BAI REPRESENTING ALTERNATIVE INVESTMENTS

# Insurance-Linked Securities: A Guide to ILS and Cat Bonds with Focus on Germany

# Executive Summary – DE:

*Faktoren wie der Klimawandel, regulatorische Anforderungen und die Inflation der vergangenen Jahre sorgen dafür, dass der Kapitalbedarf des Versicherungssektors steigt. Ein Transfer von Schadensrisiken auf den Kapitalmarkt mittels Versicherungsverbriefungen (Insurance-Linked Securities - ILS), insbesondere ihre bekannteste und liquideste Form, Katastrophenanleihen (Cat Bonds) kann dazu beitragen große und häufigerer Schadensereignisse weiterhin abzusichern und leistet somit einen* ***Beitrag zur volkswirtschaftlichen Stabilität****. ILS und Cat Bonds fungieren dabei als* ***ergänzendes Instrument zur traditionellen Rückversicherung****.*

*Der Cat-Bond-Markt verzeichnete in den vergangenen beiden Jahrzehnten ein* ***stetiges Wachstum, was zunehmendes Interesse institutioneller Investoren*** *und die wachsende Nachfrage nach Lösungen für Risikotransfer widerspiegelt.*

*Trotz dessen stellen ILS und Cat Bonds noch immer* ***weniger bekannte alternative Subassetklassen*** *dar. Wir geben daher eine* ***theoretische Einführung*** *in ILS und konzentrieren uns dabei auf ihre häufigste Form Cat Bonds. Hierbei wird ein Überblick* ***zur historischen Entwicklung der Subassetklasse, zu theoretischen Definitionen, rechtlichen Struktur und Ausgestaltung*** *gegeben.*

*Auf Grundlage von* ***Interviews mit 12 Branchenexperten****, ergänzenden Gesprächen mit Investoren und einer* ***Analyse von Marktdaten****, beleuchten wir das aktuelle Marktumfeld von Cat Bonds. Hierbei unterscheiden wir zwischen der* ***Nachfrageseite des Marktes aus Investorenperspektive*** *und der Angebotsseite aus Emittentenperspektive.*

***Nachfrageseite: Welche Treiber machen ILS-Investments attraktiv, welche Risken bestehen, und welche Hemmnisse gibt es speziell in Deutschland?***

*Insurance-Linked Securities, insbesondere Cat Bonds, bieten durch ihre niedrige Korrelation mit traditionellen und anderen alternativen Assetklassen und die Generierung attraktiver alternativer Risikoprämien, eine wertvolle Diversifikationsmöglichkeit im institutionellen Portfolio. Ihre Attraktivität basiert auf ihrer wirtschaftlichen Erklärbarkeit und geringer Korrelation mit klassischen Risikoprämien. Eine vergleichsweise hohe Sharpe Ratio lässt sich durch, im Vergleich zu anderen Assetklassen, unterschiedliche Werttreiber und Risikofaktoren, sowie einer hohen Resilienz in Finanzmarktkrisen begründen.*

*Eine* ***Analyse des Einflusses von Zins und Inflation*** *zeigt, dass Cat Bonds aufgrund ihrer weitgehenden Entkopplung vom Kapitalmarkt nur geringe Zinsrisiken aufweisen, jedoch aufgrund der hinterlegten Treuhandinvestitionen von steigenden Zinssätzen profitieren. Zudem führen höhere Versicherungsprämien, die durch Inflation und eine erhöhte Nachfrage nach Deckung getrieben werden, zu attraktiveren Renditen für Investoren. Inflation stellt jedoch auch eine Herausforderung dar, da Werte und Kapitalanforderungen steigen, und steigende Kosten präzise in die Preisgestaltung einfließen müssen.*

*Cat Bonds tragen dazu bei, die* ***finanziellen Auswirkungen von Naturkatastrophen*** *und des* ***Klimawandels abzumildern****. Sie werden von Marktteilnehmern daher überwiegend als ESG-positive Anlagevehikel betrachtet, und Cat Bonds-Fonds zumeist unter Artikel 8 SFDR klassifiziert. Allerdings wirken sich dieselben klimabedingten Ereignisse, deren finanzielle Folgen Cat Bonds abfedern sollen, auch auf ihr Risiko-Ertrags-Profil aus, da versicherte Risiken wie Hurrikane und Stürme potenziell von den Auswirkungen des Klimawandels beeinflusst werden. Wir diskutieren daher die Frage, wie sich der Klimawandel auf Cat Bonds auswirkt. Kurze Laufzeiten von Cat Bonds ermöglichen eine schnelle Anpassung an sich stetig verändernde Risiken, was die Folgen begrenzt. Regelmäßig aktualisierte Katastrophenmodelle helfen bei der Anpassung an diese Veränderungen und gewährleisten eine genaue Risikobewertung. Der Klimawandel wird teilweise als Risiko, teilweise jedoch auch als Chance für den ILS-Markt betrachtet, da die Nachfrage nach Rückversicherung steigt, und die Branche in der Lage ist, sich anzupassen. Weiter begrenzt die Konzentration auf Großereignisse die Risikoexposition von Cat Bonds.*

*Während international die Verbreitung von Cat Bonds in den Portfolios von institutionellen Investoren zunimmt, berichten Marktteilnehmer, dass sie* ***in Deutschland*** *tendenziell* ***stagniert****. Verantwortlich hierfür sind* ***mangelnde***

***regulatorische Klarheit*** *und Auslegungen des sogenannten* ***Spartentrennungsprinzips****, was Versicherer davon abhält in ILS zu investieren.*

*Zunehmende Standardisierung der Dokumentation und der Risikomodelle und eine* ***an die Marktbedingungen angepasste Auslegung des Investorenaufsichtsrechts*** *könnten die Investitionsbedingungen für ILS verbessern. Hiermit könnte ein Beitrag zur Steigerung der Resilienz des Versicherungsmarktes und zur Abfederung der Folgen des Klimawandels geleistet werden.*

***Angebotsseite: Welche Faktoren beeinflussen Cat Bond Emissionen und welche Risiken werden gehandelt?***

*Für Versicherer weist der Rückversicherungsmarkt aktuell, insbesondere in den USA, erschwerte Konditionen und ein begrenztes Angebot auf, was die Attraktivität von Risikotransfers über Cat Bonds steigert. In Europa erfolgen Emissionen weniger aus Notwendigkeit, sondern vielmehr um Cat Bonds, angesichts, regulatorischer Entwicklungen und steigenden Klima- und Inflationsrisiken, als mögliche Alternative zu testen.*

*Der Cat Bond Markt ist stark auf sogenannte Peak Perils, sehr große Katastrophen wie Erdbeben und Hurricanes, und hauptsächlich auf Nordamerika konzentriert. Dies bringt die Vorteile guter Modellierbarkeit und attraktiver Bepreisung mit sich. Nichtsdestotrotz sind die gehandelten Risiken vielfältig, so dass aus Investorenperspektive Diversifikation möglich ist. Auch nahm die Varianz an Risikotypen und geographischen Standorten von Versicherungsrisiken in letzter Zeit weiter zu und europäische und deutsche Risiken werden zunehmend über Cat Bonds abgesichert.*

# Executive Summary – EN:

*Factors such as climate change, regulatory requirements, and recent inflation increase the need for insurance capital. Transferring loss risks to the capital market through Insurance-Linked Securities (ILS), particularly their best-known and most liquid form, catastrophe bonds, can help cover large and more frequent loss events and thus* ***contribute to economic stability****. ILS and Cat Bonds act as* ***complementary instruments to traditional reinsurance****.*

*The Cat Bond market has* ***grown steadily*** *over the past two decades, reflecting* ***increasing interest from institutional investors*** *and growing demand for risk transfer solutions.*

*Despite this, ILS and Cat Bonds are* ***still lesser-known alternative sub-asset classes****. We, therefore, provide a* ***theoretical introduction*** *to ILS, focusing on their most common form, Cat Bonds. This includes an overview of the sub-asset class's* ***historical development, theoretical definitions, legal structure, and design****.*

*Based on interviews* ***with 12 industry experts****, additional discussions with investors, and* ***market data analysis****, we shed light on the current market environment for Cat Bonds. Here we distinguish between the demand side of the market from an investor's perspective and the supply side from an issuer's perspective.*

***Demand side: What drivers make ILS investments attractive, what risks exist, and what obstacles exist, especially in Germany?***

*Insurance-Linked Securities, especially Cat Bonds, offer a valuable diversification opportunity in institutional portfolios due to their* ***low correlation with traditional and other alternative asset classes*** *and the generation of attractive alternative risk premiums. Their attractiveness is based on economic explainability and low correlation with traditional risk premiums. Different value drivers, risk factors, and a high level of resilience in financial market crises can explain a relatively high Sharpe ratio compared to other asset classes.*

*An* ***analysis of the influence of interest rates and inflation*** *shows that Cat Bonds have only low interest rate risks due to their extensive decoupling from the capital market but benefit from rising interest rates due to the underlying trust investments. In addition, higher insurance premiums driven by inflation and increased demand for cover lead to more attractive returns for investors. However, inflation also presents a challenge as values and capital requirements increase, and rising costs must be accurately factored into pricing.*

*Cat Bonds help* ***mitigate the financial impact of natural disasters*** *and* ***the financial impact of climate change****. Therefore, market participants predominantly view them as ESG-positive investment vehicles, and Cat Bond funds are mainly classified under Article 8 SFDR. However, the same climate-related events whose impact Cat Bonds mitigate also affect their risk-return profile, as insured risks, such as hurricanes and windstorms, are potentially affected by the consequences of climate change. We, therefore, discuss the impact of climate change on Cat Bonds. The short maturities of Cat Bonds allow them to adapt quickly to constantly changing risks, which limits the consequences. Regularly updated catastrophe models help to adapt to these changes and ensure accurate risk assessment. Climate change is seen partly as a risk and an opportunity for the ILS market as demand for reinsurance increases and the industry can adapt. Furthermore, the focus on major events limits the risk exposure of Cat Bonds.*

*While the spread of Cat Bonds in institutional investors' portfolios is increasing internationally, market participants report that it is tending to s****tagnate in Germany****. This is due to a lack of* ***regulatory clarity*** *and interpretations of the so-called "Spartentrennungsprinzip" (line of business separation principle), discouraging insurers from investing in ILS.*

*Increasing the standardization of documentation and risk models and interpreting investor supervision laws adapted to market conditions could improve the investment conditions for ILS. This could help increase the insurance market's resilience and mitigate the consequences of climate change.*

***Supply-side: What factors influence Cat Bond issues, and what risks are traded?***

*For insurers, the **reinsurance market** currently has **difficult conditions** and limited supply, particularly in the **US**, which makes risk transfer via Cat Bonds more attractive. Cat Bonds are being issued less out of necessity in Europe than to **test** them **as a possible alternative** given regulatory developments and rising climate and inflation risks.*

*The Cat Bond market focuses strongly on so-called **peak perils**, very large catastrophes such as **earthquakes and hurricanes**, and mainly on **North America**. This brings with it the advantages of good modelability and attractive pricing. Despite this, the risks traded are so diverse that **diversification is possible from an investor's perspective**. The variance in risk types and geographical locations of insurance risks has also increased recently, and **European and German risks are also increasingly being hedged via Cat Bonds**.*

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# 1. Introduction

In recent years, people in Germany have also become increasingly aware of extreme weather events. The disaster in the Ahr valley in the summer of 2021 is just the tip of the iceberg. Numerous events have occurred in 2024, such as the extreme flooding in southern Germany in June.

In 2023, storms, hail, and heavy rain caused insured losses of € 5.7 bn in Germany. This was € 1.7 bn more than in the previous year. In 2021, the year of the disaster in the Ahr Valley, the previous record of € 13.9 bn was broken. Climate change is one reason for the upward trend in the volume of losses due to extreme weather events. However, higher values of insured goods due to inflation, increasing urban sprawl, surface sealing, and, associated with this, a lack of flood protection can also play a role here.[1]

Germany is no exception to the global trend towards ever greater damage caused by natural disasters and higher insurance claims. In 2024, natural disasters caused global losses of € 320 bn, of which € 140 bn were insured. 97% of all losses are attributable to weather-related disasters. It was, therefore, the year with the third-highest claims total since 1980 and, even adjusted for inflation, was well above the average figures for the last ten years. The majority of losses (approx. 55%) were attributable to so-called non-peak risks such as storms, forest fires, and floods. The effects of climate change are evident here. Last year, for example, a temperature record was set with average temperatures of 1.6°C above pre-industrial levels. Studies show that climate change also leads to a higher intensity of peak perils such as hurricanes Helene and Milton.[2]

The increasing frequency of loss events is triggering calls for compulsory insurance in Germany to prevent the public from having to pay for insured losses. Increasing loss volumes also present growing challenges for insurers. The insurance principle typically works in such a way that policyholders pay into an insurance policy, and, in the event of a claim, the insurance from the payments covers the claim. This so-called underwriting income represents one of two types of income for insurance companies, in addition to investment income.[3] Insurance companies, in turn, secure reinsurance for very large insurance risks that exceed premium income. However, the higher claims pressure has led to a massive increase in the cost of reinsurance contracts in recent years, well above the inflation rate. According to the consultancy Guy Carpenter, the cost of reinsurance coverage in the US has risen by 116% since 2017.

Insurance companies are subject to strict capital adequacy requirements for claims under the Solvency Regulation. Increasing loss volumes can lead to increased pressure to pass on risks with a lower probability of loss to reinsurers. However, rising loss volumes combined with higher reinsurance costs may mean that certain risks can no longer be insured in an economically viable manner.[4]

These factors can lead to the discussion of alternatives, such as transferring insurance risks to the capital market through so-called Insurance-Linked Securities. Cat Bonds, catastrophe bonds issued by municipalities, organizations such as the World Bank, insurance companies, and reinsurers are used as instruments here. Institutional investors invest in a Cat Bond and receive an attractive return. In the event of a loss, they cover the loss.

*1 Cf. Handelsblatt 23.04.2024, Handelsblatt 27.05.2024, Handelsblatt 06.06.2024.*
*2 MunichRe 2025.*
*3 BAI Insurance Companies 2024*
*4 Cf. Handelsblatt 23.04.2024, Handelsblatt 27.05.2024, Handelsblatt 06.06.2024.*

Due to uncorrelated returns with other asset classes, they offer diversification for institutional investors. However, there are still massive regulatory hurdles and uncertainties for investments, particularly in Germany.

