become compulsory?  
Not formally, but there are incentives — such as data access, reinsurance support, and faster regulatory approvals — that make non-participation commercially unattractive.
- Why are insurers joining?  
The insurers can benefit from:
  - Increased distribution efficiency;
  - Preferential access to public-sector risk;
  - State alignment and digital infrastructure that reduces costs.

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18<sup>th</sup> Annual Meeting of the  
Förderkreis Rückversicherung [Sponsoring Group Reinsurance]  
Researchers' Corner, 4 July 2025

# Cat bonds vs. traditional reinsurance – A comparison of market trends and performance

Justine Klute, M.Sc.

Market growth	New risks and structures																																												
 <p>Global Traditional and Alternative Capital 2015-2024 (USD billions)</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Traditional capital</th> <th>Alternative capital</th> <th>Total</th> </tr> </thead> <tbody> <tr><td>2015</td><td>433</td><td>72</td><td>505</td></tr> <tr><td>2016</td><td>514</td><td>81</td><td>595</td></tr> <tr><td>2017</td><td>516</td><td>89</td><td>605</td></tr> <tr><td>2018</td><td>488</td><td>97</td><td>585</td></tr> <tr><td>2019</td><td>530</td><td>98</td><td>628</td></tr> <tr><td>2020</td><td>556</td><td>94</td><td>650</td></tr> <tr><td>2021</td><td>579</td><td>96</td><td>675</td></tr> <tr><td>2022</td><td>482</td><td>93</td><td>575</td></tr> <tr><td>2023</td><td>562</td><td>108</td><td>670</td></tr> <tr><td>2024</td><td>600</td><td>115</td><td>715</td></tr> </tbody> </table> <p>Quelle: Artemis.bm</p> <ul style="list-style-type: none"> <li>Record year for cat bonds despite soft market environment</li> <li>Alternative capital 2024: <b>USD 115 bn</b> → (+6.5%)</li> <li><b>USD 715 bn</b> in reinsurance capital 2024 → (+7%)</li> <li>Cat bond issues Q1 2025: <b>USD 7.1 bn</b></li> <li>Total volume outstanding: <b>USD 52 bn</b></li> <li>Transactions Q1 2025: <b>31 deals</b> → intensified market activity</li> <li>Investor interest: strong demand due to high returns, diversification, low correlation</li> <li>Issuer interest: Maintenance of investor networks &amp; access to capital markets</li> </ul>	Year	Traditional capital	Alternative capital	Total	2015	433	72	505	2016	514	81	595	2017	516	89	605	2018	488	97	585	2019	530	98	628	2020	556	94	650	2021	579	96	675	2022	482	93	575	2023	562	108	670	2024	600	115	715	<ul style="list-style-type: none"> <li>Structural limits of traditional reinsurance in the face of complex or new risks</li> <li>Trigger mechanisms offer strategic options → parametric, index-based or indemnity – based on transparency and baseline risk</li> <li>Flexible integration into reinsurance programmes</li> <li>Increasing hedging against innovative risks, including from cyber and terror</li> <li>'King Max Re (2023)' by Versicherungskammer Bayern covers only risks in Germany → indemnity trigger</li> </ul> <div style="display: flex; justify-content: space-around;"> <div data-bbox="821 1081 1070 1263"> <p><b>Cumulus Re (2024/2025)</b> <u>Hannover Rück</u></p> <ul style="list-style-type: none"> <li>Risks of cloud failure (Cyber)</li> <li>Parametric trigger</li> </ul> </div> <div data-bbox="1098 1081 1347 1263"> <p><b>Liongate Re (2025)</b> <u>Sparkassenversicherung &amp; Zenkvoren</u></p> <ul style="list-style-type: none"> <li>Earthquake risks Germany/Japan</li> <li>Parametric and indemnity trigger</li> </ul> </div> </div> <ul style="list-style-type: none"> <li>Cyber bonds → high modelling risk &amp; investor barriers</li> <li>Digital issuance &amp; tokenisation simplify structuring &amp; create opportunities for new platform models</li> <li>Top-layer character: hedging against rare extreme events and deliberately triggering only in the event of exceptionally high losses</li> </ul>
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<p><b>Strategic signal and impetus for innovation</b></p> <ul style="list-style-type: none"> <li>Cat bonds indicate a focus on innovation &amp; proximity to the capital market</li> <li>The first issue creates expertise in the alternative transfer of risk</li> <li>Particularly well-suited for strategically positioned (re)insurers</li> <li>Strengthening long-term independence from volatile reinsurance pricing</li> </ul> <p><b>'The cat bond market is growing despite a normalising market environment – tactical manoeuvre or structural transformation?'</b></p>	<p><b>Supplementary alternative</b></p> <ul style="list-style-type: none"> <li>Cat Bonds supplement traditional reinsurance → no substitute but rather an additional component of modern reinsurance programmes</li> <li>Multi-year coverage creates planning security</li> <li>Full collateralisation offers protection against systemic counterparty risk in the reinsurance market</li> <li>Strategically useful for large insurers with high capacity requirements</li> <li>Barriers to market entry: Initial costs, SPV structure, lead time 6–12 months</li> <li>Issuance is rare due to considerations of cost – initial expenses economically viable for large (re)insurers only</li> <li>Outlook: Standardisation &amp; digitalisation will lower barriers to access</li> </ul>																																												

## **18<sup>th</sup> Annual Meeting of the Sponsoring Group Reinsurance Researchers' Corner, 4 July 2025**

### **Cat bonds vs. traditional reinsurance – A comparison of market trends and performance**

**Justine Klute, M.Sc.**

Justine Klute, M. Sc., has been a member of academic staff at the Cologne Research Centre for Reinsurance since May 2025. She has also worked in Treaty Underwriting for the UK and Ireland regions at Hannover Re since 2024. Her research focusses on the function and relevance of cat bonds against the backdrop of current market trends.



Robust growth in the cat bond market is ongoing in spite of increased capacities and the current normalisation of the reinsurance market. A historic high was reached in 2024 with an issue volume of USD 17.7 bn. An additional USD 7.1 bn was issued already in the first quarter of 2025, with cumulative volume rising by mid-year to more than USD 15 bn. Parallel to this, alternative reinsurance capital climbed to USD 115 bn, and total global reinsurance capital marked a new high of USD 715 bn. Against this backdrop, one can ask why primary insurers and reinsurers continue to opt for cat bond issues even as the market environment is characterised by high reinsurance capacities and falling prices.

A possible reason for this could rest with investors, as institutional investors continue to seek uncorrelated risks with attractive yields. After the losses seen in 2017 through 2020 and again in 2022, the spreads of cat bonds have risen to an attractive level. Fresh funds flowed back into ILS funds in 2023 and 2024 and can now be invested. A driver is also discernible on the part of the issuers. Here a strategic consideration warrants highlighting: Issuers who laboriously issued a cat bond following the difficult market in 2022/23, establishing investor networks in the process, do not want to lose this advantage simply because prices are now slightly lower.

Generally speaking, and from the current market perspective, issuance of a cat bond does not make economic sense for small and medium-sized European primary insurers if the exclusive focus is on insurance cover. The need to set up a special-purpose vehicle (SPV), the design of the trigger mechanism, legal opinions and investor road shows all entail high up-front costs – often in the amount of several

million USD. The average lead time for placement of a cat bond also lasts six to twelve months. This is reasonable for large reinsurers and multinational primary insurers. For medium-sized European primary insurers, on the other hand, classic reinsurance is still more economically efficient as long as there is sufficient capacity available.

Nevertheless, insurers issue cat bonds not just for economic reasons, but also as a strategic signal. The advantages can be found in diversification, proximity to the capital market, developing of internal competence in alternative risk transfer and multi-year structures (usually three years) offering planning security if reinsurance prices fluctuate. Institutional investors also value the stable risk-return profile and the low correlation to traditional classes of assets.

The current market trend exhibits an increasing functional and thematic expansion of cat bonds beyond classic natural disasters. The focus is on novel risks with hard-to-model characteristics, including cyber risks and hazards of terrorism. The choice of trigger mechanism – parametric, index-based or indemnity – significantly influences a bond's risk-return profile and thus its marketability. The trigger represents the central balancing of interests between issuers and investors.

