Annual Cat Bond Review & Market Outlook 2023

January 2023

info@twelvecapital.com – www.twelvecapital.com – Connect with us on LinkedIn

Marketing material for professional/qualified investors only

twelve CAPITAL

Florian Steiger, Head of Cat Bonds at Twelve Capital, provides an update on the Cat Bond market. Twelve Capital manages in excess of USD 2.8bn in insurance-linked investments both in Cat Bonds as well as in Private ILS and in aggregate USD 4.0bn in insurance related investments

"Cat Bond yields are at the highest levels they have been in many years."

Executive Summary

The past year has seen a continuation of elevated insured losses from natural catastrophes, with global insured loss numbers possibly reaching USD 130 billion. The most expensive event was Hurricane Ian in the US, which is estimated to result in an insured loss of between USD 50-60 billion. Default activity in the Cat Bond market was muted throughout the first nine months of the year before Hurricane Ian impacted Florida. Issuance activity during 2022 was less compared to the previous year, driven by a lack of investor demand, possibly due to a spike in credit spreads and higher interest rates globally, as well as a strong appreciation of the USD against other currencies which led to a liquidity drain in the Cat Bond market via the effects of FX hedging. Overall, the market is showing resilience but there are some concerns about loss creep from Hurricane Ian and uncertainty in the global economy.

The Swiss Re Cat Bond Index ended the year with a negative performance of -2.2%. This marks the first year since the index was started where annual performance of the index was negative. This was partially driven by actual defaults or the expectation thereof from Hurricane Ian and the loss creep from Hurricane Ida, but the biggest impact was felt from the spread widening. The spread widening has led to sometimes severe markdowns even of bonds completely unaffected by any catastrophe events. Observation shows that index-linked Cat Bonds have generally outperformed indemnity bonds in the past years, but the volatility around Hurricane Ian has resulted in a more complex picture with spread widening being more pronounced in index-linked Cat Bond compared to indemnity transactions. Given the current dislocation in spreads between index-linked and indemnity transactions, Twelve Capital believes that significant relative value can be gained from being overweight the index-linked transactions.

Common Trigger Types

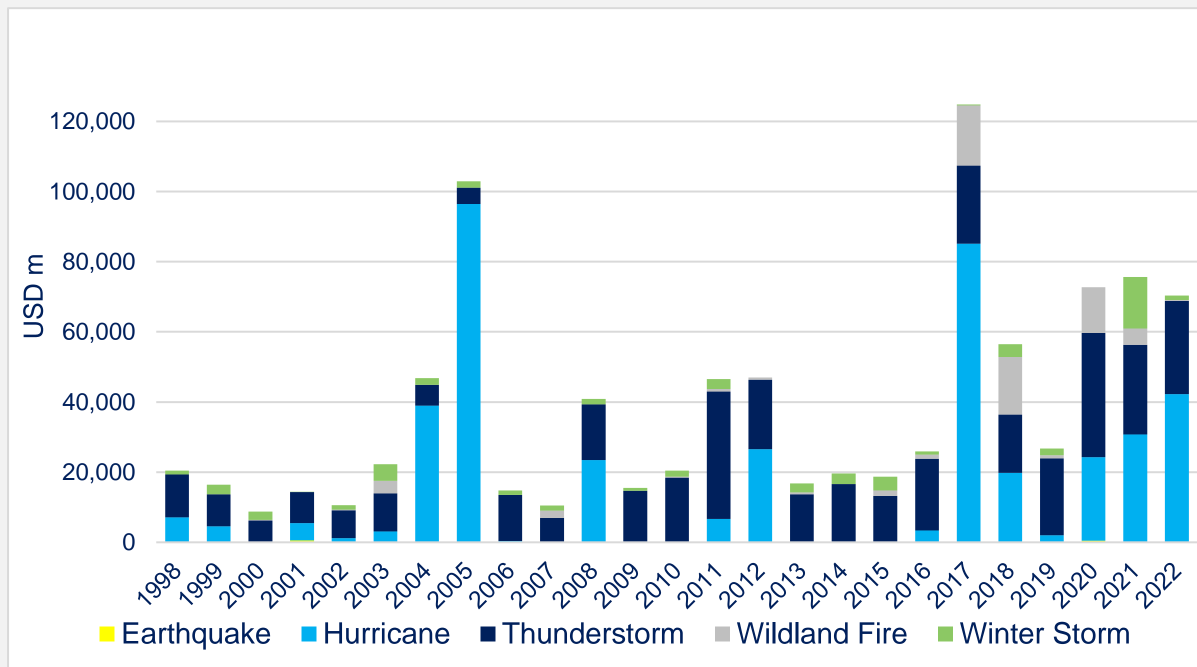
Parametric	Payout depending on specific formula, e.g. a hurricane making landfall in Florida with a specific minimum central pressure.
Index-linked	Payout depending on cumulative industry losses exceeding certain thresholds.
Indemnity	Payout depending on actually incurred or reserved losses of one specific company (cedant).