In this publication, we provide an introduction to ILS, focusing on Cat Bonds.

We show how Cat Bonds emerged as an asset class and provide an overview of the historical performance of ILS and Cat Bonds. Based on the voices of industry experts, we characterize the current market environment with a focus on Germany.

Furthermore, we discuss specific regulatory obstacles and uncertainties regarding investments in ILS and Cat Bonds in Germany and discuss the environment for Cat Bond emissions.

# 2. What are ILS and Catbonds

## 2.1 How Do Insurance and Reinsurance Markets Work?

To understand ILS and Cat Bonds theoretically, we first need to examine how insurance and reinsurance markets work. From this, we can deduce Cat Bonds' role in these markets.

Insurance markets facilitate risk transfer from individuals, businesses, or entities to specialized risk-bearing institutions. This process generates positive societal welfare effects by mitigating the economic impact of significant loss events. At its core, the mechanism involves at least two key parties. The party transferring the risk is known as the "cedent." It shifts its risk exposure to a willing counterparty in exchange for a premium payment.

A primary insurer, such as a property insurance company, covers multiple individual risks, like storm-caused property damage. This insurer estimates potential losses using statistical methods. The business model works in such a way that it aims to collect more premiums than it pays out in claims, thereby generating profit. This model works best for small, well-understood, and uncorrelated risks, allowing for adequate diversification within the insurer's portfolio.

However, large-scale events, such as natural disasters, can trigger numerous claims simultaneously, leading to "concentration risk" for primary insurers. This clustering of losses may strain liquidity and, in extreme cases, lead to insolvency.

To address this, the global reinsurance market steps in. Reinsurers are large, specialized companies with the capacity to spread risks globally. By diversifying across regions and types of risk, they can absorb localized catastrophic events and provide stability to the broader insurance system.[5]

However, very large loss events, such as natural disasters like hurricanes, can also limit the available reinsurance capital or make it too expensive.

## 2.2 Why did Cat Bond emerge historically?

At this point, a digression into the history of the catastrophe bond market helps to understand how major natural disasters led to the emergence of this (sub-) asset class and the current focus of the Cat Bond market in the USA on very large perils, so-called "peak perils."

Hurricane Andrew was the pivotal moment that led to the birth of Cat Bonds. This catastrophic event, which struck Florida and the Gulf Coast in 1992, was the costliest hurricane in US history, causing a staggering $27 bn in damages. The severe challenges it posed to the property and casualty insurance industry in the early 1990s resulted in the bankruptcy of eight insurance companies and pushed many others to the brink of insolvency.

The financial strain caused by Hurricane Andrew was significant, compelling insurers to reevaluate their risk exposure, particularly in coastal areas where the potential for substantial losses due to peak perils became increasingly evident.

### Peak perils

"Peak perils" are catastrophic events that pose an exceptionally high risk due to their potential to cause extreme financial losses. These events, such as major hurricanes, earthquakes, or other large-scale natural disasters, are considered "peak" because they represent the most significant and concentrated risks in an insurer's or reinsurer's portfolio.

*5 Steiger, Florian (2022, p.27), Versicherungen für den Klimawandel – Investieren in Katastrophenanleihen.*

When peak perils materialize, they can expose individual market players, such as insurance companies or reinsurers, to substantial financial strain. This is because these events can trigger an overwhelming number of claims, which may exceed the reserves or risk management strategies that a company has in place. The impact of peak perils can be particularly severe for companies with high exposure in specific geographic areas or specializing in covering types of risks.

BaFin provided information on „Risks in Focus 2025", which explicitly presented physical risks and their potential consequences for banks and insurance companies in the area of sustainability[6]

For example, if an insurance company has underwritten many policies in a hurricane-prone region, a major hurricane could surge claims, potentially exhausting the company's reserves and leading to significant financial losses or even insolvency. This risk is compounded when multiple companies are heavily exposed to the same type of peak peril, as with Hurricane Andrew in 1992.

In the aftermath of Hurricane Andrew, insurers raised premiums for homeowner insurance in high-risk coastal regions to account for the possibility of future catastrophic events. However, the need for increased insurance capacity also prompted insurers to explore alternative ways to manage their risk. This is where the concept of catastrophe bonds was born. Cat Bonds offered a novel solution by allowing insurers to transfer some disaster-related risk to investors.

Cat Bonds work by having insurers or reinsurers issue bonds to investors, who, in return, receive periodic interest payments. These bonds are tied to catastrophic events like hurricanes or earthquakes. If the specified event occurs and causes significant damage, the bond's principal is used to cover the insurance claims, effectively transferring the risk from the insurer to the investors. If the event does not occur, investors receive their full principal back at the bond's maturity.

The first Cat Bonds were issued in 1997, providing a new mechanism for insurers to access capital from the broader financial markets. Since their inception, the market for Cat Bonds has grown significantly.[7]

## 2.3 Definition of ILS and Cat Bonds

The transfer of reinsurance risks to the capital market is facilitated through the so-called alternative reinsurance capital provided by the global capital market. This capital is supplied via investment vehicles whose profitability depends on the non-occurrence of certain loss events. The overarching term for these marketable instruments is Insurance-Linked Securities (ILS).

The most established subcategory of ILS is catastrophe bonds (Cat Bonds), which are the primary focus of this publication, though other ILS categories are also briefly discussed. The second key subcategory of ILS are private ILS with their subcategory "Collateralized Reinsurance" instruments.

Cat Bonds and Collateralized Reinsurance instruments differ in the following ways:

**Legal structure and tradability:**

- Cat Bonds are structured as bonds, which allows them to be traded on the secondary market and identified using ISIN (International Security Identification Number) or CUSIP (Committee on Uniform Security Identification Procedures) security identification numbers.

- Collateralized Reinsurance instruments are negotiated bilaterally, often lack standardization, and are not easily transferable, resulting in the absence of a liquid secondary market.

- Cat Bonds are more suitable for beginner ILS investors.

6 BaFin.
7 Chicago Fed Letter, No. 405, 2018, The London School of Economics.

**Credit risk:**

- In reinsurance contracts, there is a theoretical risk that claims may not be covered if the reinsurer becomes insolvent.

From the reinsurers' perspective, ILS represent both an opportunity and a risk. On the one hand, they offer the ability to transfer risks from their balance sheets to the capital market. On the other hand, the availability of ILS as an alternative to traditional reinsurance puts downward pressure on prices, altering price dynamics to the disadvantage of traditional reinsurers.[8]

## 2.4 Legal Structure of Cat Bonds

Cat Bonds are tradable securities that allow capital market investors, such as investment funds, to trade them like liquid corporate or government bonds, thanks to unique security identification numbers (ISIN or CUSIP). The transformation of a reinsurance contract into a tradable security follows a multi-step process.

First, a **sponsor** (typically an insurer or reinsurer) enters into a reinsurance agreement with a **Special Purpose Vehicle (SPV)**, a legal entity created specifically for this transaction. The contract defines key details, such as the type of insurance coverage, the risks being insured, terms and conditions, insurance premiums, and the maximum loss limit to be covered.

Next, the SPV issues a so-called Cat Bond with a nominal value that matches the predefined loss limit. Investors purchase the bond, providing the SPV with liquidity equal to the bond's nominal value. This liquidity is deposited into a **trust account** and invested in low-risk, short-term collateral, such as US Treasury bills or supranational bonds, to minimize credit risk.

During the bond's term, investors receive periodic **coupon payments**, consisting of the insurance premium paid by the sponsor and returns from the collateral investment. At the end of the coverage period, investors receive their principal back, minus any losses from insured events that triggered payments under the reinsurance agreement.

A key advantage of Cat Bonds is their **insulation from the sponsor's insolvency**. Since the liquidity is held in a trust account, the funds remain secure even if the insurer defaults. This structure creates a clear separation from financial markets, with the only direct market exposure coming from the collateral investments. As a result, the main risk for investors is the occurrence of a catastrophic event that activates the payout trigger.[9]

The SPV is the counterparty to the cedent (insurance sponsor) in a reinsurance contract. The contract outlines the insurance coverage, type of insured risks, terms, premiums, and the maximum insured loss.

An important consideration in structuring Cat Bonds is the location of the SPV. Different jurisdictions may offer regulatory, tax, or legal advantages, raising the question of where the SPV should be established.

Most SPVs for Cat Bonds are established in Bermuda, the Cayman Islands, and Ireland due to their advantageous regulatory, tax, and operational environments.

These jurisdictions provide flexible and efficient regulatory frameworks, allowing SPVs to be set up and managed with minimal bureaucracy. These locations offer favorable tax conditions or full tax exemptions, significantly reducing the overall cost of issuing Cat Bonds.

Bermuda and the Cayman Islands are recognized as global leaders in reinsurance, while Ireland's EU membership makes it particularly attractive to European investors seeking regulatory alignment within the European market.

*8 Steiger 2022, p.25-27.*
*9 Steiger, Florian (2024, p.37-41), The Essential Guide on Investing in Cat Bonds.*

*Peter Miller, Senior Vice President, Neuberger Berman*

**Peter Miller, Senior Vice President, Neuberger Berman**, highlights the complexity of ILS and the additional challenge of regulatory and tax concerns. Specifically, the perception of investing through jurisdictions like Bermuda and the Cayman Islands can deter European investors despite these unjustified concerns, as he argues.

*Thorsten Fromhold, Chief Group Reinsurance Officer, Allianz*

The fact that Bermuda should not be viewed negatively as a location for the SVP of a Cat Bond from a European or German perspective is supported by the plans for a Cat Bond of a German insurer. **Thorsten Fromhold, Chief Group Reinsurance Officer, Allianz,** explains, explains that when issuing a Cat Bond, his company considered various options for the domicile of the SPV. While Bermuda was an option, they ultimately chose Dublin, which operates within the Solvency II framework, mainly because it was considered a safer choice, especially regarding recognition by regulators like BaFin. Although Bermuda is generally considered Solvency II equivalent, it would have required an additional approval step with BaFin, which they preferred to avoid. However, he notes that the costs and offers between Bermuda and Dublin are similar, but Bermuda typically processes approvals faster due to more experience.

*Ulrich Müller, Reinsurance Manager and Head of Department, Versicherungskammer Bayern*

**Ulrich Müller, Reinsurance Manager and Head of Department, Versicherungskammer Bayern**, explains that they chose to establish their SPV in Ireland because it falls within the European Union and adheres to European regulatory standards. While other locations like Bermuda were options, they prioritized staying within the EU for compliance and regulatory alignment.

## 2.5 Trigger

The risk-return profile of Cat Bonds is primarily determined by the specific coverage conditions for insured loss events, which are defined by the so-called "trigger mechanism." The trigger type specifies the information or data used to determine whether a claim under the Cat Bond is activated and payouts to the insurer are made.

Three types of trigger mechanisms exist: **indemnity trigger, parametric trigger, and index-linked trigger.**

One common trigger type is the **indemnity trigger**, where the payout is based on the actual insured losses incurred by the insurer. If the insurer's losses from a disaster exceed a predefined threshold, known as the **attachment point**, a partial payout is triggered, resulting in a partial loss for the investor. If the losses reach the higher **exhaustion point**, a full payout of the bond's principal occurs, leading to a total loss for the investor. This structure allows insurers to precisely tailor their risk coverage to their specific needs. However, for investors, indemnity triggers are often perceived as less transparent since the size of the insurer's losses, and thus the potential payout cannot be directly inferred from the observable effects of a natural disaster.

Another widely used trigger type is the **parametric trigger**, which bases payouts on measurable physical parameters of the natural event. For instance, a Cat Bond might be triggered when the magnitude of an earthquake or the minimum central pressure of a hurricane surpasses a predefined threshold. Just like indemnity triggers, partial and complete payout thresholds are established for parametric triggers. From an investor's perspective, parametric triggers are seen as more transparent and predictable since the occurrence and intensity of natural disasters can be objectively measured and tracked in real-time using meteorological or geological data.

For the sponsor (cedent), however, parametric triggers have a potential drawback. The actual financial damage caused by a natural disaster does not always correlate perfectly with the measured intensity of the event. For instance, an earthquake of a specific magnitude might cause greater-than-expected insured losses, which would not be fully covered if the bond's trigger is based solely on the magnitude. This misalignment between physical parameters and actual financial loss is known as basis risk and can expose the insurer to residual losses.

The **index-linked trigger** mechanism for Cat Bonds relies on the total amount of insured losses incurred across the **entire insurance industry** due to a natural disaster. If the total insured losses from a specific event surpass a predefined threshold, a payout is triggered. Like other trigger types, specific thresholds are established for **partial and full payouts**, determining the extent of the investor's loss.

This trigger type is particularly attractive to **large, globally active reinsurers**, as their risk exposure often closely aligns with the overall market. For such reinsurers, the correlation between their own losses and the industry-wide index is relatively high, making it an effective way to hedge their exposure.

However, for **primary insurers**, this alignment is less reliable. Their risk exposure often differs significantly from the market average, resulting in a **mismatch between actual losses and coverage**. This discrepancy, known as **basis risk**, occurs when an insurer experiences higher-than-expected losses that are not fully covered because the industry-wide loss threshold has not been met. As a result, index-linked triggers are generally less appealing to primary insurers than reinsurers.

Another important distinction in the **trigger mechanism** of Cat Bonds is whether payouts are linked to a **single loss event** or **multiple loss events** within a specified period.

In the case of a **single-event trigger**, the payout is activated if a single natural disaster, such as a hurricane or earthquake, meets the predefined trigger conditions (e.g., surpassing a magnitude threshold or exceeding an insured loss amount). This approach is more straightforward and easier to monitor, focusing on one specific event.