An example of this trend can be seen in a number of recent transactions:

- Cumulus Re (Hannover Rück): Since 2024, risks of cloud failure have been hedged by means of a parametric trigger. This was reissued in an expanded structure again in 2025.
- Pool Re: The UK's state-supported pool for terrorism insurance issued its third terrorism bond in 2025. It employs an indemnity trigger with aggregated annual cover.
- King Max Re (Versicherungskammer Bayern, 2023): This cat bond exclusively covers risks in Germany and employs an indemnity trigger.
- Liongate Re (SV SparkassenVersicherung, 2025): This cat bond uses a dual trigger structure: a parametric trigger for SparkassenVersicherung in Germany and an indemnity-based trigger for Japanese cooperative insurer Zenkyoren in Japan.

These transactions highlight the tool's increasing structural flexibility. At the same time, technological concepts are becoming increasingly important and include blockchain-based emissions, tokenisation and the use of digital-platform models. In the long run, these approaches can enlist fresh approaches to standardisation, improved efficiencies and lower costs in the market for cat bonds.

Disaster bonds have established themselves as a complementary component within modern reinsurance programmes. Their economic appeal to smaller insurers is

currently limited, but they offer specific strategic advantages including capital-market access, independence and diversification. Continued high demand by issuers and investors alike suggests that cat bonds are increasingly becoming an integral feature of the reinsurance market. The central question, however, remains: Is this a phenomenon of tactical transition or a lasting transformation in the architecture of global systems of risk transfer?

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## Discussion

- Why have medium-sized primary insurers scarcely participated in the ILS market to date?

High initial costs, regulatory requirements and the complexity of structuring an SPV (special-purpose vehicle) remain key barriers to entry. At the same time, targeted entry with issuance limited in volume is increasingly regarded as a strategic learning step, as seen in the case of SparkassenVersicherung and 'Liongate Re'.

- What motives do insurers pursue in spite of the current soft reinsurance market with sufficient capacity?

Issuance of cat bonds is viewed not so much as an economic imperative but as a strategic signal instead. The main reasons given were the development of expertise, the maintenance of contacts with institutional investors and the strengthening of a company's own capital-market capacity.

- What are the challenges on the part of investors?

In the view of some investors, there is currently a lack of sufficient transparency, standardisation and placement volume. The quality of available data – concerning reports of loss, for example – fails to meet expectations at times, as well. Without marketing campaigns and structured road shows, market access remains difficult for many international investors. In future, reinsurers with experience in asset management could act as mediators in this regard.

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18<sup>th</sup> Annual Meeting of the  
Förderkreis Rückversicherung [Sponsoring Group Reinsurance]  
Researchers' Corner, 4 July 2025

Loss of biodiversity  
How can reinsurers adapt their underwriting?

Jörg Dirks, M.Sc. / FCII

Significance:

Loss of biodiversity & handling

Assessment:

- Biodiversity directly affects the risk structure of primary insurance and reinsurance and thus calls for integrative consideration in the risk assessment.

- According to a WEF study, more than half of global economic output is moderately or heavily dependent on nature.
- Biodiversity loss thus poses a significant risk to corporate and financial stability – possibly even exceeding the risks due to climate change.
- According to the WEF Global Risk Report 2024, biodiversity loss will present of the three greatest risks to the global economy by 2034.

Type of risk

**Physical risks**

Arise from changes in weather, climate and/or biodiversity that impact economies

**Transition risks**

Arise from changes in expectations as a result of a transition to a low-carbon and/or nature-positive economy

Sources of environmental risk

Severe storms destroy built infrastructure, agricultural crops or livestock

CLIMATE-RELATED RISKS

Net-zero policies or laws limiting/ending coal power generation could lead to stranded assets

Climate change facilitates the spread and establishment of many alien species, leading to loss of biodiversity, with potential impacts on agricultural yields

CLIMATE + BIODIVERSITY-RELATED RISKS

Expansion of protected areas through Nature Based Solutions limits businesses' ability to expand into or exploit natural resources

Loss of pollinators like bees and bats affects agricultural yield

BIODIVERSITY-RELATED RISKS

Expansion of protected areas via the Global Biodiversity Framework limits businesses' ability to expand into or exploit natural resources

Source: NGFS Final Report of the NGFS-INSPIRE Study Group on Biodiversity and Financial Stability, 2022

Implications for reinsurance

Affected sectors:

Integration into underwriting:

Directional estimate of overall nature-related risks for economic sectors

Source: NGFS Final Report of the NGFS-INSPIRE Study Group on Biodiversity and Financial Stability, 2022

- Risk-management approaches and modelling algorithms should be adjusted in the context of biodiversity.
- Loss of biodiversity could lead to more and greater claims.
- A lack of available data could present a potential challenge to integration.
- This could result in uncertainties in risk assessment.
- One possible approach would be to create climate-transition plans.

## **18<sup>th</sup> Annual Meeting of the Sponsoring Group Reinsurance Researchers' Corner, 4 June 2025**

### **Loss of biodiversity – How can reinsurers adapt their underwriting?**

**Jörg Dirks, M.Sc. / FCII**

Jörg Dirks (M. Sc.) is a member of staff at the Cologne Research Centre for Reinsurance at the Cologne University of Applied Sciences, where he works under Prof. Stefan Materne and investigates Biodiversity – How can reinsurers sustainably adapt their underwriting?



This research focusses on the changing climatic conditions resulting from the loss of services in support of the ecosystem. Risk-management approaches and modelling methods were also analysed with an eye to considerations of biodiversity. This work also investigated the extent to which underwriting already takes aspects of biodiversity into account.

Jörg Dirks works full-time as a Senior Manager in 'Retrocession & Capital Markets' at Hannover Rück SE.

In a world faced with the challenges of climate change and ecological uncertainty, an awareness of the importance of biodiversity is growing increasingly relevant. Not only is this diversity essential to the smooth functioning of ecosystems, but it also has a significant impact on the primary-insurance and reinsurance sector.

'Loss of biodiversity' means that the variety of plants, animals, genes and habitats on Earth is decreasing. This downturn owes to factors including changes in the landscape, climate change, excessive use of natural resources, pollution and incursions of non-native species. The loss of biodiversity has extensive negative impacts on the environment and on numerous sectors of the economy.

According to a study by the World Economic Forum (WEF), more than half of global economic output is moderately or heavily dependent on nature. Biodiversity loss thus poses a significant risk to corporate and financial stability – possibly even exceeding the risks due to climate change. According to the WEF Global Risk Report 2024, biodiversity loss will present one of the three greatest risks to the global economy by 2034.

The Network for Greening the Financial System (NGFS) is a worldwide alliance of central banks and regulators dedicated to an emphasis of ecological aspects in the financial sector. The work of the NGFS considers biodiversity loss an important risk to the financial system. This risk is broken down into two basic categories:

- Physical risks stemming from direct impacts of biodiversity loss on ecosystems and the economy.
- Transitional risks in business and state responses to biodiversity loss, such as regulatory, technological or market-based changes. (Inspire and NGFS, Robins, Jun, et al., 06/2021)

This distinction shows that biodiversity loss not only has environmental consequences but also poses significant financial and economic risks to financial institutions and the entire banking sector. (Deutsche Bundesbank, Dietz, et al., 06/2023)

Although some reinsurance companies have already begun incorporating environmental considerations into their strategies, the measures taken to date seem rather insufficient. This is made clear by the enormous economic damage seen in recent years: In 2022, global losses due to natural disasters totalled to around USD 275 billion – of which just USD 125 billion was insured. The 2021 flooding in the Ahr Valley led to damage of around EUR 34 billion – of which just EUR 8 billion was insured. This does not take the non-monetary damage into account.

These damage amounts are likely to continue to increase as climate and natural crises increase. The challenge to primary insurers and reinsurers is to expand their cover with society in mind even as the risk of ‘uninsurability’ continues to rise. Hence, it should be in the interest of primary insurers and reinsurers to transform their business models accordingly.

The effort to integrate aspects of biodiversity is becoming increasingly important to reinsurance underwriting. Risk-management strategies and modelling procedures must be built around the specificities of biodiversity in an effort to address increased vulnerability to loss due to declining biodiversity. This is necessary because a downturn in biodiversity can potentially lead to an increase in both the frequency and magnitude of claims.

The lack of data availability presents a core challenge to implementing these requirements and leads to significant uncertainties in risk assessment. A pragmatic approach toward a solution would be to create climate-transition plans explicitly

addressing biodiversity risks and ensuring that these risks receive systematic consideration.