By contrast, a **multiple-event trigger** aggregates the impact of several smaller disasters that occur within a defined time frame, such as a calendar year. If the combined losses or event parameters exceed a certain threshold, the payout is triggered. This approach can provide broader protection but is more complex to administer, as multiple events must be tracked and aggregated.[10]

**Catastrophe bonds & ILS outstanding by trigger type**

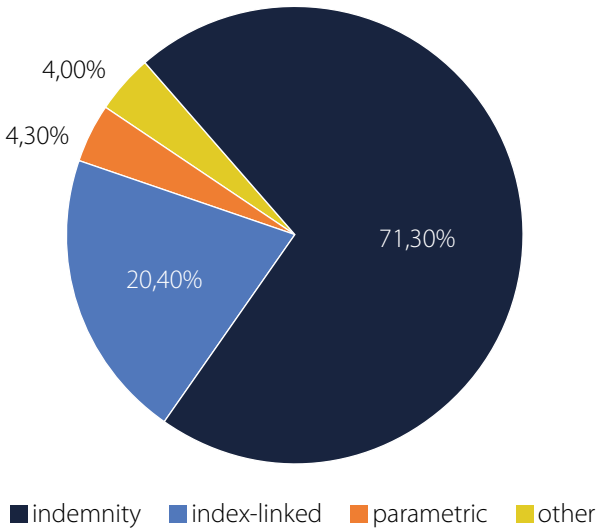



*Figure 1: Market breakdown of ILS and Cat Bonds by trigger type 2025. Source: Artmis[11]*

*10 Cf. Steiger 2024, p55-71., CAIA, American Academy of Actuaries.*
*11 Artemis*

**Thorsten Fromhold, Allianz**, explains the advantages and disadvantages of using different types of triggers for Catbond issuance. He notes that an "indemnity-based trigger" is generally preferable for the issuer because it covers actual losses, eliminating basis risk (the risk of a mismatch between the bond payout and the issuer's real losses). However, the company opted for an "index-based trigger" for their European storm Catbond for two main reasons:

The company has a large and evenly distributed market share in Europe, so, he argues, an index appropriately reflects their exposure, something they wouldn't rely on in the USA due to their specific portfolio there. However, index-based bonds are quicker and more efficient to issue, as indemnity-based bonds require extensive due diligence, which would be overly complex and time-consuming, especially considering the large number of storm-exposed entities they have in Europe.

Referring to the King Max Cat Bond, **Ulrich Müller, Versicherungskammer Bayern**, explains that they opted for an indemnity trigger for their Cat Bond due to the regional nature of their portfolio, which has a unique loss profile. While an index trigger may work for larger international programs, it wasn't suitable for their more localized operations.

## 2.6 Different types of ILS

*Michael Stahel, Partner, LGT ILS Partners*

**Michael Stahel, Partner, LGT ILS Partners**, outlines the differences between Cat Bonds and private ILS: Cat Bonds and private Insurance-Linked Strategies serve different purposes for insurance companies. Cat Bonds, which are more complex and costly to structure, typically have longer terms (around three years) and involve a significant initial investment for legal, structuring, and risk assessment fees, paid for by the sponsor of the bond, i.e. the insurance company. The structures are, therefore, typically used for larger, more strategic capital protection solutions and involve collaboration with external parties like investment banks and risk assessment consultants.

On the other hand, private ILS contracts (such as Collateralized Reinsurance Instruments - CRI) are more flexible and less expensive, allowing for shorter-term coverage, usually around 12 months. These private contracts are more adaptive to changing conditions and are clearly the preferred route to buy protection for insurance companies due to their lower costs and ease of management.

In terms of market share, the overall ILS market is estimated at around $100 bn, with private ILS making up the larger portion at approximately $60 bn, while Cat Bonds account for about $40 bn.

However, Stahel outlines that the Cat Bond market has seen significant growth in recent years, gaining market share from private ILS (CRI). This shift is driven by a higher demand for protection purchases by insurers on the back of an increased loss activity in recent years, pushing insurers to tap into broader the capital market to obtain the required capacity. And while private ILS offer more flexibility and shorter duration (around 12 months), Cat Bonds provide liquidity through secondary market trading, which private ILS lacks.

Currently, private ILS contracts offer slightly higher returns (5-10% more) due to the current market segmentation, but Cat Bonds offer an attractive entry for new investors.

Life Insurance-Linked Securities (Life ILS) are financial instruments tied to life insurance risks, such as mortality, longevity, or pandemics. These securities are linked to the performance of underlying life insurance policies.

*Nils Ossenbrink, Managing Partner, Products and Distribution, Twelve Capital*

**Nils Ossenbrink, Managing Partner, Products and Distribution, Twelve Capital** emphasizes that life and non-life Insurance-Linked Securities offer different diversification potentials. In the non-life sector, especially concerning natural catastrophe risks like earthquakes and hurricanes, there is significant diversification potential since these risks have little correlation with traditional market trends. In contrast, Life risks are more influenced by interest rate fluctuations, which somewhat reduces their diversification benefits in a traditional portfolio. However, both areas, especially Non-Life, provide substantial diversification opportunities for investors.

*Stephan Ruoff, Co-Head Schroders Capital Private Debt & Credit Alternatives and Chairman Schroders Capital ILS*

According to **Stephan Ruoff, Co-Head Schroders Capital Private Debt & Credit Alternatives and Chairman Schroders Capital ILS**, different types of Insurance-Linked Securities play different roles for investors. The main categories include catastrophe bonds, private transactions, and specialized niche areas such as life insurance ILS and cyber-ILS.

Catastrophe bonds are characterized by higher liquidity and transaction standardization, which makes them easier accessible for investors. This standardization and more frequent liquidity (up to three times per month) allow investors to react more quickly to market changes and manage their portfolios more efficiently.

Private ILS transactions, however, offer less liquidity and are less standardized, making them more sophisticated for investors. However, these instruments can be integrated into funds with quarterly or semi-annual liquidity to meet the needs of long-term investors.

The choice between these types of ILS depends heavily on investors' individual requirements, such as their liquidity preference, return expectations, risk appetite, and long-term portfolio strategy. Investors use Cat Bonds and private ILS according to their specific objectives and the structures that best suit their portfolio construction.

From an investors' perspective Cat Bonds liquidity and the existence of a secondary market are benefits within the ILS-spectrum.

*Dr. Jochen Heubischl, Head of Multi Asset, MEAG MUNICH ERGO Kapitalanlagegesellschaft mbH*

According to **Dr. Jochen Heubischl, Head of Multi Asset, MEAG Munich Ergo Kapitalanlagegesellschaft mbH**, in the ILS segment, they "rely on a selection of actively managed Cat Bond investment funds that invest in a globally diversified portfolio of standardized catastrophe bonds for which a public secondary market exists. An actively managed Cat Bond investment fund has several advantages: In addition to managing the risk in the fund by adjusting the allocation to create additional value by exploiting seasonal effects in the portfolio, through selection to tactically holding liquidity to benefit from market distortions, e.g. when a significant event occurs".

# 3. Market environment for ILS and Cat Bonds: The demand side

In recent years, alternative investments have become increasingly popular in institutional investors' portfolios for different reasons. During the period of low interest rates, illiquid assets substituted bonds to generate predictable income and fulfill obligations on the liabilities side.

In the wake of increased inflation following the COVID-19 pandemic and the subsequent turnaround in interest rates, liquid bonds became more attractive again, and alternatives partially lost their role as a substitute for bonds in portfolios. However, the importance of alternatives in asset allocation continued to increase or remained high, which is why other factors, such as hedging against inflation, came to the fore. Alternative risk premiums, e.g. illiquidity premiums, promise statistically higher returns for alternative asset classes than their liquid counterparts. From an investor's perspective, this is particularly useful in increased inflation phases to achieve real return targets. Due to partly different risk- and performance drivers, diversification is also a constant driver for investing in Alternative Investments.

However, among alternative asset- and sub-asset classes, ILS and Cat Bonds have different risk-return profiles and drivers for institutional investors' investments. Therefore, in the following, we analyze the drivers and obstacles for Cat Bond Investments, their role in LPs' portfolios, and the current market environment.

## 3.1 Drivers for LPs' investments into Cat Bonds

We talked to investors to understand why they consider Cat Bond investments attractive.

According to German investors we talked to, Cat Bonds could generally be considered an attractive addition to Alternative Risk Premia portfolios, for example for pension schemes (German Versorgungswerke). However, several pro- and contra arguments exist from their perspective, which we outline in the following.

Cat Bonds' appeal lies in their alignment with key criteria for alternative risk premia, which include being economically explainable, empirically observable, and uncorrelated with traditional risk premia. Cat Bonds meet all three of these conditions.

The return potential of Cat Bonds is driven by their independence from conventional market risks and the relatively low probability of occurrence for specific natural disaster events. This low correlation with traditional asset classes makes Cat Bonds an effective diversification tool, enhancing the overall risk-return profile of a portfolio.

One key advantage is their ability to achieve a comparatively high Sharpe ratio. Their near-zero correlation with financial market crises allows Cat Bonds to remain relatively stable, even after major catastrophe events. Losses are typically limited, and the market tends to recover quickly due to the so-called spillover effect, which facilitates a rapid return to pre-loss levels.

From a long-term perspective, the risk-adjusted returns of Cat Bonds are expected to exceed those of high-yield (HY) bonds with comparable default risk. This makes them a compelling choice for pension schemes seeking to diversify risk while maintaining competitive returns in a low-interest-rate environment.

However, several concerns about Cat Bond investments were discussed as well.

On the one hand, investments in the asset class inhibit a risk of total loss, which conflicts with the primary objectives of security and profitability required for pension schemes' capital investments.

On the other hand, regulatory frameworks, such as BaFin Circular 3/99 and 08/2017, emphasize the need for

capital guarantees and prohibit negative yields for structured products. Cat Bonds do not fall under any recognized asset category in existing investment regulations, raising further doubts about their suitability.

However, the arguments are partially refuted or weakened by the pension schemes we talked. Pension schemes typically adopt a broadly diversified investment approach to reduce risk. Instead of direct investments, Cat Bonds are accessed through fund structures, which provide diversification and operational efficiency.

When comparing Cat Bonds to other risk-bearing investments, expected loss (EL) serves as a useful benchmark. Over the past 25 years, Cat Bond portfolios have shown an average EL of 2.0%, which aligns with the risk profile of a B+ rated high-yield bond portfolio. The highest observed EL of 3.5% corresponds to the risk of a B-rated bond, further highlighting the manageable nature of Cat Bond risks.

Furthermore, Cat Bond investments are also seen as free from reputational risk, as Cat Bond investors do not profit from natural disasters. Instead, their financial contributions support insurance payouts to affected policyholders when a predefined event occurs. By assuming part of the risk, Cat Bond investors increase the risk-bearing capacity of insurance and reinsurance companies, allowing them to underwrite additional risks. From a broader economic perspective, this strengthens the overall financial resilience of the insurance sector.

This gives rise to a number of relevant factors for Cat Bond investments from an investor's perspective, which we discuss below.

## 3.2 The performance and role for diversification of the ILS and Cat Bonds-asset class

The performance and risk/return structure of Cat Bonds and ILS were described by investors as attractive. We analyze the reasons for this in the following.

The first question is how the performance of ILS and Cat Bonds can be measured and how it has been in the past.

The Swiss Re Cat Bond Total Return Index is the most widely used benchmark for the market performance of Cat Bonds. It tracks the performance, including coupon payments, of all publicly traded Cat Bonds worldwide. Private Cat Bonds or private ILS are not included as no data exists for them. Due to low liquidity, there are no exchange-traded funds or other ways to invest in the index.[12]

The Eurekahedge ILS Advisors Index is another potential market benchmark that differs in structure and focus from the Swiss Re Cat Bond Index. The Eurekahedge Index is equally weighted, giving all included funds the same influence, regardless of size. In contrast, the Swiss Re Index is market-value weighted, meaning larger Cat Bonds have a greater impact on performance. The Eurekahedge Index covers around 27 ILS funds and reflects a variety of strategies within the ILS space. At the same time, the Swiss Re Index focuses exclusively on Cat Bonds, excluding life and health bonds. Another key difference is in cost considerations. The Eurekahedge Index is net of fees, while the Swiss Re Index is shown gross of fees and transaction costs. The Eurekahedge Index provides data since 2006, while the Swiss Re Index dates back to 2002.[13]

The Swiss Re Cat Bond Total Return Index has achieved an annulled return of 7.1% since its inception on 30 June 2004. This means that Cat Bonds are not that far from stock investments regarding the expected return, as the MSCI World in USD achieved a return of 9.56% over the same period. However, with an annual volatility of 13.77%, the equity benchmark fluctuates significantly more than the Cat Bond index at 3.79%. The better return in relation to risk in the past is reflected in the Sharpe ratio of the Cat Bond Index, which is 1.87, compared to 0.69 for the MSCI World Index. Over the last twenty years, the volatility of Cat Bonds has, therefore, been significantly lower than that of liquid bonds, which recorded 6.08%. The broader-based index for the ILS mar-

*12 SwissRe, Cf. Steiger 2024, p.98.*
*13 Man Institute, Eurekahedge.*

ket, the Eurekahedge ILS Advisers, has achieved a lower annual return of 4.26% since its launch in 2006 than the Swiss Re Index, which focuses on Cat Bonds and has a slightly lower volatility of 3.48%.[14] The catastrophe bond market is more liquid and possibly more efficient than the market tracked by the broader Eurokahedge ILS Advisers Index. For the annual return of all four benchmarks, cf. Figure 3.

However, the technical effect that the Swiss Re Index is not adjusted for fees, unlike the Eurekahedge Index, also contributes to the discrepancy between the two indices.

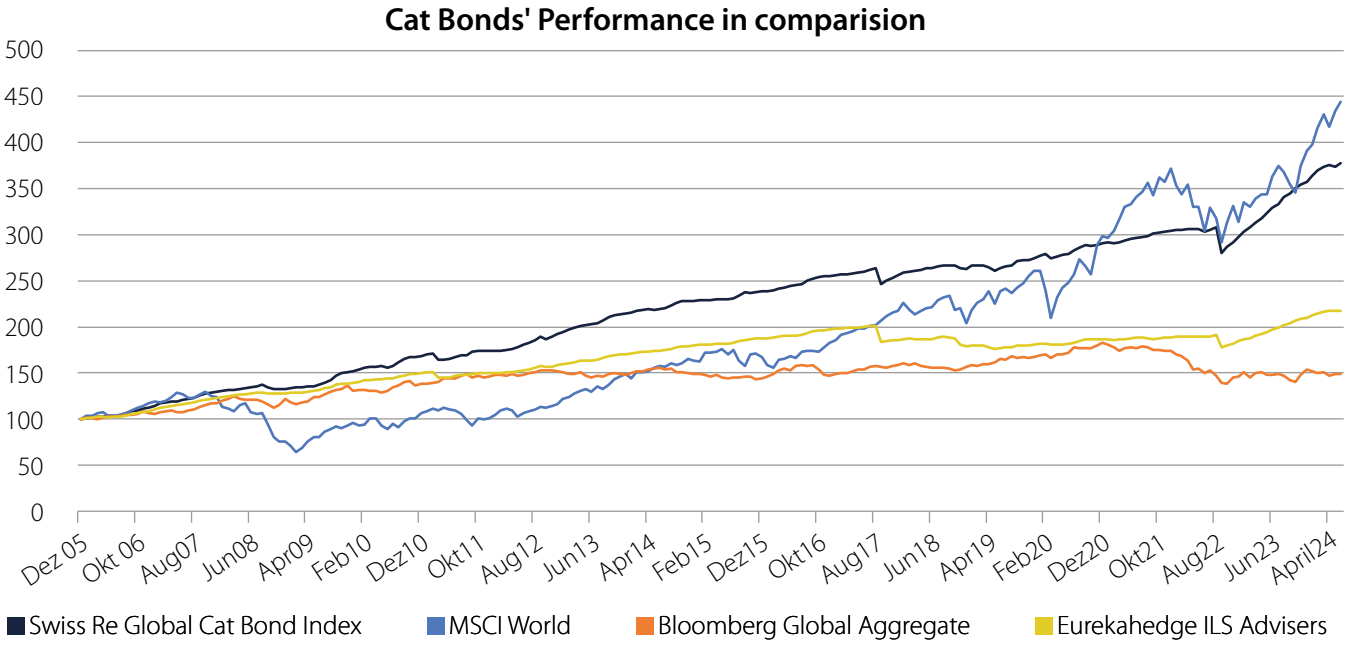



*Figure 2: Source: Twelve Capital, Bloomberg, June 30, 2024.*

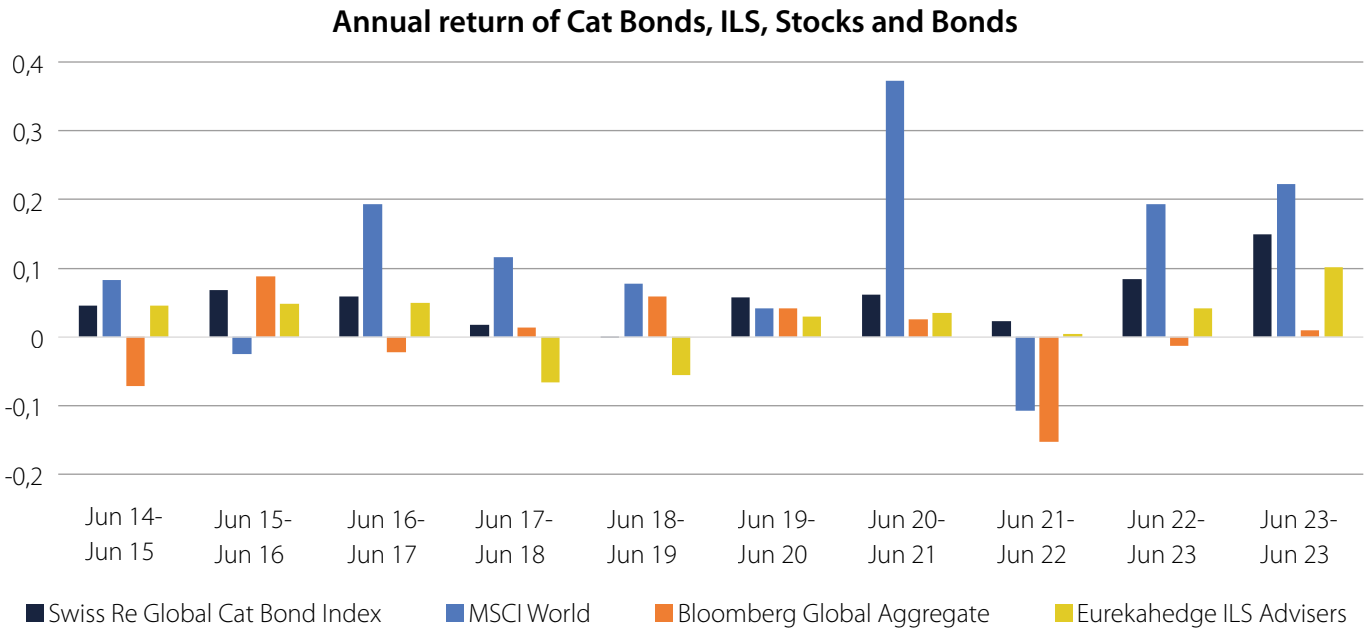



*Figure 3: Source: Twelve Capital, Bloomberg, June 30, 2024.*

The reason for Cat Bonds' lower volatility and higher Sharpe ratio compared to other asset classes becomes clear when one considers the reasons, intensities, and frequency of drawdowns over the past 20 years. With the bursting of the dot-com bubble and the global financial crisis, stock markets experienced two slumps of around 50%. The euro crisis, the Covid-19 pandemic, the Russian war of aggression in Ukraine, inflation, and the turnaround in interest rates led to further sharp falls of between 16% and around 21%. The global financial crisis, COVID-19, and the turnaround in interest rates also significantly impacted the global bond markets. They

*14 Twelve Capital, Bloomberg. As at 30 June 2024.*

fell by 11.4% during the financial crisis, 6.8% during the COVID-19 pandemic, and 16.7% due to the dramatic turnaround in interest rates, which aligns with the equity markets. The financial market crises that affected the global bond markets also impacted the Cat Bond markets, albeit to a lesser extent. For example, the Swiss Re Cat Bond Index fell by 1.49% during the global financial crisis and by 1.84% and 0.88%, respectively, during the financial market crises at the start of the Covid-19 pandemic and the outbreak of war in Ukraine. During the trade conflict with China at the end of 2018, when there was turbulence in the financial markets and equities and bonds also fell, the Cat Bond Market Index also lost 1.62%.

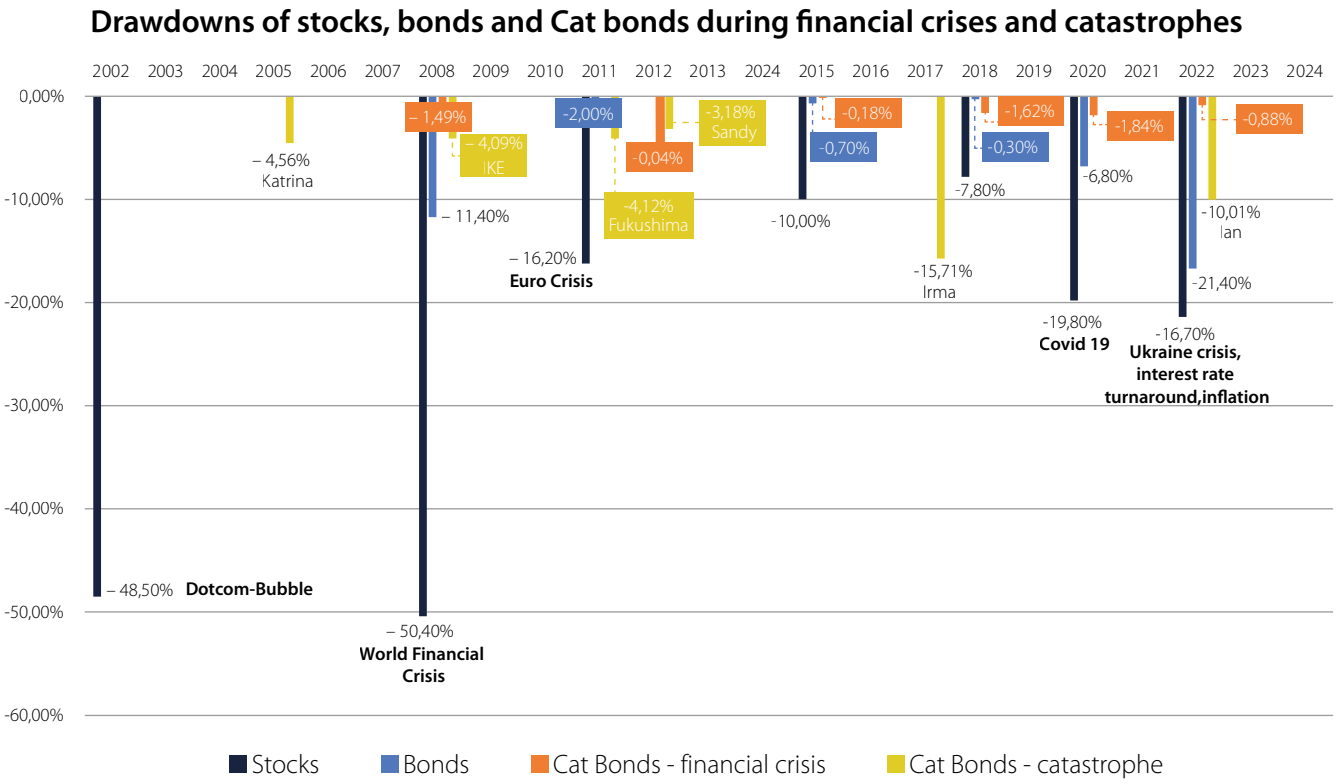



*Figure 4: Drawdowns of different asset classes, source: Twelve Capital, Bloomberg.*[15]

The fact that Cat Bonds have different drivers than other asset classes is reflected in their high resilience to financial market crises. In fact, major natural disasters interrupted the almost linear, steady positive development of the Cat Bond market benchmark over the last 20 years and had a much greater impact than financial market crises. A total of five major hurricanes and one major earthquake had a significant impact on the Swiss Re Cat Bond Index during the reporting period. Hurricane Irma triggered the sharpest decline of 15.71% in 2017. Hurricane Ian in 2022 caused the market benchmark to fall by 10.1% and Hurricane Katrina in 2005 by 4.56%. The biggest earthquake with a global impact on the industry was the one at the beginning of 2011, which triggered the typhoon and the reactor disaster in Fukushima and caused the market for Cat Bonds to plummet by 4.12%.[16]

It can be said that the slumps in the Cat Bond market caused by natural disasters in the past have not had a significant impact on the financial markets and other asset classes and have been less severe than financial market crises in equities and bonds.

However, it is impossible to make reliable predictions about future developments based on observations of benchmark developments in the past.

By thoroughly analyzing the risks and key drivers of Cat Bonds performance, their value as a portfolio diversification tool becomes evident. Cat Bonds effectively protect against the tail risks associated with extreme financial market events, enhancing portfolio resilience. Their low correlation with traditional asset classes allows for improved risk-adjusted returns, contributing to overall portfolio optimization from a risk/return perspective.

*15 Stocks: MSCI World, Bonds: Bloomberg Global Agg., Cat Bonds: Swiss Re Cat Bond Index.*
*16 Data from Bloomberg, Twelve Capital.*

**Peter Miller, Neuberger Berman**, argues that the evergreen attraction for ILS has always been and continues to be its fundamentally uncorrelated nature. The fact that it isn't inherently correlated to financial markets is the main attraction to investors.

**Dr. Jochen Heubischl, MEAG Munich Ergo**, outlines: "We are constantly looking for uncorrelated, liquid, and stable alternative returns for our global multi-asset portfolios to identify all potential returns worldwide. Cat Bonds are a building block for risk diversification as alternative and liquid investments. They are independent of developments in the financial markets and general economic growth. In addition, Cat Bonds have a limited interest rate risk due to their variable interest rate character, which makes them very robust against interest rate fluctuations."

As discussions with industry experts have shown, a positive correlation between equities and bonds increases the importance of Cat Bonds for optimizing the overall portfolio.

The stock-bond correlation (SBC) has been predominantly negative over the last two decades, providing crucial diversification benefits. This negative relationship allows bonds to offset equity losses during market downturns, as growth boosts stocks but depresses bond prices through inflation expectations, while economic slowdowns drive investors to bonds.

However, historical patterns reveal that the negative SBC is a relatively recent phenomenon. Before the 2000s, the SBC was often positive, meaning stocks and bonds frequently moved in tandem. The dynamic between growth and inflation news largely dictates SBC. Bonds serve as effective diversifiers during growth-driven periods but lose this role when inflation dominates market sentiment.

In 2022, stocks and bonds began moving in the same direction, indicating a return to positive SBC, driven by inflationary pressures and monetary tightening. This shift exposes investors to simultaneous declines in both asset classes, underscoring the necessity of diversifying beyond traditional portfolios.

Research shows that a consistently negative SBC has existed mainly over the past two decades, while historically, it was often positive, especially during high inflation periods. Interest rate volatility, rather than absolute levels, is a key driver of SBC changes. Periods of inflation exceeding 3% have led to positive SBCs 98% of the time since 1926.[17]

From an investor's perspective, **Dr. Jochen Heubischl, MEAG Munich Ergo**, argues that we must also adjust to a changed landscape of correlations if inflation is expected to remain well above 2% in the future.

This makes asset classes with low correlation to asset classes, as stocks, particularly attractive.

*One of the key takeaways from market movements in 2022 was that correlations are more volatile and susceptible than long assumed. Driven by far-reaching geopolitical events and fiscal and monetary policy measures, we continue to see a positive correlation between the major asset classes of equities and bonds. The traditional 60/40 multi-asset approach, a core component of many institutional portfolios, has long relied on the predominantly negative correlation between equity and bond returns. Diversification across different asset classes has become a more significant challenge, especially for managers of multi-asset portfolios, to optimize portfolio construction. The environment of multiple market risks in which we operate continues to show that it is more important than ever to monitor cross-asset correlations and take them into account in active and dynamic asset allocation.*

***Dr. Jochen Heubischl, Head of Multi Asset, MEAG MUNICH ERGO Kapitalanlagegesellschaft mbH***

*17 State Street Global Advisors.*

The Swiss Re Global Cat Bond Index highlights Cat Bonds' low correlation, capped at 0.25, with asset classes such as stocks, global bonds, hedge funds, real estate, and commodities. This correlation is notably lower than the correlation between stocks and these other asset classes, reinforcing the value of Cat Bonds as a powerful diversification tool in multi-asset portfolios.[18]

## 3.3 Risk-return profile of individual ILS-strategies

In the previous section, we used benchmark indicators to analyze the performance of the Cat Bond and ILS (sub-) asset classes as a whole.

In the following, we look at the risk-return structures of individual ILS strategies and what influences them. To this end, we will let industry experts have their say.