This approach is in line with the recommendations of the NGFS-INSPIRE Report 2021, which emphasises the need for a scientifically sound and practical expansion of the existing tools for the analysis of risk to adequately counter biodiversity losses in (re)insurance business. (Inspire and NGFS, Robins, Jun, et al., 06/2021)

Preventive selection of risks and consideration of nature-based scenarios minimise the risk of financial instability in the reinsurance market.

- Reinsurance ultimately calls for an integrated approach that incorporates biodiversity risks into underwriting and pricing,
- Minimises data gaps through targeted data collection and monitoring, adapting risk-quantification models and linking these with transition planning that takes the interconnectedness of biodiversity and climate risks into account
- And proactively incorporates nature-based solutions and sustainable investment strategies.

This permits correct addressing of regulatory requirements (e.g. CSRD, TNFD) and economic realities while taking the systemic importance of biodiversity into account in the reinsurance business. (PWC, McClellian, et al., July 2023)

Integrating biodiversity into reinsurance strategies not only comes in response to regulatory requirements but is also a necessity for the long-term stability of the financial sector. This is the only way to ensure financial security, meet legal requirements and maintain competitiveness in a changing risk landscape.

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## Discussion

- Which sectors and regions in the portfolio are particularly affected by biodiversity loss?

The sectors and regions in the reinsurance portfolio that are particularly affected:

- Agriculture and forestry: Highly dependent on functioning ecosystems (e.g. pollination, arable soil). Loss of biodiversity increases crop losses and has direct effects on liability and property insurance.

- Fisheries and aquaculture: Loss of marine biodiversity due to overfishing, pollution and climate change threatens the earnings situation and hence insurance risks as well.
- Construction and infrastructure: Loss of natural buffers (such as wetlands and forests) increases the risk of disaster during storm surges, floods and erosion, in turn affecting reinsurers in the event of natural-disaster cover.
- Tourism: Many destinations depend on intact landscapes and species diversity. Biodiversity loss increases business interruption and liability risks; comparing the Cold War with the current Russian-Ukrainian war, there are major differences in economic interdependence due to previous globalisation, which peaked in 2018. Prior to the Russian-Ukrainian war, economic relationships between Russia and the West (Europe & USA) were much stronger or closer than they had been in the 1980s. Following the annexation of Crimea, a belligerent attack by Russia on Ukraine was still considered theoretical in the reinsurance market; the reinsurance industry had not sufficiently modelled or analysed the long-term and real consequences of this geopolitical tension.
- Will certain risks or sectors need to be excluded or limited in future?
  - Exclusions are discussed: Sectors with a particularly high impact on biodiversity loss (such as industrial agriculture, the extraction and processing of fossil raw materials, palm oil and soybean production, heavily polluting chemicals industry) can be subject to insurance and reinsurance restrictions or exclusions in future.
  - Implementation through ESG criteria: Reinsurers are increasingly incorporating biodiversity criteria into their risk models and specifically excluding industries that contribute towards the destruction of critical ecosystems.
  - Regulatory requirements: Legal requirements (e.g. EU taxonomy, SFDR, the German Supply Chain Act) promote exclusion or reduced cover of high-risk industries and insist upon transparent reporting of biodiversity risks in the portfolio.
- Are there sustainable product innovations that target the promotion of biodiversity?
  - Green bonds and impact investments: Reinsurers are increasingly weighting investments in projects that systematically promote biodiversity (e.g. reforestation, soil protection, protected areas) as sustainable assets.
  - Index insurance: Development of policies offering targeted incentives for biodiversity-enhancing farming practices (e.g. agroforestry, regenerative agriculture).

Product innovations in underwriting: Integration of biodiversity risks into the underwriting policy, e.g. offering special cover for companies that demonstrably protect ecosystems or acquire biodiversity certificates:

- Conclusion:

Reinsurers play an essential role in the integration of biodiversity criteria. There should be increasing analysis of sectors and regions that are particularly nature-dependent and feature high biodiversity, accompanied by any necessary limitations or exclusions. At the same time, sustainable products and investments that specifically promote biodiversity present fresh opportunities to minimise risk and create value within the core business of reinsurance.

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18<sup>th</sup> Annual Meeting of the  
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Researchers' Corner, 4 July 2025

The role of the SII review in  
calculating volatility adjustments

Adrian Hamm, M.Sc.

### The current status quo of the Solvency II review

17 Dec 2020: **OPINION ON THE 2020 REVIEW OF SOLVENCY II** (EIOPA)

22 Sept 2021: **Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL** (European Parliament and Council)

27 Jul 2023: **REPORT** on the proposal for a directive of the European Parliament and of the Council amending Directive 2009/138/EC (European Parliament)

23 Apr 2024: **AMENDMENTS** to the Solvency II Directive (European Parliament)

27 Nov 2024: **Directive (EU) 2025/2** Amending Directive 2009/138/EC (European Union)

**Implementation from 30 Jan 2027**

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### Change in the volatility adjustment (VA) as a central element of the review

#### Risk-free interest curve

#### Aims of the redesign

- Improved functionality of the VA
- Improved risk correction of credit spreads
- Taking the illiquidity of the obligations into account
- Limiting overshooting

#### Definition of 'overshooting'

*'An "overshooting" effect occurs particularly when, in a scenario of widening credit spreads, the VA's cushioning effect exceeds the effect of a loss in the market value of fixed-interest assets. This leads to an increase in own funds under Solvency II.'*

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### Effects of recalculating the VA \* Effective dates calculated as at 31 Dec 2024

#### Old calculation

$$VA = 65\% \cdot RCS_{cur}$$

$$= 65\% \cdot 35,38 \text{ bps}$$

$$\approx 23 \text{ bps}$$

RCS = Risk-Corrected Spread

#### New calculation

$$VA = 85\% \cdot RCS_{cur} \cdot CSSR_{cur}$$

$$= 85\% \cdot 57,92 \text{ bps} \cdot CSSR_{cur}$$

Flat-rate factor

New derivation of the RCS

Individual overshoot factor ( $0 \leq CSSR \leq 1$ )

CSSR = Credit-Spread Sensitivity Ratio

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#### Conclusion

- $Va_{new} > Va_{old}$  for  $CSSR_{cur} > 0.47$
- $Va_{new} < Va_{old}$  for  $CSSR_{cur} < 0.47$
- $Va_{new} = Va_{old}$  for  $CSSR_{cur} = 0.47$

- Initially, the increased flat-rate factor and new derivation of  $RCS_{cur}$  lead to a **higher VA**
- Problem:** High level of dependence on the CSSR factor
- CSSR: Relation between **spread sensitivity** of capital investments with **interest rate sensitivity** of underwriting provisions → Leads to **low CSSR** and slim VA for life insurers with 'legacy liabilities'

## **18<sup>th</sup> Annual Meeting of the Sponsoring Group Reinsurance Researchers' Corner, 4 July 2025**

### **The role of the SII review in calculating volatility adjustments**

**Adrian Hamm, M.Sc.**



Adrian Hamm is a member of academic staff at the Institute of Insurance Studies Cologne (ivwKöln) and has been working for the Cologne Research Centre for Reinsurance since October 2024. In addition to these two roles, he is completing his doctorate at the University of Cologne under the supervision of Prof. Schradin (University of Cologne) and Prof. Wolf (Cologne University of Applied Sciences). His research focusses on the management of life insurance firms in the HGB (German Commercial Code), IFRS 9/17 and Solvency II accounting systems. The lattermost of these forms the basis for the topic of his paper.

The aim of this paper is to examine the implications of the latest amendments to the methodology used to calculate volatility adjustments (VA) in the German life insurance sector. The VA essentially represents one of five so-called 'Long-Term Guarantee' (LTG) metrics introduced under Solvency II to ensure adequate treatment of insurance products featuring long-term guarantees. The VA is the LTG metric used most widely at the European level. In any case, insurers' application of LTG metrics is subject to the prior approval of the national supervisory authority (cf. EIOPA, 2018, p. 9 et seq.).