*François Divet, Head of ILS Team, AXA IM Alts*

**François Divet, Head of the ILS Team, AXA IM Alts**, explained that two main factors are influencing the risk-return profile within ILS strategies. The first is the focus on US hurricanes or earthquakes, which offer higher spreads for a given level of risk compared to other regions like Europe or Japan. The second factor involves investing in more junior reinsurance layers or tranches of a catastrophe bond. In the traditional reinsurance market, these layers represent different levels of risk within a reinsurance program, with higher-risk layers typically offering higher potential returns.

*Jordan Strah, Senior Analyst, Catastrophe Bonds at Franklin Templeton*

**Jordan Strah, Senior Analyst, Catastrophe Bonds at Franklin Templeton**, explains that the risk-return profile of a Cat Bond is influenced by several factors, particularly its structure and the specific risks it covers. He highlights that the size of the Cat Bond, the number of positions it holds, and how the risk layers are structured all play crucial roles in determining the bond's risk and return characteristics.

One significant factor is the type of events covered by the bond. Over the past 20 years, most insured losses have been driven by low-severity, high-frequency events, such as severe convective storms, rather than large, singular disasters like major hurricanes or earthquakes. This means that Cat Bonds covering aggregate layers, where multiple smaller events can trigger losses, may need to offer higher premiums to attract investors. These aggregate structures are riskier because they can be impacted by frequent, smaller storms rather than a single large event, which investors might not have fully appreciated in the past.

On the other hand, occurrence-based structures, where the bond is only triggered by a significant, single event, are often viewed more favorably, especially after the challenging reinsurance years from 2017 to 2022. During this period, the Cat Bond market still managed to produce favorable returns, with the only negative year-end return in 2022, which was due to mark-to-market pricing rather than actual losses.

Strah also notes that placing the Cat Bond within the reinsurance tower (i.e., the order in which it would be triggered relative to other insurance layers) is crucial. New sponsors entering the Cat Bond market often start by positioning the bond in one of two ways: either as the first layer above the retention layer (where the reinsurer first covers losses before the Cat Bond is triggered) or in a more remote layer that would only be triggered by a large, infrequent event. This placement affects the risk level and, consequently, the expected returns for investors.

Overall, the structure of the Cat Bond, whether it covers aggregate or occurrence-based risks and where it sits

*18 Source: Bloomberg. Twelve Capital. As at June 30, 2024. Cat Bonds: Swiss Re Global Cat Bond Index Total Return (SRUSWTRR), stocks: MSCI World USD; Bonds: Bloomberg Global Aggregate Total Return Index; Hedge Funds: Dow Jones Credit Suisse Hedge Fund Index; Real Estate: EPRA/NAREIT Dev TR USD Index; commodities: S&P GSCI index; Calculations use weekly returns since 2002 or as long as available.*

within the reinsurance tower, along with the size and scope of the risks covered are key factors that determine the bond's risk-return profile.

From an investors' perspective, Dr. Jochen Heubischl, MEAG Munich Ergo, argues the Cat Bond investment funds they include in the portfolio have a risk/return profile like that of high-yield bonds, albeit with significantly lower volatility and an almost zero interest rate risk. They do not invest in investment funds that invest in private debt securities and private ILS transactions. Although these can additionally benefit from illiquidity premiums, they also entail additional volatility, and the risk/return profile does not correspond to their globally balanced funds.

Studies by Amoruso and Mariani (2016)[19] and Drobetz, Schröder and Tegtmeier (2020)[20] confirm the positive effect of investing in Cat Bonds in terms of diversification and total return, due to lower volatility and relatively stable returns. Accordingly, Cat Bonds are in particular an effective diversifier compared to other asset classes and serve as a safe haven against extreme price slumps on the stock markets in the post-crisis period.

## 3.4 The impact of the macroeconomic environment on ILS and Cat Bonds

As we outlined, according to benchmark indicators, ILS and Cat Bonds showed a strong performance in the past, with steady growth, only interrupted by a few major hurricanes (Figure 2, Figure 3). However, since the COVID-19 pandemic and the Russian war of aggression, we have experienced a turbulent macroeconomic environment, dramatically increasing interest rate levels, and inflation, which have recently decreased again. In the next section, we let industry experts have their say regarding the impact of macroeconomic factors on ILS and Cat Bonds.

### 3.4.1 What influence does the interest rate environment have on ILS and Cat Bonds?

Cat Bonds are fundamentally decoupled from capital markets. The only link to capital markets is through the returns on trust investments (cf. 2.4). Liquidity is deposited by the cedent into a trust account and invested in short-term, low-risk collateral such as US Treasury bonds or bonds issued by supranational organizations. This structure minimizes interest rate risk, making loss events the primary risk factor from an investor's perspective. This also explains why financial market crises only had a minor impact on Cat Bond and ILS benchmarks (Figure 2, Figure 3). However, rising interest rates directly impact the returns of trust investments.

**Jordan Strah, Franklin Templeton**, describes the recent market environment for Insurance-Linked Securities and Cat Bonds as particularly favorable, primarily due to rising rates over the past two and a half years. These higher rates have improved the returns on these collateralized bonds. While the market yields for Cat Bonds increased above 13% following Hurricane Ian, they have since tightened to the mid-to high 6% range. Despite this, the total return remains attractive, with the market currently exceeding 10+%.

He also underscores the significant evolution of Cat Bonds' structures compared to 12 years ago. The market has not only grown substantially, but the structures have become more refined and focused, often covering only a single peril rather than multiple risks as in the past. This refinement, or 'cleaned-up structures,' leads to more transparent and better-defined products, making risk assessment and pricing more straightforward and attractive.

While higher interest rates have indeed contributed significantly to the attractiveness of Cat Bonds, it's important to note that the appeal of these investments is not solely dependent on interest rates. Even if future rate cuts by the Federal Reserve occur, the attractiveness of Cat Bonds and ILS is expected to remain strong due to the improved market conditions, the more focused and transparent structures, and the better-understood underlying risks.

19 *Amoruso and Mariani (2016).*
20 *Drobetz, Schröder and Tegtmeier (2020).*

*„We believe that including Cat Bond investment funds makes strategic sense. Due to the current interest rate level, Cat Bonds offer double-digit spreads, offering a yield opportunity that has not existed in the last ten years."*

***Dr. Jochen Heubischl***

**Stephan Ruoff, Schroders Capital ILS**, explains that ILS, particularly Cat Bonds, stand out in the current financial market environment as the mark-to market of Cat Bonds has minimal exposure to interest rate fluctuations. This characteristic makes ILS especially appealing to investors looking to reduce interest rate risk in their portfolios. The reason for this resilience is that the collateral backing ILS is typically invested in money market funds. The interest rate on these funds is reset on a regular basis, so overall interest rate changes only have limited impact on the mark-to-market value of an ILS instrument. Also, when interest rates rise, the returns on these collateral investments increase accordingly and vice versa.

Moreover, the premiums or coupons associated with ILS are determined by the underlying insurance risks rather than interest rate conditions. This decoupling from interest rate trends further enhances the appeal of ILS in a volatile financial market environment where other fixed-income instruments might suffer.

As already explained, Cat Bonds are floating-rate securities that bear interest at a premium to the US money market rate. Spreads on the market for Cat Bonds are currently at a historically attractive level, and interest rates are also having an impact.

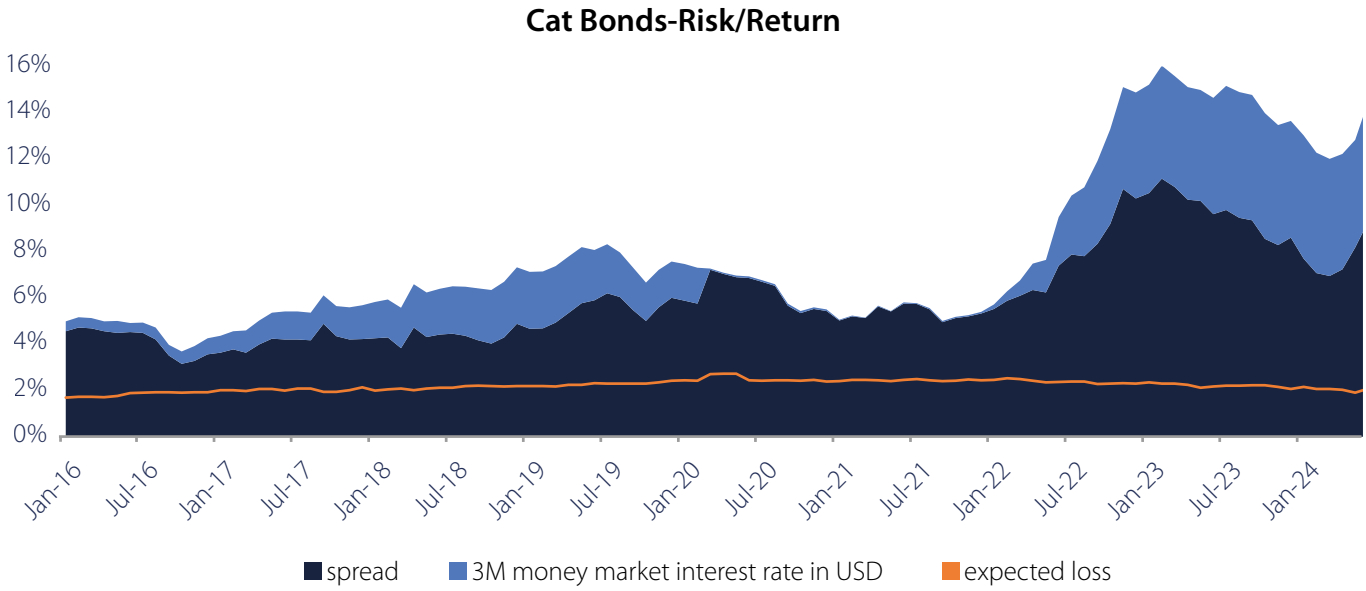



*Figure 5: Source: Twelve Capital. As of June 30, 2024, the Twelve Cat Bond Market Portfolio is a portfolio of Cat Bonds modeled by Twelve Capital. Every publicly available Cat Bond is represented with its entire outstanding nominal value.*

### 3.4.2 What influence does inflation have on ILS and Cat Bonds?

In addition to the dramatic changes in interest rates, the second dominant macroeconomic factor in the capital markets was the sharp rise in inflation in the wake of the coronavirus pandemic. While inflation has subsided, it remains at pre-crisis levels, and the market expects it will also be structurally higher in the medium term. How does this affect Cat Bonds?

**Stephan Ruoff, Schroders Capital ILS**, explains that inflation can be a significant issue for ILS investments if not properly addressed in the risk models and pricing strategies. He argues that the time lag between the damage and the rebuilding of destroyed buildings due to a catastrophe leads to increased costs due to inflation. By the time the house is rebuilt, the cost will be higher than at the time of the initial damage because inflation has driven up prices in the interim.

To remain effective, insurance contracts must incorporate inflation into their pricing for ILS investments. This means that the estimated costs at the time of payout must reflect the expected inflation between the start of the risk period, the event and the payout. If inflation is accurately factored into the insurance pricing, it doesn't

become a problem for ILS investments because the increased costs are anticipated and covered. However, if inflation is not considered, the premiums or coupons set for these securities could be too low, resulting in insufficient returns for investors.

He emphasizes the critical need to work with ILS managers who are experts in natural catastrophe modeling and insurance mathematics. This ensures that portfolios are correctly priced, reflecting the true risk and incorporating necessary adjustments for inflation. Without this careful pricing and modeling, the returns from ILS investments might fall short of expectations, underscoring the importance of addressing inflation in the insurance and investment processes.

**François Divet, AXA IM Alts**, argues that inflation increases the risk exposure for insurance companies, leading them to transfer more of that risk to reinsurers and ILS managers. He explains that inflation was a key driver behind the significant spread and rate-on-line increases observed in 2022. This rise in inflation, coupled with financial challenges like the crisis and claims payments, strained insurers' and reinsurers' balance sheets. Consequently, they sought additional capacity from the reinsurance market and ILS space, contributing to heightened market activity in 2023 and early 2024.

**Michael Stahel, LGT ILS Partners**, explains that inflation is driving up insured values, leading to increased capital requirements for insurance companies, to meet the regulatory stress tests. As a result, insurers and reinsurers need to purchase more coverage for extreme events, and are forced to retain more risk at lower levels, pushing structures to a higher tier. For ILS investors, this means a well-managed risk level (focus on a reduced short-term volatility) with higher premium levels. There is strong demand from sponsors for reinsurance coverage via catastrophe bonds, though some planned new issuances were withdrawn due to premiums being deemed too low. The hard market supports higher premiums for catastrophe bonds, allowing investors to push for better risk compensation. However, catastrophe bond yields are more susceptible to short-term price fluctuations, largely influenced by temporary supply-demand imbalances.

## 3.5 ILS in the context of ESG and climate change

Another crucial driver for LPs' ILS investments is ESG. Environmental, Social, and Governance (ESG) criteria are increasingly important in institutional investing, driven by intrinsic motivations and regulatory frameworks such as the EU Sustainable Finance Disclosure Regulation (SFDR). The SFDR requires different disclosure obligations depending on the different levels of ambition with regard to sustainability, which have been interpreted by the market as different classifications: Article 8 and Article 9 products. Article 8 funds consider environmental and social aspects, but these factors are not central to their core objectives. In contrast, Article 9 funds have sustainability goals embedded into their product design, significantly influencing their portfolio strategy.

### 3.5.1 What are the implications of ESG regarding ILS?

Cat Bonds are widely regarded as ESG-positive instruments by market participants. This perception is linked to their alignment with the "United Nations Sustainable Development Goals (SDGs)," particularly "SDG 8 (Decent Work and Economic Growth)" and "SDG 13 (Climate Action)". Cat Bonds generate social value by providing capital that enables communities to rebuild their livelihoods after natural disasters. A notable example is the issuance of Cat Bonds by the World Bank, which aims to protect infrastructure in developing countries from the financial impact of natural catastrophes. These bonds fill a critical gap in regions where traditional reinsurance markets are underdeveloped, supporting efforts to reduce poverty and enhance disaster resilience - particularly in the face of climate change.

Although Cat Bonds can be regarded as „impact investing instruments" by market participants, they are most often name as„Article 8 products" under the SFDR. This disclosure obligations reflect their indirect but meaningful contribution to environmental and social outcomes rather than the direct pursuit of sustainability goals required for Article 9 status. Therefore, ESMA argues relevant ESG factors are driving investors' interest in Cat Bond UCITS.[21]

*21 Steiger 2022, p.129-134, Response to ESMA's Call for Evidence on the review of the UCITS Eligible Assets Directive – selected ILS industry participants' response.*

***Michael Stahel, Partner LGT ILS Partners**, outlines, „the EU has declared natural catastrophe reinsurance and thus ILS as a sustainable investment, as part of introducing the EU Taxonomy around the Sustainable Finance Disclosure Regulation (SFDR). On that basis, we were able to structure and classify our products as Article 8 funds, i.e., as sustainable investments."*

**Peter Miller, Neuberger Berman**, notes that ILS has positive implications for ESG strategies. He explains that ILS can play a crucial role in mitigating the impacts of climate change, which aligns with ESG goals. They indirectly protect consumers by providing the necessary capital to support insurance markets. He points out that without sufficient capital, major insurers have stopped writing new business in places like Florida, leading to increased premiums or an inability for consumers to obtain insurance, both of which have negative ESG implications. These gaps often necessitate state intervention through state-run insurance pools, which have grown significantly. Thus, ILS help stabilize insurance availability and affordability, mitigating these negative impacts and ultimately benefiting consumers and supporting ESG objectives.

"In the selection process, we consider two aspects, among others: given the small size of the Cat Bond market segment, the volume of the fund for a targeted positioning of the fund manager in the portfolio and, in addition, the quality of the sustainability concept that matches our Article 8 funds. However, our vertical integration does not end here; a high degree of transparency in the Cat Bond investment fund and regular dialogue with the respective portfolio management allow us to review the positioning regularly." **Dr. Jochen Heubischl, Head of Multi Asset, MEAG MUNICH ERGO Kapitalanlagegesellschaft mbH**

**François Divet, AXA IM Alts**, outlines their methodology that evaluates ESG performance of ILS based on three main criteria. The first criterion is the ESG score of the catastrophe bond sponsor, which could be an insurance company or a corporate entity. The second is the collateral's ESG score, typically invested in AAA-rated money market funds within a SPV. The third criterion is the ESG score of the ultimate beneficiaries, often individuals or corporations. Higher scores are given when the beneficiaries are individuals, as they generally have a lower environmental impact than corporations.

He provides an example of a catastrophe bond issued by the oil industry and backed by an insurance company dedicated to the oil sector that would receive a lower ESG score compared to one where the beneficiaries are individuals who typically have a smaller environmental footprint.

## 3.5.2 What are the implications of climate change on the ILS-asset class?

Cat Bonds can play a vital role in mitigating the financial impact of natural disasters driven by climate change. However, the same climate-related events that these bonds aim to address also influence their risk-return profile. This is because a significant portion of the insured risks, such as hurricanes and storms, are potentially affected by the consequences of climate change. While extreme weather events are often linked to climate change, it remains difficult in practice to quantify the exact influence of climate change on specific disaster events.

Not all risks covered by Cat Bonds are influenced by climate change. For example, risks associated with earthquakes are unrelated to climate change, as they result from geological processes.

One key advantage of Cat Bonds in the context of climate risks is their relatively short maturity, typically lasting no more than three years. This short duration allows for frequent price adjustments, enabling new information about climate risks to be reflected in bond pricing and risk assessments. In contrast, the effects of climate change often evolve over much longer time horizons, meaning that Cat Bonds can adapt to changing risk conditions more quickly than many other financial instruments.[22]

**Peter Miller, Neuberger Berman**, suggests that while climate change might deter some from investing in ILS due to perceptions of increased risk, he sees it as an opportunity rather than a threat to the asset class. He

*22 IMF, ECB, Steiger 2022, p.135.*

explains that ILS is underpinned by sophisticated catastrophe models updated annually to reflect the latest environmental conditions, allowing incremental adjustments over time. Miller argues that the main driver of increased losses is not necessarily worsening environmental conditions but exposure growth and inflation in catastrophe-prone regions, such as Florida. He is confident that the models can capture these changes and believes climate change will lead to greater demand for reinsurance as insurers and reinsurers face increasing scrutiny on managing these risks. Thus, Miller views climate change as a positive factor for the growth of the ILS asset class.

According to **François Divet, AXA IM Alts**, the impact of climate change on ILS, particularly catastrophe bonds, is relatively limited for several reasons. First, he emphasizes the difference in time horizons between ILS investments and climate change forecasts. Climate change projections, like those from the IPCC, are long-term, often stretching to 2050 or 2100, while ILS investments typically have much shorter durations, such as one to three years. This disparity means that any impact from climate change would likely be gradual and incremental rather than immediate.

Second, he points out that CAT risk modeling software, which is used to assess the risks associated with climate change, is regularly updated to reflect current conditions. These models are revised annually or periodically for key perils like hurricanes or earthquakes, ensuring that current risk factors are accounted for.

Nonetheless, he highlights that the growing cost of natural catastrophes is empirically more driven by factors such as population growth, increasing property values, and inflation, rather than climate change alone.

Finally, he argues that while the overall risk of natural catastrophes may increase due to climate change, insurers will likely adjust by increasing deductibles (or franchises). This would lead insurers to retain more of the risk themselves, limiting the risk increase for ILS investors. As a result, the risk to ILS investors might not increase proportionally, even though the market for these securities is expected to grow.

According to **Nils Ossenbrink, Twelve Capital**, climate change leads to an increase in secondary risks and increases premiums for primary risks. The increased insured losses caused by these more frequent and intense natural events increase the insurance industry's capital requirements. Therefore, this "background noise" of secondary risks also indirectly influences the premiums for peak risks. Even in years without significant hurricanes, such as 2023, the cumulative losses from numerous smaller events lead to a high demand for insurance capital.

**Michael Stahel, LGT ILS Partners**, distinguishes between different types of ILS in this context. In line with interviewees mentioned before, he also argues that climate change primarily increases the frequency of what is referred to as secondary perils, such as local floods, hailstorms, wildfires, and tornadoes, which drive up costs for insurers. However, primary perils like major hurricanes and earthquakes, which are less impacted by climate change, remain the focus of Cat Bonds.

Cat Bonds thus benefit from being less exposed to the growing risks associated with climate-driven secondary perils. Collateralized Reinsurance Investments (CRI) initially covered cumulative damages from multiple smaller events, making them more vulnerable to the effects of climate change. However, the market has since adjusted CRI structures to align more closely with Cat Bonds, focusing on large-scale, isolated events, thus reducing exposure to the increased risks from secondary perils.

*Olaf Trenner, Principal, LGT Capital Partners*

In this context, **Olaf Trenner, Principal, LGT Capital Partners**, highlights that recent damages in the German insurance market have sparked discussions about the need for a state-backed insurance solution, suggesting that current regulations may be inadequate for addressing climate change challenges. In Germany, regional insurers often only cover immediate risks, leading to restrictive claims handling during major events. He advocates for a more positive approach, emphasizing the need to integrate the capital market more effectively. This would enhance diversification and better manage the impact of extreme weather events, reducing the need for state intervention.

## 3.6 Regulatory obstacles for ILS in Germany

What is the situation for ILS and Cat Bonds in Germany? What regulatory difficulties are there for the asset class at the moment? Based on the opinions of the industry experts surveyed and literature, we address these questions in the following section.

*Lutz Morjan, Senior Vice President and Senior Client Portfolio Manager, EMEA at Franklin Templeton*

**Lutz Morjan, Senior Vice President and Senior Client Portfolio Manager, EMEA at Franklin Templeton**, discusses the interest and demand for Cat Bonds among institutional investors in Germany, describing it as a developing and growing space. He notes that, based on his conversations, many investors are still in the early stages of getting familiar with this asset class, particularly in terms of how it fits into their portfolios alongside traditional investments like bonds, equities, and alternatives.

He highlights that Cat Bonds offer significant portfolio diversification benefits, primarily due to their uncorrelated returns and unique risk profile compared to other asset classes. This makes them an attractive addition for managing overall portfolio risk. Although the number of investors actively engaging with Cat Bonds in Germany is still limited, Morjan sees a positive trend, with growing interest as investors become more familiar with the asset class. He emphasizes that as the education process continues and investors observe the successful use of Cat Bonds by others, particularly in the insurance and wealth management sectors, the market for Cat Bonds in Germany is expected to expand significantly.

However, our expert interviews reveal that in contrast to the US, which has the strongest foothold and the most experienced investors in the ILS space, particularly among institutional investors like pension funds, European investors face comparatively higher hurdles due to regulatory constraints. These constraints lead to the fact that European investors have to invest in ILS mostly through UCITS structures and catastrophe bonds, limiting their flexibility compared to US investors.

**Michael Stahel, LGT ILS Partners**, points to regulatory uncertainties regarding ILS investments among German institutional investors. In Germany, for example, there is the special situation that ILS strategies are in a gray area from a regulatory perspective. Pure Cat Bond strategies are UCITS-compliant and, therefore, available in Germany. Distributing UCITS funds does not require a regulatory approval, based on the EU cross-border agreements. However, acceptance of and response to the offering of ILS funds remains muted and somewhat subdued in Germany.

Furthermore, our interviews reveal major hurdles for Solvency-regulated insurance companies and AnlV-regulated investors in Germany (the "Anlageverordnung – "AnlV" – is the Investment Ordinance, for smaller insurance companies not in scope of the Solvency II Directive, issued by the Federal Ministry of Finance (BMF), the associated circular is issued by BaFin).

According to **Olaf Trenner, LGT Capital Partners**, "it is unfortunate that there is no clarity in Germany for VAG- and solvency-regulated investors as to whether and in what form an investment is permissible. This means that German investors are unnecessarily foregoing another diversifying asset class. But the insurance market needs more investors and more reinsurance capital to give more people the opportunity to insure their possessions. And local insurers, in particular, will be better positioned to diversify their books by buying and selling insurance risks." Due to the current regulatory situation in Germany, primary investors in ILS are typically family offices, particularly multi-family offices, and less regulated entities such as CTAs. These investors are more open to ILS investments, with smaller investors and wealth management channels also increasingly participating in Cat Bonds, which are seen as more accessible compared to reinsurance contracts.

Insurance companies play a dual role in the ILS or Cat Bond market. On the one hand, insurers and reinsurers act as issuers of catastrophe bonds (3.6). On the other hand, ILS and Cat Bonds are attractive investment objects for insurance companies as institutional investors, among other things, for risk diversification. In some cases, it is even possible for an insurance company to issue certain risks on the capital market and invest in other insurance risks.

The regulation of ILS under investor supervision law (AnlV) has been the subject of intense debate for some time, and discussions with market players show that there is still considerable uncertainty in this regard.

Although there is no official statement from BaFin on this topic, market participants received negative feedback regarding ILS investments, particularly within the AnlV. The statements are sometimes interpreted as stating that primary insurers are generally not allowed to invest in Cat Bonds to prevent insurance risks that are usually on the liabilities side of insurance companies from being shifted to the assets side. In this context, it is therefore implicitly argued that the "principle of separation of lines of business" (Section 8 para. 4 sentence 2 VAG) could be weakened.

Accordingly, insurance companies may only operate in the insurance lines with a special license. The idea is to minimize risk by ensuring that companies only operate in areas with sufficient expertise and control mechanisms. For example, an insurance company with only a license for the life insurance sector may not operate in the 'property and casualty insurance' sector without further ado. To operate in another line of business, the company would have to obtain an additional license from BaFin. It is, therefore, worried that by acquiring such securities, primary insurance companies could invest in other lines of business whose risks they cannot adequately assess and manage - e.g. if a life insurer invests in Cat Bonds, which typically hedge risks from natural disasters, particularly about the application of the AnlV.

**Stephan Ruoff, Schroders Capital ILS**, explains that Germany stands out in Europe regarding regulations on insurance companies' investments in ILS, largely due to the "Spartentrennungsprinzip" (line of business separation principle). In Germany, particularly for life/health but also property/casualty insurers, this principle is interpreted to mean that ILS investments are not allowed because they are viewed as involving insurance risks rather than investment risks. The same holds true for pension funds in Germany that can't invest in ILS.

He contrasts this with other European countries, such as Scandinavia and Southern Europe, where the regulatory approach to ILS is more flexible. In these regions, ILS is recognized as a beneficial investment, offering diversification and protection against interest rate fluctuations and other financial market risks, making it an attractive option for insurance portfolios. An ILS allocation could be sensible for a portfolio that does not have other natural catastrophe exposures. A similar interpretation in Germany would not necessarily conflict with the "Spartentrennungsprinzip," suggesting that Germany could benefit from considering the regulatory practices of other European countries.

Böhringer (2019) discusses the "Spartentrennungsprinzip" in the context of Investor supervisory law and ILS investments. He argues that the German regulatory authority initially adopted a restrictive stance toward investments in ILS by primary insurance companies (Erst-VU), mainly due to the principle of business line separation. This principle protects policyholders in certain insurance lines, such as life and substitute health insurance, from the unpredictable risks associated with property insurance. The BaFin was concerned that mixing insurance lines could introduce risks that insurers might not be able to manage adequately.

However, Solvency II's introduction established a risk-based regulatory framework that mandates precise risk assessment and corresponding capital requirements for insurers. These regulations, combined with the internal expertise, processes, and procedures that companies must demonstrate, provide a strong foundation for justifying Erst-VU's acquisition of ILS. This raises the question of whether the principle of business line separation, in its current form, remains necessary, given that Solvency II already offers a high level of protection.

Additionally, BaFin initially rejected the ILS classification into the permissible AnlV categories, as they predominantly represent insurance risks rather than typical market risks. However, the ILS market has evolved. Therefore, BaFin might reconsider its position in light of these market developments.

Regarding reinsurance companies (Rück-VU), they are subject to the same Solvency II requirements as Erst-VU, meaning they must also assess, evaluate, and cover all risks associated with ILS with appropriate capital.

In summary, the necessity of strictly applying the business line separation principle is debatable, especially in light of the precise risk assessment under Solvency II and the development of the ILS market. Erst-VU and other insurers not subject to Solvency II could invest in ILS, provided they have implemented adequate risk management procedures. The classification of ILS within the AnlV should be risk-appropriate, such as categorizing them as subordinated instruments or profit participation rights.

Furthermore, ILS's legal documentation and risk modeling have also progressed, becoming more standardized and easier for investors to understand and manage. The triggers for payouts, which are critical for ILS, have become more refined, with index-based triggers gaining popularity due to their transparency. These triggers help investors better understand the risks associated with these instruments and enhance market liquidity.