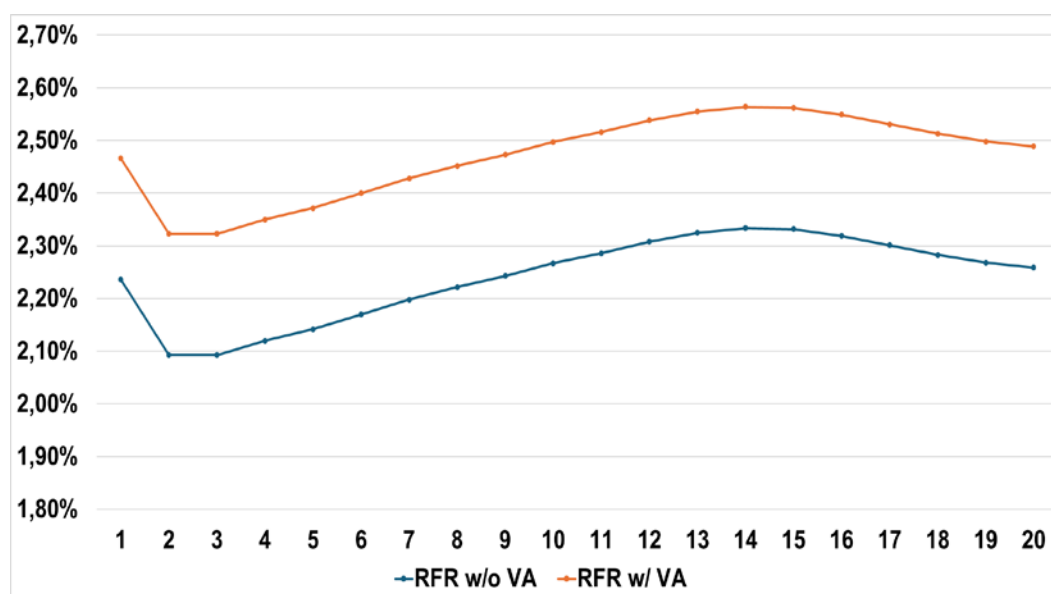
The purpose of the VA is to cushion temporary market distortions brought about by widening credit spreads in the bond markets. Such fluctuations in market are the result not of changes in the probability of default, but of unfavourable changes in perceived market risk. Under Solvency II, a scenario like this would lead to a reduction in the market value of the assets while leaving liabilities unchanged. The resulting decline in own funds (OF) and the associated short-term balance-sheet volatility are at odds with insurers' long-term business models. Insurers are permitted to avoid such effects by applying the VA, which serves as a surcharge on the risk-free interest curve used to assess the technical provisions (cf. Directive 2025/2 (EU),

2024, Recital 45). Under the calculation methodology still in effect until 30 January 2027, the VA is determined as follows:<sup>1</sup>

$$VA_{cur} = 65\% \cdot RCS_{cur}$$

The risk-corrected spread (RCS) is derived from the fixed-income instruments of the reference portfolio defined by EIOPA, which reflects the average asset allocation of all European insurance and reinsurance undertakings (cf. Directive 2009/138/EC (EU), 2025, Article 77d). Consequently, a widening of credit spreads leads to an increase in VA, which in turn causes a stronger discounting of Best Estimate Liabilities (BEL) and thus cushions the depreciation of the assets involved.

**Fig. 1: Risk-free rate (RFR) for the Eurozone (Current as at: December 2024)**



Source: Own presentation based on EIOPA, 2025

The method of operation of the VA has been the topic of intense discussions in the past. Already in 2020, the European Insurance and Occupational Pensions Authority (EIOPA) published proposals revising the calculation of the VA in an effort to bring it into closer alignment with the intended objectives. Besides a more realistic depiction of illiquidity characteristics on the liabilities side, the focus specifically targets the avoidance of what are referred to as ‘overshooting’ effects (cf. EIOPA, 2020, p. 8). The supervisory authority defines this term as follows: ‘An “overshooting” effect

<sup>1</sup> In addition to the currency component, the VA also comprises a theoretical country constant. For this to be taken into account, however, the risk-adjusted currency spread must exceed a threshold of 85 basis points. As this has never been the case for Germany the introduction of Solvency II, a more in-depth presentation is dispensed with here. For further information, please refer to Directive (EU) 2009/138/EC.

occurs in particular where, under a scenario of widening credit spreads, the dampening effect of the VA exceeds the effect of a loss in the market value of fixed-income assets. This leads to an increase in own funds under Solvency II' (cf. EIOPA, 2019, p. 83 et seq.). In principle, the occurrence of such an effect depends significantly on the balance-sheet structure of an insurance company. Specifically, the phenomenon of overshooting was observed among life insurers with a pronounced duration gap. As the occurrence of overshooting triggers an increase in own funds, the current VA mechanism creates incentives for a deliberate widening of the duration gap (cf. Barucci, Marazzina & Rroji, 2023, p. 26). For German life insurers, this presents a significant disincentive potential with regard to their asset liability management (ALM). This is mainly due to the fact that many German life insurers hold a high proportion of fixed-income securities. Particularly in an environment characterised by low interest rates, higher duration gaps have a negative effect on financial stability under Solvency II (cf. Berdin & Gründl, 2015, pp. 411–413). Recalculation of the VA to effectively prevent overshooting would thus appear to be justified. The current version of the Solvency II review, which will enter into force from 30 January 2027, takes the following methodology for calculating the VA into account:<sup>2</sup>

$$VA_{cur} = 85\% \cdot RCS_{curneu} \cdot CSSR_{cur}$$

where:

$RCS_{curneu}$  = risk-adjusted spread for the respective currency;  
 $CSSR_{cur}$  = company-specific indicator of credit-spread sensitivity.

With regard to  $RCS_{curneu}$ , it should be recalled that, by contrast to the calculation of the risk-adjusted spread under the regulatory framework currently in force, under the reformed approach this will gradually be derived from a hypothetical portfolio consisting entirely of fixed-income securities. This leads to an increase in RCS (cf. Directive (EU) 2025/2, Art. 77a). With regard to  $CSSR_{cur}$ , it should be noted that its value lies between 0 and 1. A value of less than 1 results if the sensitivity to a widening of credit spreads on the part of the fixed-income securities denominated in the respective currency is inferior to the sensitivity of the undertaking's underwriting provisions to changes in interest rates. To measure this sensitivity, the present value

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<sup>2</sup> As under the current calculation of the VA, recalculation also includes a country-specific component. As this component carries no deeper significance for the German market (cf. Barucci/Marazzina/Rroji, 2023, p. 25), deeper consideration is also dispensed with here. For further information, please refer to Directive (EU) 2025/2.

of a basis point must first be determined for both the FI and the underwriting provisions. In a second step, these values are expressed as a ratio:

$$CSSR_{cur} = \frac{PVBP_{FI}}{PVBP_{BEL}}$$

Finally, to measure the impact of the recalculation on the level of the VA, the available data for December 2024 can be referenced. Under the current methodology:

$$VA_{cur} = 65\% \cdot 35,38 \text{ bps} \approx 23 \text{ bps}$$

Under the terms of the new calculation method, it is assumed that the asset allocation will remain unchanged within the reference portfolio. Accordingly:

$$VA_{cur} = 85\% \cdot 57,92 \text{ bps} \cdot CSSR_{cur}$$

By implication, if the new methodology is employed, the VA will always exceed the 'old' VA if  $CSSR_{cur} > 0,47$ . In summary, it can be seen that the level of the future VA is largely a function of  $CSSR_{cur}$ . Under certain circumstances, this aspect can prove problematic for life insurers that have written substantial, interest-sensitive policies in the past. In light of the high sensitivity of underwriting provisions to interest rates, it can be expected that  $CSSR_{cur}$  will be low, resulting in a low VA.

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## Discussion

- How do you assess the overall impact of the SII review on the insurance industry, particularly in terms of the effort involved?

The fundamental expectation is that there will be an increased administrative burden, particularly throughout the first periods following the entry-into-force of the review. Changes in quantitative requirements can also be expected to present new questions in corporate governance. Certain statements in the context of the review still cannot be considered final, but no sweeping amendments by the European Union or EIOPA are anticipated.

Please contact Adrian Hamm ([adrian.hamm@th-koeln.de](mailto:adrian.hamm@th-koeln.de)) with any questions or comments.

18<sup>th</sup> Annual Meeting of the  
Förderkreis Rückversicherung [Sponsoring Group Reinsurance]  
Researchers' Corner, 4 July 2025

The marine liability market post-Baltimore

Missed opportunity or used chance?  
Erik Winkler, LL.B. / M.Sc.