Therefore, recent developments indicate that BaFin's original restrictive stance may need to be adjusted, as today's market conditions and regulatory frameworks present a different risk profile for ILS compared to the past.[23]

**Dr. Jochen Heubischl, MEAG Munich Ergo**, explains that MEAG deliberately avoids investing in catastrophe bonds issued by Munich Re, even though there is no regulatory requirement forcing them to do so. This is to prevent risk duplication within their portfolios, maintaining a clear separation between their roles as investors and the issuer's potential exposure.

**Nils Ossenbrink, Twelve Capital**, argues that regulatory hurdles for ILS investments in Germany are due to the inconsistent application of the investment regulation. BaFin does not provide clear guidelines, leading to different interpretations and practices at the regional level. Interestingly, conditions for such investments seem to be more favourable in northern Germany, while investors in southern regions often face stricter restrictions. Regional authorities rejected investors interested in entering this segment in south Germany, while similar investments were accepted in the north. Despite ILS's importance for climate risk protection and their positive evaluation by European regulators, those uncertainties make investing in this asset class in Germany complex. Although major insurance companies remain active in this area, regulatory barriers limit institutional investors. As a result, German institutional investors' demand for ILS investments is stagnating despite this asset class's clear interest and potential benefits.

Occupational pension schemes are only indirectly subject to the AnlV under state law. This results in differences depending on the federal state.

We asked the supervisory authorities of the federal states responsible for regulating investors subject to the Investment Ordinance, such as pension funds, to what extent they are permitted to acquire ILS/Cat Bonds for their security assets in the respective federal state. The situation was unclear, and in most cases, no information was provided.

Progress in standardizing ILS documentation and risk models could allay regulators' concerns. At the same time, discussions on a more flexible interpretation of the regulations could improve investment conditions. This could help increase the insurance market's resilience and mitigate the consequences of climate change.

*23 Dr. Böhringer, Martin (2019), Aufsichtsrechtliche Aspekte bei Insurance Linked Securities, RdF 2019, Heft 02, p.108-115.*

# 4. Market environment for ILS and Cat Bonds: The supply side

The previous chapter discussed the current market environment from a demand-side perspective. We outlined which characteristics of Cat Bonds drive LP demand for Cat Bonds and which obstacles they face. In the next section, we will look at what drives Cat Bond markets from the demand side: Which factors impact the emissions of Cat Bonds? Which risks are traded, and what geographical locations do they have?

## 4.1 Cat Bond emissions

ILS or Cat Bonds can be issued as a substitute or supplement for traditional reinsurance. The reasons for this can lie on the supply or demand side. For example, a lack of capacity in the reinsurance market can lead to insurance risks being transferred to the capital market. However, targeted demand from investors can also be a driver for emissions. One reason is that debt instruments like Cat Bonds are easier to trade than reinsurance instruments.

From a reinsurer's perspective, Insurance-Linked Securities present both opportunities and risks. On the one hand, they provide the chance to transfer risks from the balance sheet to the capital market. On the other hand, they offer insurers an alternative to traditional reinsurance, increasing competition and putting downward pressure on prices, thereby shifting price dynamics to the disadvantage of reinsurers.[24]

**Thorsten Fromhold, Allianz**, perceives the current market situation as one where the traditional reinsurance market has hardened, leading to better conditions, higher prices, and more restricted coverage. This trend has increased investor interest, as seen in the unprecedented number of Cat Bond issuances, particularly in the US. He explains that US reinsurance prices have risen sharply, and capacity is now constrained as reinsurers find offering more capacity unfeasible. Reinsurance relies on global diversification, and too much overweight on US risk reduces the diversification. Consequently, some entities are now exploring alternative capital markets for additional solutions.

In Europe, however, the situation is different. The market is not experiencing the same strain level as in the US. European issuers are carefully watching developments across the Atlantic. While the European market remains more stable, Fromhold doesn't foresee a scenario where the traditional reinsurance market will be unable to meet European capacity needs. Instead, the primary challenges for insurance companies revolve around non-modellable risks and secondary perils, for which the capital markets currently offer limited solutions.

The volume of Cat Bonds issued worldwide has been increasing continuously for two decades.

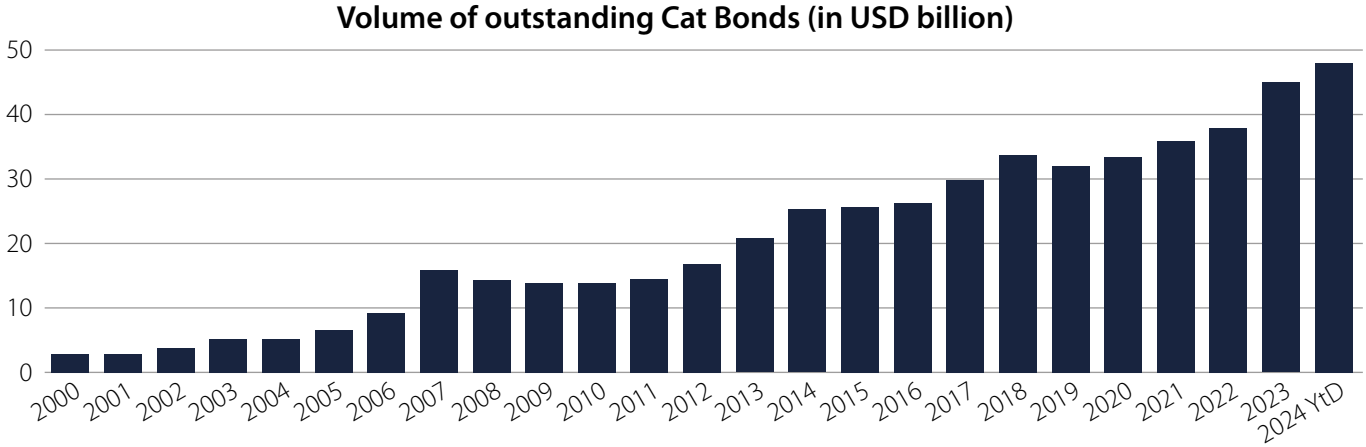



*Figure 6: Source: Twelve Capital. Artemis; 30.06.2024.*

*24 Steiger 2022, p.27.*

*„Another record issuance volume in the Cat Bond market this year, with spreads and interest rates remaining high, ensures that the yield level of this asset class remains attractive with improved liquidity. This makes it possible to adjust the quotas for inclusion in multi-asset portfolios. If there are no major losses from natural disasters, returns in this asset class could normalize in the medium term if demand remains high."*

***Dr. Jochen Heubischl, MEAG Munich Ergo***

In general, the market is seen as attractive and reinsurers want to participate in it in various ways, not necessarily as an issuer.

*Tom Beckmerhagen, Principal Lead P&C Underwriter at Hannover Re*

**Tom Beckmerhagen, Principal Lead P&C Underwriter at Hannover Re**, describes that Cat Bonds initially appealed to their reinsurance company as a way to stay close to the market, offer better risk transformation services to clients whilst also being in a position to invest into this asset class. The company invested to improve client offerings and strengthen its market positioning. This approach proved successful, eventually leading to external interest and the management of additional funds. Beckmerhagen highlights that Cat Bonds and the traditional reinsurance market have different cycles, making one more attractive than the other at times. Overall, apart from taking risks in bonds, the primary motivation was to enhance their transformation capabilities and remain highly integrated within the market.

However, emmitents are also increasingly appearing on the German market.

**Ulrich Müller, Versicherungskammer Bayern**, explains that issuing their Cat Bond was driven by a need for additional reinsurance capacity, significantly as the traditional reinsurance market had tightened in 2023, with reduced capacity and challenging pricing. They had observed the Insurance-Linked Securities market for years. With partly inflation-driven growth in their portfolio and a harder reinsurance environment, the timing seemed right to explore alternative capital sources. Additionally, this step helped improve their negotiating position with traditional reinsurers by signaling that other options exist, particularly in case market conditions worsen again due to factors like inflation or increased natural disasters. Even though capacities in the reinsurance market have now recovered, the issue of Cat Bonds represents a valuable alternative.

**Thorsten Fromhold, Allianz**, explains that Allianz Re decided to issue a Cat Bond again after a 10-year hiatus due to changing market conditions. For the past decade, the reinsurance market was in a "soft market" phase, with low prices and broad coverage, making Cat Bonds economically unfeasible, as they were more expensive and offered less coverage. However, the recent transition to a hard market made Cat Bonds a viable option again. Additionally, he emphasizes that administrative processes for Cat Bonds have become much simpler and more standardized than they were 10 years ago, which reduced the associated burdens.

He observes that in Europe, the increase in Cat Bond activity can partly be attributed to a psychological reaction among insurers rather than an actual concern about the availability of reinsurance capacity. European insurers, accustomed to a soft market with generous terms and pricing, were caught off guard when the reinsurance market hardened. This hardening refers to a shift towards stricter conditions, including higher prices and more limited coverage. Consequently, some insurers have started to explore alternative solutions, driven by both a desire to adapt to these new dynamics and an interest in developments in the US market. However, Fromhold emphasizes that this exploration is more about testing new options than a genuine concern about a lack of capacity.

**Ulrich Müller, Versicherungskammer Bayern**, suggests that regulatory factors could play a significant role in the future issuance of Cat Bonds, particularly if capital requirements increase due to the effects of climate change. As the need for coverage grows, these bonds may become a more attractive option for transferring risk to the capital markets. He also emphasizes that their current Cat Bond issuance is more than just a test case; it's a critical addition to their reinsurance strategy. They anticipate potentially issuing more bonds, restructuring them, or even exploring other models for emissions, such as slicing off different layers of coverage or securing frequency protection, depending on investor risk appetite.

**Tom Beckmerhagen, Hannover Re**, suggests that the growing role of reinsurance in covering high-severity risks leads to an increased need for capital, which could drive further potential for catastrophe bond issuances. However, he notes that this does not necessarily mean that Cat Bond issuance is the only solution; collateralized reinsurance makes up a large portion, and it could also encourage the increased usage of sidecars from existing reinsurance companies or even the formation of new reinsurance companies to absorb the risks. Catastrophe bonds serve as a complementary tool rather than a replacement, supporting the overall resilience of the reinsurance market by providing an alternative channel for capital when needed. He observes that the catastrophe bond market has shown consistent growth over the past 24 years, even if initial predictions of rapid expansion were not fully realized.

He argues that the role of reinsurance will continue to grow, given that local and regional primary insurers often lack the capacity and/or geographic diversification needed to manage significant risks.

## 4.2 Risks traded on the ILS market

From an investor's perspective, when investing in ILS and Cat Bonds, it is crucial to understand the specific risks inherent in the vehicle. Different risk types and geographical allocations of risk have a significant impact on the risk/return structure.

The variance of risks traded in the ILS market also determines the ability to diversify within the asset class to limit the impact on the overall portfolio in the event of large natural disasters. In the following, we let industry experts have their say on the risk types and geographical distribution of insurance risks in ILS.

### 4.2.1 Types of catastrophe risks are included in ILS – Peak perils vs. secondary perils

Data from Artemis show that US multi-perils have the largest share of risk in outstanding Cat Bonds (21%). Internationally diversified multi-perils also have a large share (18%). However, an estimated 2/3 of the market is concentrated on risks in the USA.

**Catastrophe bonds & ILS outstanding by risk or peril**

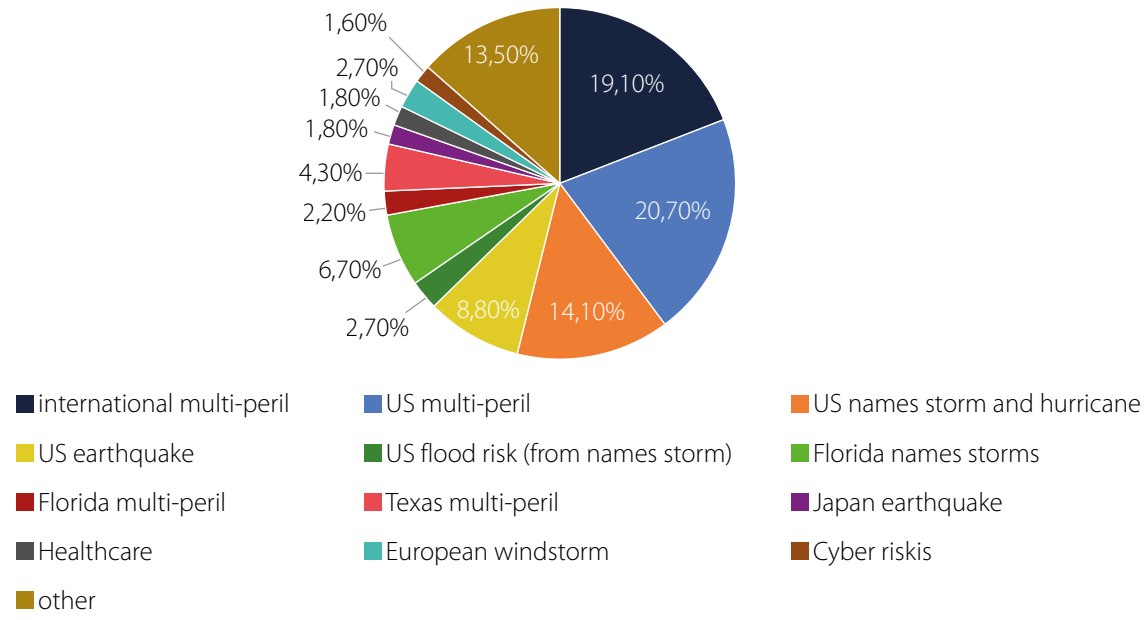



*Figure 7: Market breakdown of ILS and Cat Bonds by risk or peril 2025. Source: Artmis*[25]

25 Artemis.

In the following, we let industry experts have their say on the reasons and current trends.

**Nils Ossenbrink, Twelve Capital**, explains that there is an alignment of interest between the insurance industry and the capital market, particularly concerning capital-intensive perils known as Peak Perils. While infrequent, these perils can be extremely costly when they do occur, requiring insurers to hold significant capital reserves. There is an incentive to transfer such perils to the capital market to manage this capital demand. Since Peak Perils are generally well-modelled and researched, they are attractive to investors because they are quantifiable and offer higher premiums. This shared interest strengthens the collaboration between insurers and capital market participants. In contrast, there is less need and interest in transferring secondary perils to the capital market, as these can often be diversified within an insurer's portfolio.