1. Vessel collides with Francis Scott Key Bridge (26 Mar 2024)



Estimated known cost items:

Bridge Repair Costs	1.7 bn
Business Interruption	0.2 bn
Loss of Life	0.15 bn
Salvage Costs	0.105 bn

Total estimated costs 2.155 bn

Uncertainty factors

Limitation of Liability  
Betterment in Repairs  
Subrogation  
Legal Costs  
US Legislation

2. International Group of Protection & Indemnity Clubs<sup>2</sup>



3. IGP&I<sup>2</sup> (Re-)Insurance Renewals from 2023

		Cash Change Renewal 20/02/2023	Cash Change Renewal 20/02/2024	Cash Change Renewal 20/02/2025
3.1bn	Layer 4 USD 1bn xs USD 2.1bn 100% Order	+5.0%	-3.5%	+35.0%
2.1bn	Layer 3 USD 600m xs USD 1.5bn 100% Order	+5.0%	0.0%	+30.0%
1.5bn	Layer 2 USD 750m xs USD 750m 100% Order	+5.0%	0.0%	+30.0%
750m	Layer 1 USD 650m xs USD 100m 75% Order	-1.0%	-6.0%	+12.5%

4. Missed opportunity for an appropriate adjustment or significant price correction?

IGP&I Renewals are often burning cost-driven –  
The pricing correction on the higher layers is significant

The price and structure do not reflect the underlying exposure growth (e.g. cruise ships or global trade) or the changing environment (e.g. social or raw material inflation)

Oversupply of capacity in Specialty Reinsurance leads to limited pressure on the renewal and opens up the opportunity to purchase additional coverage

There is no need to buy more coverage given the mutualised pooling structure and the improvement in free reserves

## **18<sup>th</sup> Annual Meeting of the Sponsoring Group Reinsurance Researchers' Corner, 4 July 2025**

### **The marine liability market post-Baltimore – Missed opportunity or used chance?**

**Erik Winkler, M.Sc.**



Erik Winkler (M.Sc.) works full-time at Liberty Mutual Re in the London Market Risk Underwriting of Marine & Energy Risks. In addition, he is a member of academic staff at the Cologne Research Centre for Reinsurance at the Cologne University of Applied Sciences, where his research concerns the marine liability market in the wake of the shipping accident that occurred in Baltimore on 26 March 2024. In addition to his professional work, as part of the Researchers' Corner, Mr Winkler offered an in-depth examination of the renewal of the International Group of Protection & Indemnity Clubs and the associated implications.

On 26 March 2024 a vessel called 'Dali' collided with the Francis Scott Key Bridge in Baltimore. Regarding the loss quantum, the biggest amount accounts for the bridge repair costs of USD 1.7 billion, followed by business-interruption costs of USD 200 million. The business-interruption costs are mostly due to a toll that was charged for passing the bridge. In addition, loss of life accounts for around USD 150 million. This was unfortunately the fate of five workers who were on the bridge when the accident happened at night and the bridge collapsed. Finally, salvage costs account for USD 105 million. This leads to a total estimate of around USD 2.1 billion.

However, there are uncertainties that could affect the loss amount. The first one is the limitation of liability. The limitation of liability is an act that essentially holds that liability is limited to the value of the ship (cf. Buglass, 1978). The Dali is valued at around USD 43.7 million. Therefore, the claim would be limited to USD 43.7 million, not USD 2.1 billion (cf. Casey, 2024). The second uncertainty is betterment through repairs. This is because although the bridge was not built according to the latest standards, it will be rebuilt according to the latest standards, representing a significant amount of betterment that cannot be charged for. The next uncertainty concerns subrogation. The bridge was insured for USD 350 million, and this policy has already paid out (cf. Smith and Wright, 2024). However, the question is what will happen with the amount between USD 350 million and 1.7 billion currently held by the US government. Will the US government subrogate against the shipowner, and how

much will they subrogate? Additionally, and apart from US legislation, legal costs and interest are always an uncertainty factor the longer a claim is pending in court. In conclusion, the shipowner potentially faces a USD 2.1-billion liability claim. The shipowner purchased liability cover with the Britannia P&I Club.

The Britannia P&I Club is a member of the International Group of Protection & Indemnity Clubs, which is a pool of liability cover for most of the world's shipping that provides cover for circa 90% of the ocean-going tonnage and 95% of the ocean-going tankers as well as most of the crews or cruise-ship fleets. It consists of 12 clubs that pool their exposure in a unique group structure. (Cf. Cutler, Andrew 2025.) The International Group of Protection & Indemnity Clubs purchases an Excess of Loss (Re-)Insurance programme that is mostly written through direct Marine Liability underwriters in the London market. The programme is currently structured as follows with a plafond of USD 3.1 billion:

- Layer 1: USD 650 million excess of USD 100 million
- Layer 2: USD 750 million excess of USD 750 million
- Layer 3: USD 600 million excess of USD 1.5 billion
- Layer 4: USD 1 billion excess of USD 2.1 billion.

Before discussing the impact of the Baltimore accident on the renewal of the International Group, the renewal of the last two years shall be illustrated with regard to the cash change. On 20 February 2023, the programme saw an increase across layers two to four of +5%. Only the bottom layer saw a slight reduction of -1%. On 20 February 2024, the top layer was reduced by -3.5% and the bottom layer by -6%. Layers two and three renewed unchanged. The renewal on 20 February 2025 reflects the Baltimore accident and therefore shows increases across the programme. The bottom layer increased by +12.5%, layers two and three by +30% and the top layer by +35% (cf. Casey, 2024).

Looking at renewal, the question now arises: Does it constitute a missed opportunity or a used chance? Therefore, the following four statements shall be examined. The first statement is "IGP&I Renewals are often burning-cost driven – the pricing correction on the higher layers is significant". Looking at a possible loss amount of USD 2.1 billion, the top layer would be loss-free but show a price correction of +35%. Given that the programme renewals are often burning-cost driven, the adjustment would be significant (cf. Casey, 2025). Contrary to the previous statement, the second statement is "The price and structure do not reflect the underlying exposure growth (e.g. cruise ships or global trade) and the changing environment (e.g. social or raw material inflation)". This highlights that the programme price and structure cannot cope with the increase of the underlying exposure. For instance, cruise ships and global trade have seen a significant growth/increase over the past decade. Together with the impact of inflation, it might make sense to rethink the structure and pricing of the programme (cf. Bass, 2023). The third statement is "Oversupply of

capacity in speciality reinsurance leads to limited pressure on the renewal and opens up the opportunity to purchase additional cover”. This statement deals with the speciality reinsurance market, which is currently in a softer cycle. The renewal pressure on the programme of the International Group of Protection & Indemnity Clubs is thus limited. This would possibly offer an opportunity for the International Group of Protection & Indemnity Clubs to place a greater limit at a lower price. However, it would be questionable how the Clubs would react if the specialty reinsurance market should harden again. The last statement is “There is no need to buy more cover given the mutualised pooling structure and the improvement of the free reserves”. This statement reflects improvements in the Clubs’ reserves over the past several years. Therefore, the pooling structure is more resilient against a loss that breaks the plafond (cf. Casey, 2025).

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## Discussion

- Can it be deduced, on the basis of larger cruise ships alone, that additional limit should be purchased, or that the programme no longer reflects the underlying exposure?

The trend in cruise-ship sizes is significant and an observation point with regard to increasing exposure. As is clearly evident, the tonnage involved in maritime transport has increased significantly over the past several years as well. Not least, vessels are increasingly fitted with more technology, and this in turn increases their value.

- Could an improvement in the reconstruction of the Francis Scott Key Bridge mean that not all costs can be passed along to the insurance market?

Yes, an improvement in reconstruction cannot be counted as an insured loss and will reduce the amount of the loss. The way in which reconstruction of the bridge is assessed remains to be seen, however.

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18<sup>th</sup> Annual Meeting of the  
Förderkreis Rückversicherung [Sponsoring Group Reinsurance]  
Researchers' Corner, 4 July 2025

Tariff policy and reinsurance: A European view  
of US trade measures

Fabian Lassen, M.Sc./ FCII

• The topic is constantly evolving, this consideration is not exhaustive and limited to a dated snapshot

• Actuarial view, capital investments not considered here

• Purpose: basis for discussion

**1. Tariffs affect the (re)insurance sector**

8 Apr 2025 – Versicherungsmonitor

**US-Zölle treffen auch Versicherer**

Die von US-Präsident Donald Trump eingeführten Zölle auf Produkte in der USA haben weltweit für Unruhe sorgen und die Abhängigkeit auf Lieferketten für Anpassungen und Anstieg bereits jetzt von China zur Folge. Auch die Gesetzgebung der Versicherer in Bezug. Schließlich sind die Lieferketten von globalen Anbietern, die auch in anderen Zonen mit globalisierten Lieferketten überlappen. Diesem Effekt der Auswirkungen der Zölle auf die Versicherungswirtschaft bedarf kritischer, wenn auf Versicherungsgesellschaften (V).

4 Apr 2025 – Versicherungswirtschaft heute

**Comptroller drückt die Stimmung bei Rückversicherern**

Die von der US-Comptroller des Handelsministeriums veröffentlichten Ergebnisse haben die wirtschaftliche Unsicherheit und anhaltende Marktvolatilität bestätigt. Dies ist ein Hinweis auf die globale Lieferkettenunsicherheit und „global“ auf „global“ hergestellte Waren. Für einen US-Zoll und diese wirtschaftliche Folgen werden sich nicht einschleichen.

Die von der Comptroller des Handelsministeriums (DHS) in einer aktuellen Analyse.

9 Apr 2025 – Versicherungsmonitor

**Europäische Versicherer nicht immun gegen US-Zölle**

VON FREDRIK KAREL AN 6. APRIL 2025

Auch wenn die europäische Versicherungswirtschaft nicht direkt von den neuen US-Zöllen betroffen ist, so ist sie nicht immun gegen die Auswirkungen, wenn Lieferketten unter den vollen Auswirkungen des Handelskriegs stehen. Die Auswirkungen der Zölle auf die Lieferketten sind ein Problem für die europäischen Versicherer, die auch in anderen Zonen mit globalisierten Lieferketten überlappen. Diesem Effekt der Auswirkungen der Zölle auf die Versicherungswirtschaft bedarf kritischer, wenn auf Versicherungsgesellschaften (V).

**2. Possible impacts of tariffs**  
Global trade & supply chains:

- Decline in trade volume
- Supply chains are destabilised
- Economic uncertainty: downturn in investments & forecasts

Tariffs and inflation

- Tariffs = higher import costs (taxes on imports)
- Enterprises: Prices rise or margins fall
- Potentially less competition → Scope for price increases for domestic providers
- Opposing effects are possible in other countries if no counter tariffs are imposed; falling demand as supply remains unchanged.

Cf. The macroeconomic effect of US tariff hikes – European Commission, 19 May 2025. Cf. Ariola, C. et al. (2024). OECD Trade Policy Papers, No. 280

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**3. US tariffs affect the US and European economies**

Average tariff rate on all imports (%). Historical rates from 1935-2023, projected rate for 2024, and estimated rate for 2025 under Trump's imposed tariffs. Source: Tax Foundation. Data as at 4 April 2025.

Abbildung 1: Kurzfristige Veränderungen der realen Preiskosten

Change in price level:\*

- AUT -0.88%
- EU -1.14%
- USA +7.26%

\*Estimate based on April 2025 data  
Cf. WIFO (4 Apr 2025): US-Zölle belasten US- und EU-Wirtschaft

Inflation risks – particularly in the US

- Costlier repairs and materials → rising claims costs
- Particularly relevant for reinsurers with US exposure

**4. Insurance benefits not directly affected by tariffs**

As service providers, insurers are exempt from tariffs; indirect impact on insured risks and losses, e.g. for supply chains:

- Property, technical, business-interruption insurance: potentially longer recovery times and production downtimes
- Comprehensive insurance: Trend in pricing of spare parts?

Price shocks are familiar from the aftermath of crisis years 2020 and 2022

**CPI vs. pricing of spare parts for passenger cars in DE**

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**5. Impacts on reinsurance in the EU**

**Claims deflation possible**

- Falling costs of repair and materials → more stable loss ratio
- Potentially lower claims expenditures for primary insurers and reinsurers
- However: Volatile markets and supply chains mean rising uncertainty

Downturn in economic output

- Less economic activity → declining EPI

Pricing & underwriting

- Regional differences: occasionally opposing effects

Key challenge: supply-chain risks

- Increased complexity in risk assessment and modelling

**6. Conclusion**

- Direct relevance for EU reinsurers is low, but regional effects are possible
- Depending on the region, claims costs may increase (e.g. due to costlier spare parts) or decrease (e.g. due to falling demand)
- Supply chains may be affected or interrupted, which can lead to lengthier downtimes
- Economic slowdown → possible downturn in premium income
- What other risks emerge for our sector? E.g. interrelationship of capital investments & solvency ratios?

# 18<sup>th</sup> Annual Meeting of the Sponsoring Group Reinsurance Researchers' Corner, 4 July 2025

## Tariff policy and reinsurance: A European view of US trade measures

**Fabian Lassen, M. Sc. / FCII**



As Senior Account Executive at Gen Re, Fabian Lassen (M. Sc., FCII) is responsible for the German and Austrian markets. He is also a staff member at the Cologne Research Centre for Reinsurance at the Cologne University of Applied Sciences.

### **Introduction**

The introduction of protectionist measures by the United States – specifically the tariff increases of April 2025 – has caused a stir worldwide. Reactions to these steps extend far beyond industry boundaries and have an impact on the insurance sector as well. Tariffs are primarily trade barriers, but the way in which they are implemented reveals a number of impacts on the European insurance and reinsurance sector (cf. Swiss Re Institute 2025).

The challenge facing the European insurance sector is to assess the economic impact of tariffs with regard to its clientèle and the risks it insures.

### **The theoretical foundations of tariff policy**

Tariffs lead to an increase in the price of imported goods, influence pricing structures and ensure rerouting of global supply chains (cf. European Commission 2025 and cf. OECD 2024).

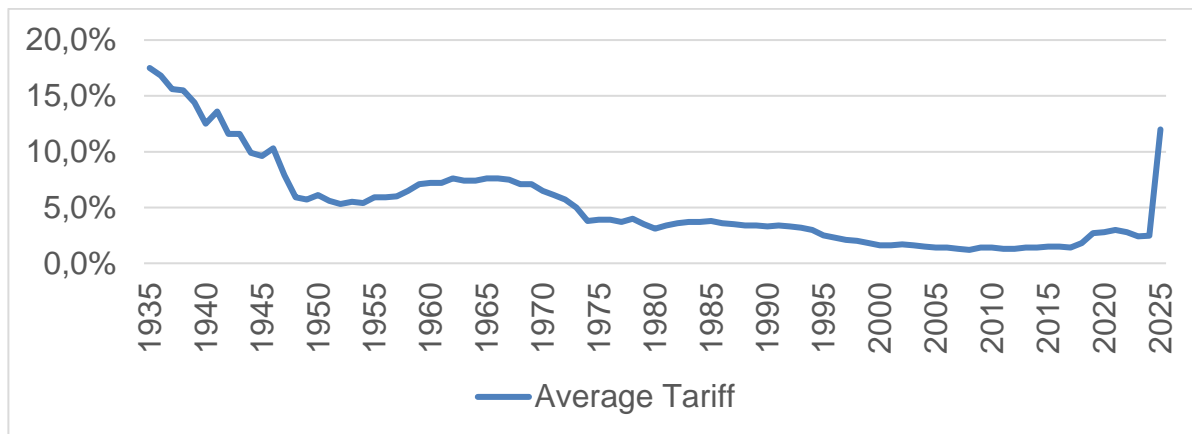
Important mechanisms:

- Downturn in the volume of international trade
- Shifts in conditions of competition and in supply chains
- Economic uncertainty and low level of planning certainty can lead to declining investments

Tariffs have the effect of a tax on cross-border value creation. They lead to changes not only in pricing but also in the ways in which undertakings position themselves strategically.

### Economic implications of US tariff policies

In April 2025, the US government announced across-the-board tariffs on goods imported from the EU; other countries were threatened with tariffs as well. Tariffs averaging more than 12 percent are set to be introduced. This is a level that was last seen in the 1930s. Since that time, all US governments have liberalised tariff policies step by step (see Tax Foundation 2025):



The tariffs announced in April 2025 have a direct impact on growth and price trends in the US and the EU. The Austrian Institute of Economic Research (WIFO) calculated the effects of the April tariffs as follows (see WIFO 2025):

Region	Growth	Price trend
USA	-1.7%	+7.16%
EU	-0.2%	-0.88%

### Effects on the primary-insurance sector

Tariffs do not have direct effects on insurance services, but there may be indirect impacts: (cf. Swiss Re Institute 2025)

- Policyholders' risk profiles can shift dynamically, e.g. due to relocations of production operations, the arrival of new suppliers or changed sales markets.
- Shifts in supply chains can result in longer – and hence costlier – claims for business interruption.