According to **Tom Beckmerhagen, Hannover Re**, the catastrophe bond market is primarily centered on peak perils, particularly high-severity risks in North America, such as Florida hurricanes and California earthquakes. Although there has been some diversification toward secondary perils, these remain less attractive due to increased modelling uncertainties. European investors typically pursue a more diversified portfolio, whilst many US investors concentrate heavily on Florida risks, drawn by the higher expected returns - for instance, a one percent expected loss at times gave a 10% return versus only a little over 2% for the Japanese earthquake risks.

Tom Beckmerhagen highlights that risks like cyber are challenging if they were to become a larger part of a portfolio due to limited diversification potential within the cyber risks. Unlike natural catastrophes, where geographic dispersion helps to mitigate correlated risks, cyber events could simultaneously affect policies across all regions, which diminishes their attractiveness in the Cat Bond market. Hence, cyber threats lack the geographical separation that makes natural catastrophes more manageable.

**Peter Miller, Neuberger Berman**, also argues that their primary focus is hurricanes and earthquakes because these risks are the best understood and most quantifiable due to their established predictability and pricing models. While they recognize emerging risks such as severe convective storms, wildfires, and cyber risks, the science and pricing for these risks have not yet developed sufficiently to warrant significant investment.

The year 2025 began with devastating wildfires in Los Angeles, which have so far destroyed or damaged an estimated 16,000 buildings and sadly resulted in 26 deaths.[26]

The Cat Bond market is pricing in a loss of USD 30bn for the insurance industry. The Swiss Re Cat Bond Total Return Index lost 0.27%, which means that the losses are small by historical standards.[27]

**Nils Ossenbrink, Twelve Capital**, argues that focussing on peak perils, such as those associated with large-scale natural disasters like hurricanes, is due to their modelling quality and competitive pricing preferable to investing in secondary perils, which are becoming more frequent and severe due to climate change. For instance, while recent flooding events in Germany have caused significant damage, they are still far less costly than major hurricanes, which can result in damages reaching tens of billions of dollars. As a result, peak perils offer better pricing and risk assessment, making them more attractive for institutional investors. While secondary perils might appear to diversify a portfolio on paper, they often result in a higher frequency of more minor losses and create unwanted negative surprises due to less reliable modelling. Therefore, Ossenbrink suggests that focusing on peak perils rather than secondary perils, may be more prudent. Alternative risks, such as cyber risks, pose an even more significant challenge here. This is a relative new addition to the ILS-market, which keeps still too many questions about understanding the risks unanswered. For example, it cannot be ruled out that they are based on acts of war. However, war risks are not insurable.

**Ulrich Müller, Versicherungskammer Bayern**, explains that their Cat Bond covers their four main risks: hail, storms, floods, and earthquakes, although the latter is less significant given their focus as a regional insurer in Bavaria. While it is unusual to include four risks in a Cat Bond, they wanted it to align closely with their traditional reinsurance coverage. Therefore, modeling those risks is possible, ensuring investors have a reliable assessment.

*26 FAZ.*
*27 https://www.plenum.ch/en/wildfires-los-angeles-2/*

### 4.2.2 Geographical locations of insurance risks included in ILS and Cat Bonds

As the experts say, the geographical concentration on the USA is both a curse and a blessing. There is a tension here between good modellability and attractive returns versus low diversification. However, the market is developing dynamically and issues in other geographical regions are gaining in importance.

**Stephan Ruoff, Schroders Capital ILS**, explains that while the catastrophe bond market primarily concentrates on US risks, particularly hurricanes affecting the East Coast, Florida, and the Gulf of Mexico, as well as earthquake risks in California, the market also offers transactions with diversifying risks as from Japan, such as earthquakes and typhoons, as well as from Europe. For example, winter storm risks in Europe are becoming more frequently covered, and even flood risks in Germany have recently been included in the capital market. Risks such as earthquakes in Italy have also been securitized, indicating that the market is expanding to include various risks across different regions.

In contrast, the private ILS market is inherently more diversified, offering a more detailed risk distribution as reinsurers primarily drive it. This market covers a broader range of risks from various regions, including Japan, Europe, and other parts of the USA, allowing for a more granular approach to risk exposure.

**Nils Ossenbrink, Twelve Capital**, agrees that US risks are the more reliable risks from an investor's perspective and that a greater focus on European risks would mean more secondary perils that are less easy to model.

It can be argued that there is a trade-off between diversification and return.

On the one hand, **Tom Beckmerhagen**, Hannover Re, highlights the concentration of risks in the USA, particularly in Florida and California, where peak risks like hurricanes and earthquakes dominate, as a key challenge in catastrophe bond investments. This US-heavy risk profile makes it difficult to achieve the level of geographic diversification typical of traditional reinsurance, as investment opportunities in a variety of risks across other regions are limited.

On the other hand, he points out that diversification does not necessarily maximize returns. Concentrating on US risks, especially in Florida, can offer a more favorable risk-to-return profile, yielding higher returns compared to other regions. This trade-off between concentration and diversification means that the ideal strategy depends on the investor's objectives and risk tolerance. For some, the higher yields of a US-focused strategy may be more attractive, while others might prioritize a more diversified approach to reduce exposure to any single catastrophic event.

**Michael Stahel, LGT ILS Partners**, mentions that diversification within hurricane risks is possible despite a strong focus on North American risks, particularly in the USA, within the ILS market. Even though well over 70% of the ILS market covers US hurricane risks, investment managers can diversify the portfolio by targeting Cat Bonds that cover different regions within the USA, such as Texas, Florida, or the Carolinas, as hurricanes impact these areas differently. However, such diversification is less effective with earthquake risks, particularly in California, where a major event may potentially trigger a payout across many outstanding bonds.

According to **Peter Miller, Neuberger Berman**, the USA, as the location for catastrophe risks, benefits from abundant data, making the risks there the best understood and most quantifiable. This results in better pricing compared to other regions. While they also consider Europe, Japan, Australia, and New Zealand, these markets have more mature and developed insurance systems that can be addressed effectively. However, as he notes, regions like the US are primarily impacted by peak perils such as earthquakes and hurricanes, whereas Central Europe faces secondary perils like extratropical windstorms and floods. Emerging risks, like European floods, require more data and better pricing before significantly addressing them.

The possibility of additional diversification in the Cat Bond market will also depend on how issues in Asia and Europe develop.

**François Divet, AXA IM Alts**, argues that the long-term outlook for the ILS market is positive due to several factors. Inflation, though less severe than in previous years, continues to drive risk transfer to the ILS market. Population growth, especially in risk-prone areas, is increasing insurance needs. However, he notes that the development of the ILS market in developing economies has been slower than anticipated. For example, while there were expectations of more activity in China, progress has been limited because a strong insurance market must first develop before a reinsurance or ILS market can emerge. Despite this slower growth, Divet emphasizes that rising awareness of underinsured risks in both developed and developing countries is supporting the expansion of the insurance, reinsurance, and ILS markets.

**Jordan Strah, Franklin Templeton**, elaborates that the Cat Bond market is increasingly diversifying in terms of both geographical regions and types of perils covered. Historically, the market has been dominated by North American risks, with US windstorm constituting approximately 74-75% of the total market expected loss. However, there is a notable shift towards incorporating more European risks and a broader array of perils.

For example, recent transactions have seen a rise in European wind risk coverage, with Cat Bonds that focus on European wind events. Additionally, the market is expanding to include new and diverse perils, such as cyber risks and potentially terrorism risks. Cyber risk coverage has gained traction. He also mentions that there are emerging examples of Cat Bonds addressing more unique risks, such as those from the French and Bavarian regions. These developments highlight the market's willingness to embrace a broader range of regional and peril-specific risks. As the market adapts to these changes, it is expected that the variety of covered perils and regions will continue to expand, reflecting a broader and more inclusive approach to Cat Bond investments.

An example of a Cat Bond that includes European regional risks is the King Max Cat Bond from Versicherungskammer. **Ulrich Müller, Versicherungskammer Bayern**, outlines that their Cat Bond is heavily dependent on risks from Bavaria but covers all of Germany, where they have business operations as primary insurers. This geographic scope enhances diversification for investors compared to the typical North American catastrophe risks included in Cat Bonds.

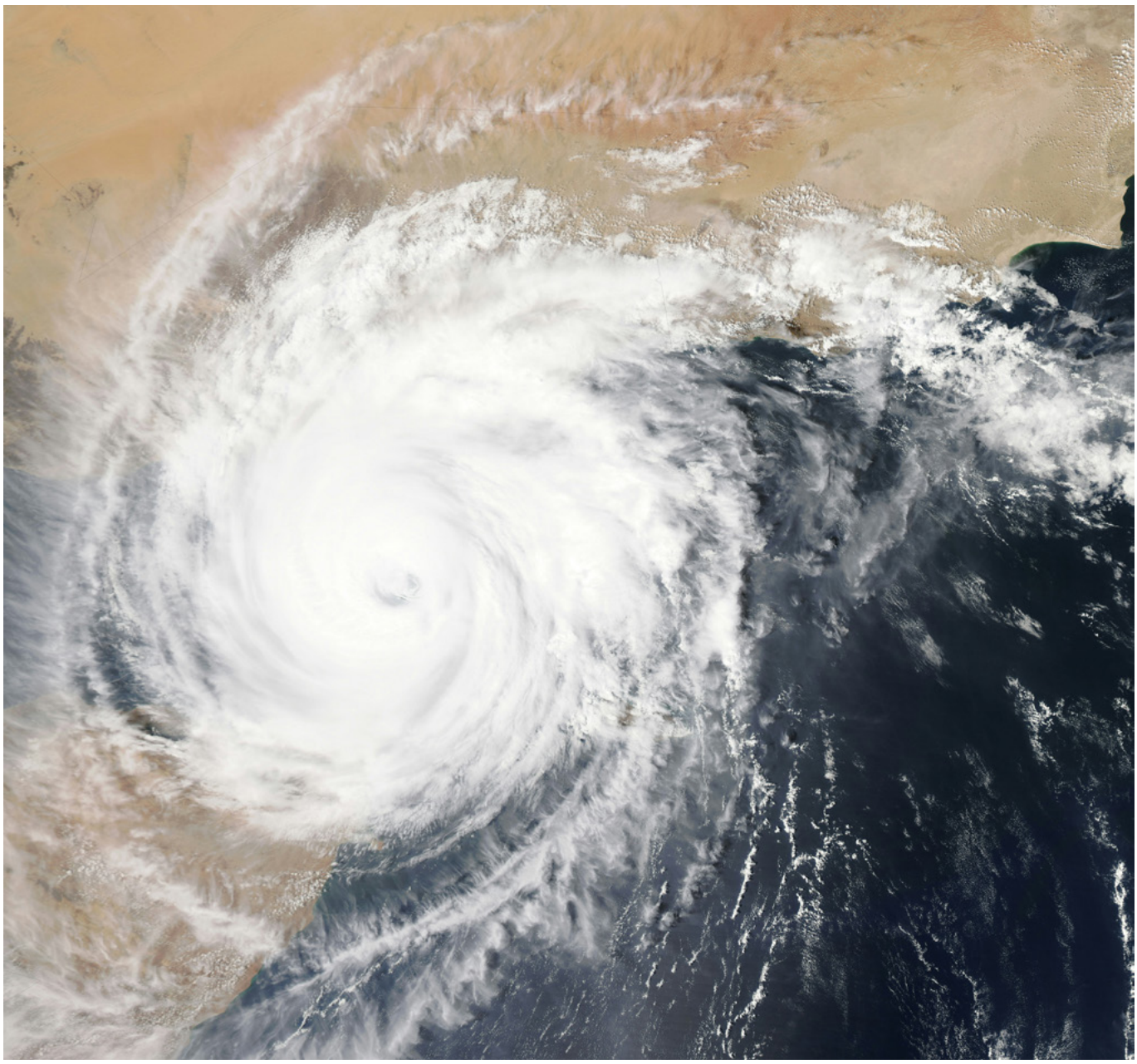
# 5. Conclusion

ILS and especially Cat Bonds can play an important role in the portfolios of institutional investors, as they offer attractive returns and significantly increase diversification.

Climate change can be seen as both an opportunity and a challenge for the sub-asset classes. Increasingly severe loss events are raising the need for reinsurance capital and increasing the demand for ILS. At the same time, risk models must be adapted to the changing environment.

However, the transfer of catastrophe risks to the capital market increases the resilience of the insurance industry and the economy. It can help to make properties and areas exposed to high risks more insurable and mitigate the financial consequences of climate change and, therefore, has a strong ESG component. On the other hand, there is a lack of regulatory clarity for investors, particularly in Germany, which is slowing down the further development of the asset class from the perspective of market participants.

The strong focus on so-called Peak Perils and on North America offers the benefits of good modelability and attractive returns but makes diversification within the sub-asset classes more challenging. However, the market develops dynamically, and the variance of risk types and geographical locations is increasing.



# 6. Acknowledgements


## We want to thank the following industry experts for their support of this study:

- Tom Beckmerhagen, Principal Lead P&C Underwriter at Hannover Re, Hannover Re
- François Divet, Head of ILS Team, AXA Structured Finance
- Thorsten Fromhold, Chief Group Reinsurance Officer, Allianz
- Dr. Jochen Heubischl, Head of Multi Asset, MEAG MUNICH ERGO Kapitalanlagegesellschaft mbH
- Peter Miller, Senior Vice President at Neuberger Berman
- Lutz Morjan, Senior Vice President and Senior Client Portfolio Manager, EMEA, Franklin Templeton Investment Management Limited, and Jordan Strah, Senior Analyst, Catastrophe Bonds, Franklin Templeton
- Ulrich Müller, Reinsurance Manager and Head of Department, Versicherungskammer Bayern
- Nils Ossenbrink, Managing Partner, Products and Distribution, Twelve Capital
- Stephan Ruoff, Co-Head Schroders Capital Private Debt & Credit Alternatives and Chairman Schroders Capital ILS
- Michael Stahel, Partner, LGT ILS Partners, and Olaf Trenner, Principal, LGT Capital Partners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**Impressum:**
Verantwortlich:
Bundesverband Alternative Investments e.V. (BAI)
Poppelsdorfer Allee 106
D-53115 Bonn