- As margin pressures on export-oriented companies increase and levels of production in Europe decline, the demand for insurance may decline, in turn leading to downturns in premium income. (cf. German Insurance Association [GDV] 2025)

### **Outlooks from a reinsurance point of view**

As a consequence of their global business model, reinsurers are generally more subject to macroeconomic trends than primary insurers are.

- WIFO forecasts a downturn in price levels in the EU as a result of the April tariffs. This makes loss deflation a conceivable outcome in some insurance lines and regions. Uncertainty is also rising, however, in the wake of volatile markets and unstable supply chains.
- Uncertainty in assumptions about inflation complicates the assessment of risk and adds to uncertainties in contract negotiations.
- Currencies are responsive to announcements of tariffs. This has impacts for international claims settlement and for projections of premium income.

### **Summary**

Although tariffs do not have a direct impact on the insurance sector, indirect effects can be seen:

- Tariffs can lead to a restructuring of supply chains and sales markets. This results in dynamic shifts in insured risks.
- In this dynamic environment, the central challenge is to assess impacts on supply chains and the risks involved, such as longer periods of business interruption.
- A downturn in premiums is also possible in the event of an economic slowdown.

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## Discussion

- No points of discussion

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# **Reinsurance sector executives' willingness to invest personally towards preventing drug-related deaths – A pilot study within the scope of a survey of ESG motivations**

**Ulrich Frischknecht  
Stefan Materne  
Alexander Pinz  
Stephan Hankammer**

## **Summary:**

The opioid crisis in the USA has made reinsurance companies increasingly aware of the significance of problems associated with addiction. For these companies, standards on ecological, social and governance (ESG) characteristics are not just guidelines imposed by policy-makers but also elementary elements of profitability. An anonymous online survey asked 42 executives in this sector how their companies' individual ESG-compliant behaviour motivated them – and what personal investment they would be willing to make if it could prevent deaths due to drugs. Of the 13 ESG-compliant factors surveyed, 'valuing diversity' was the most frequent response and 'life free from addictive substances' the least frequent. It turned out, however, that 80% of respondents would be willing to invest a portion of their gross income to prevent drug-related deaths. They would be willing to invest other individual resources as well, particularly to serve as role models by limiting their own consumption. The investigation shows additional steps reinsurers could take to promote ESG compliance and offers a clear indication of the industry's keen interest in investing financial resources to prevent deaths due to drug consumption. Given the social and economic significance of reinsurance companies, this should prompt politicians to take more vigorous and sustainable action to encourage addiction prevention.

## **Background:**

By assuming major risks – particularly in the area of disasters – reinsurance companies promote international risk-sharing and strengthen the resilience of insurers and economies around the globe. They accomplish this through cross-border risk allocation that narrows protection gaps in case of natural disaster (EIOPA, 2024) and by promoting nature-based solutions to mitigate disaster risk – e.g. by financially supporting ecosystems that play a protective natural role. Their profit interest motivates the prevention of damage. But the insurance sector has a crucial

role to play in rebuilding and in reducing disaster risk even after loss events have occurred (Marchal et al. 2019). As a recent publication by the UN SDSN (Sustainable Development Solutions Network) suggests, the insurance and reinsurance sectors are key players in achieving social-development goals: They provide protection for vulnerable communities, reduce food insecurity and safeguard livelihoods through systematic risk transfer (Swiss Re Institute, 2023). Taken together, these factors permit reinsurers to contribute meaningfully to global financial stability and promote adaptation to climate change, civil protection and social cohesion – making them relevant stakeholders for environmental, social and political stability.

One of the most sustained disasters of recent decades – triggering a decline in the average life expectancy of the population for the first time in the post-antibiotic history of the USA – is the opioid crisis. A result of a failed drug policy and neoliberalisation in health care, this crisis has claimed an estimated 3 million lives in recent years (Hebert & Hill, 2024).

At a social level, reinsurers have an indirect impact on efforts to manage the opioid crisis in the USA. Even in 2017, a study by Munich Re found that more than 90% of underwriters classified opioid consumption as a life-threatening risk, but only around half of them systematically tested for the share of opioids in that risk (Munich Re, 2017). This reluctance to conduct risk assessments hindered proper premium pricing and can lead to erroneously low premiums – which in the long run can increase financial burdens on insurers and amplify harms to social health. Reinsurers can use risk assessment and data analysis to support the health sector, e.g. by screening risks using tools such as drug databases to identify chronic opioid usage at an early stage. As this example shows, reinsurers can employ technological and risk-based mechanisms to influence the approaches taken to crises in social health through, in indirect support of medical and political efforts.

In summary, reinsurers could strengthen the financial architecture at the global level by mitigating systemic risks; at the micro level, they could employ risk reduction and information policies to have an impact on social crises such as the opioid epidemic. They could thus significantly contribute to economic, political and social resilience.

Executives within their companies have a special role to play in this regard. They are more involved in relevant corporate decision-making, on the one hand; on the other hand, through their direct authority and their social learning, they provide elementary role models for individual and organisational behaviour (Koutroubas & Galanakis, 2022). They also have the option of dedicating personal and professional resources to efforts around social topics. As the environmental-social-governance (ESG)

aspects that political stakeholders expect are relevant to taking corporate decisions into consideration and correlate positively with profit interest in the reinsurance sector, the question arises: To what extent are reinsurance industry executives willing to invest in addiction prevention? In awareness of the opioid crisis in the USA and a similar upturn in opioid prescriptions in Germany (Glaeske, Ernst & Höfel, 2022), but also against the backdrop of high drug-related follow-up costs to the economy as a result of alcohol and tobacco consumption – which the German Cancer Research Center estimates at approx. EUR 140 billion annually (Schaller et al. 2022; Schaller et al. 2020), reinsurers are aware of the issues that surround drug use.

As the production and consumption of addictive substances correlates with enormous environmental, social and political harm (UNODC, 2022) and an increased rate of drug deaths is observable in populations with elevated consumption of alcohol and nicotine (Rajabi et al. 2019; Morton et al., 2024), the present study considered the extent to which executives in the reinsurance industry feel motivated by their companies to live up to ESG goals, and their willingness personally to invest towards addiction prevention. Mortality as the hardest end point, combined with recently published data on a doubling in the number of drug deaths in Germany over the past decade, confirm that this is an issue of current relevance.

### **Methodology:**

The 18<sup>th</sup> Annual Meeting of the Sponsoring Group Reinsurance was held 4 July 2025 in Niederkassel, Germany. The delegates of the n=82 reinsurance companies that make up this Sponsoring Group convene there every year. In total, these companies account for approx. 80% of the global reinsurance volume. Along with networking, this conference offers current scientific input on industry trends with implications for the future, as documented in this series of publications. Last year's discussions included a lecture on the opioid crisis forecast for Germany (Frischknecht, 2024). Against this backdrop, in 2025 an anonymous, voluntary online survey via LimeSurvey was conducted among those in attendance. All of the study participants received advance notice, orally and in writing, about data protection and the purpose of the study and could take part in the survey only after actively giving their consent by ticking the relevant box.

A first block of questions offered participants 13 items designed to determine how strongly they felt their companies motivated them with respect to the individual factors attributable to the ESG complex (cf. Table 1). The introductory question was: *'How strongly does your company motivate you to consider the following ESG factors in your lifestyle – both professionally and personally?'* Responses were provided on a

four-point Likert scale (1=not motivated at all – 2=not very motivated – 3=rather motivated – 4=very strongly motivated). For purposes of the analysis presented in Table 1, answer options 3&4 were grouped together as 'motivated,' answer options 1&2 as 'does not motivate me.'

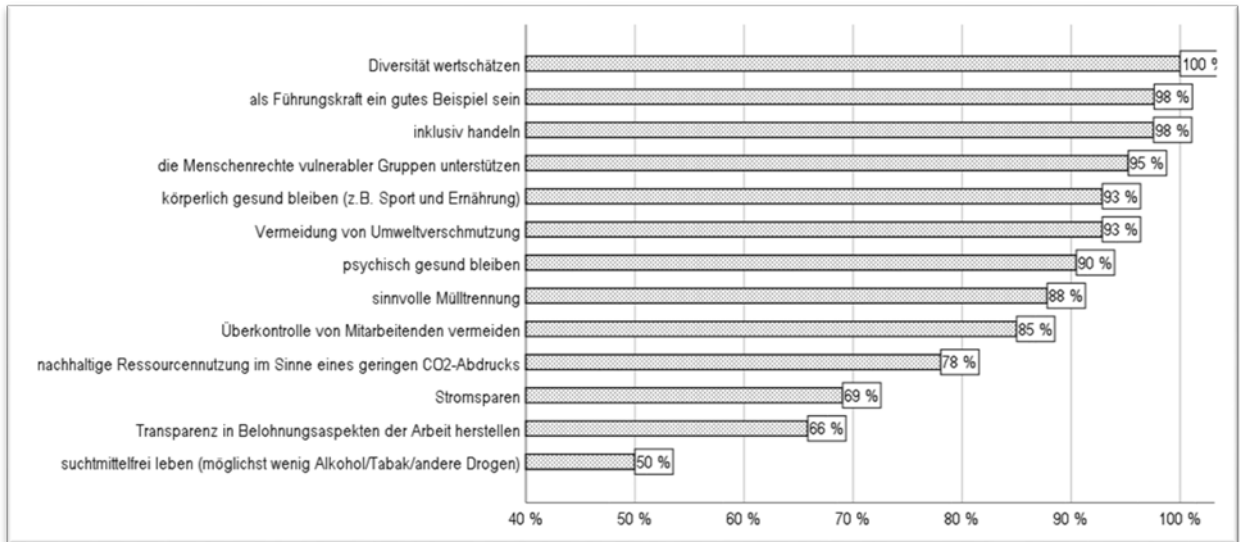
In the second block of questions, participants were asked about their willingness to invest towards preventing drug-related deaths based on five individually distinguishable resources. The question and its introduction was as follows: 'The number of annual drug deaths in Germany has continuously risen, from 1002 in 2013 to 2227 in 2023. What personal investment would you be willing to make if it would help reduce the number of drug deaths by 300 in the coming year? Please indicate what percentage of the following resources at your disposal you would be willing to invest on a one-off basis.' The respective options were: 0=nothing; 1=<0.1%; 2=0.1-0.3%; 3=0.4-0.9%; 4=1-2%; 5=>2%.

Finally, the number of managers for whom participants were responsible in their company, and the gross annual salary, were queried. The analyses presented include only respondents reporting management responsibility for at least 1-4 people.

## **Results:**

Of the n=88 participants on hand at the Annual Meeting, n=59 completed the questionnaire. The sample included in the analysis consisted of N=42 executives, N=11 of whom indicated that they had management responsibility for 1-4 people. An additional N=11 participants reported management responsibility for 5-10 individuals. Another N=17 participants indicated management responsibility for 10-50 people. The management responsibility was even greater for another N=3 respondents. Accordingly, the distribution of annual gross income was as follows: N=4 reported earning an annual salary of between 70,000 and 119,999 euros. N=15 selected the reply of '120,000-200,000,' and another N=17 reported earning more than 200,000 euros per year.

The results of the question block on ESG aspects are presented in Figure 1. This shows that all of the executives participating in the survey felt that their companies motivated them to value diversity, while just 50% of the participants felt motivated to live without addictive substances.



**Figure 1<sup>3</sup>:** Share of executives who feel ‘rather motivated’ or ‘very strongly motivated’ by their company as regards the various ESG factors in their professional and personal lives.

Table 1 presents frequencies for the queried willingness to invest in preventing drug deaths based on individual personal resources. It turns out that across all areas, at least 72.5% of participants would be willing to invest personal resources to prevent drug deaths. With 85.4% willing to invest, the highest-percentage willingness to invest can be seen among those reporting ‘Setting an example by personally refraining from consuming addictive substances.’ This response is closely followed by a willingness to invest personal social commitment (80.5%) and gross salary (80%).

<sup>3</sup> Translation of Figure 1:

- Appreciating diversity
- Providing a good example as an executive
- Promoting inclusion
- Supporting the human rights of vulnerable groups
- Staying physically healthy (e.g. sports and nutrition)
- Preventing pollution
- Staying mentally healthy
- Separating waste in useful ways
- Avoiding micromanagement of employees
- Using resources sustainably through a narrow CO<sub>2</sub> footprint
- Saving electricity
- Creating transparency in the reward aspects of work
- Living free from addictive substances (minimising use of alcohol/tobacco/other drugs)

**Table 1:** Reinsurance sector executives' willingness to invest personally towards preventing drug-related deaths

<b>Investment range</b>	<b>Order of magnitude of willingness to invest</b>					
	<b>&gt;2%</b>	<b>1-2%</b>	<b>0.4-0.9%</b>	<b>0.1-0.3%</b>	<b>&lt;0.1%</b>	<b>'nothing'</b>
<b>of my gross salary</b>	5.0% (n=2)	10.0% (n=4)	12.5% (n=5)	22.5% (n=9)	28.6% (n=12)	20% (n=8)
<b>of my assets</b>	--	5.0% (n=2)	10.0% (n=4)	15% (n=6)	42.5% (n=17)	27.5% (n=11)
<b>to serve as role models by limiting my own consumption of addictive substances</b>	46.3% (n=19)	7.3% (n=3)	4.9% (n=2)	19.5% (n=8)	7.3% (n=3)	14.6% (n=6)
<b>of my social commitment</b> (e.g. investment of time towards addiction prevention in my clubs/charities)	19.5% (n=8)	29.3% (n=12)	4.9% (n=2)	17.1% (n=7)	9.8% (n=4)	19.5% (n=8)
<b>of my influence on political stakeholders</b>	23.8% (n=10)	16.7% (n=7)	9.5% (n=4)	15.0% (n=6)	7.5% (n=3)	25.0% (n=10)

Survey participants had been queried about their gross salary amounts, the lower limits of the value ranges presented (with '<0.1%' substituted with '0.1%') were multiplied individually by these amounts as part of a conservative exploratory analysis. The values in which this multiplication resulted suggest an average minimum willingness per participant to invest EUR 459.64 (standard deviation=565.2;

data base: n=28), meaning a total investment willingness of EUR 12,870 as a lower limit based on the sample of survey participants.

## **Discussion**

This study is the first to consider the perceived motivation preparedness on the part of reinsurance industry executives, inspired by their companies, to take personal, ESG-compliant actions; the focus of this study is on the willingness to invest to prevent deaths associated with drug consumption. The results indicate, on the one hand, that social factors – such as ‘valuing diversity,’ ‘acting inclusively’ and ‘providing a good role model as an executive’ – are already successfully promoted by firms in the reinsurance sector. On the other hand, the more environmental factors – including ‘sustainable use of resources through a low CO2 footprint,’ ‘saving electricity’ and ‘creating transparency in rewards’ – are still in need of improvement. The more specific question in this context, addressing ‘life free from addictive substances,’ reflects the assumptions seen in other work contexts and in the population at large: that the effort to curb the use of addictive substances is not the mission of higher authorities but a personal lifestyle choice instead. This is a questionable stance, given the enormous health costs of alcohol and tobacco consumption, which not only include personal suffering and the suffering of family members but also lead to massive economic costs as a result of early retirement and illness-related staff shortages (Effertz, 2019; Manthey & Kilian, 2025). In light of this, executives in reinsurance might consider promoting social engagement through corporate volunteering programmes. The option of employee engagement in drug prevention during working hours can offer a low-threshold solution to help raise awareness of the issue and present the reinsurer as a socially responsible enterprise. There are already health-oriented leadership interventions (Pischel, Felfe & Krick, 2025) in existence that offer modern, evaluation-tested team-development initiatives aimed at workplace-based health promotion. As in other social groups, the role model that executives fulfil for employees must be underscored within companies as well. There are multiple studies, for example, that show that self-care on the part of executives leads to improved employee health behaviour (Krick & Felfe, 2022). Nicotine and alcohol, together with low levels of exercise and unhealthy eating habits, rank among the leading causes of preventable disease in Germany – particularly in male-dominated industries. Consequently, executives would do well to be particularly well-informed and sensitised to issues of addiction (Berglund et al. 2025; WHO, 2024). It also warrants pointing out that corporate strategies and standards for executive roles appear to be important elements of the effort to avoid an illegitimate abuse of power due to neglect of the duty of care. Still, any limits placed on consumption would need to be accompanied by clear and effective offers of support for those already affected by addiction, in order not to amplify the conditions that

trigger and maintain the use of addictive substances by this vulnerable group of individuals who are already faced with the risk of exclusion.

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