twelve CAPITAL

Natural Catastrophe Activity

After a prolonged period of increased natural catastrophe activity since 2017, unfortunately the past year has been a continuation of elevated insured losses from natural catastrophes. With insured loss numbers close to reaching USD 130bn globally, the year of 2022 will likely again be one of the most expensive years in the history of the reinsurance market.

Figure 1: Insured natural catastrophe losses in the US

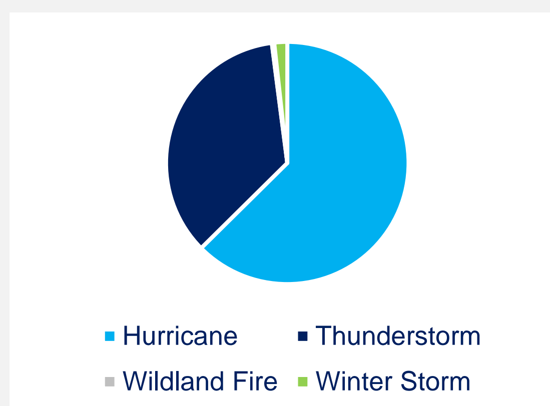


Source: Property Claims Service. As at December 2022. Loss numbers are inflation-indexed to 2022 USD assuming a 3% inflation rate per annum.

Whilst the first half of 2022 was mostly calm, it was again the hurricane season in the past year, which had big influence on ILS investors. The most expensive single event during the past year was, of course, Hurricane Ian, which made landfall in Florida in late September. The losses for this event are still developing with current estimates indicating an insured loss of between USD 50-60bn as the most likely outcome. Of course, these numbers should always be taken with a healthy level of scepticism. The loss development of Hurricanes Irma (2017) and Ida (2021) has shown us that loss creep can be significant threat to ILS investors even several months, or even years, after the actual event has taken place.

Within secondary perils, such as thunderstorms or wildfires, the losses suffered in the US market during 2022 seem to be more or less in line with more recent years.

Figure 2: Insured US losses in 2022



Source: Twelve Capital. As at January 2023.

twelve CAPITAL

Default Activity in the Cat Bond Market

Default activity was overall muted throughout the first half of 2022. The most notable default in the Cat Bond market prior to Hurricane Ian during the last year, was the complete write-down of the Pelican 2021-1 B transaction, suffering from an increase in losses caused by Hurricane Ida in 2021 at the ceding company (Louisiana citizens).

Also, even after Hurricane Ian occurred during September, most price changes in the Cat Bond market are not the results of actual defaults or the expectation of such defaults to occur in the future. For the vast majority of bonds, the pricing changes seen throughout the year 2022 are much more a function of spread widening than a reflection of an increased risk of losses.

There are, however, some examples of bonds that are likely to suffer from a loss. The bonds with the biggest relative loss in market price are shown below. For most of these bonds, this is due to the anticipated impact that Hurricane Ian might have.

Table 1: Example of Cat Bonds likely to suffer from a loss

Name	Trigger	Notional	2022 Price Change
Pelican IV Re Ltd. 2021-1 Class B	Indemnity	USD 50m	-99.99%
Sanders Re III 2022-2 Class C	Indemnity	USD 37.5m	-95.00%
Caelus Re VI 2020-2 A-2	Indemnity	USD 75m	-92.31%
Integrity Re II 2020-1 Class A	Indemnity	USD 150m	-46.71%
Herbie Re 2020-2 Class C	Industry Index	USD 25m	-39.70%
Merna Re 2022-2 Class A	Modelled Loss	USD 200m	-37.74%
Cosaint Re 2021-1 Class A	Indemnity	USD 150m	-37.09%
Astro Re 2021-1 Class A	Indemnity	USD 40m	-36.73%
Bonanza Re 2022-1 Class A	Indemnity	USD 135m	-35.24%

Source: Twelve Capital. As at 24 January 2023.

Despite the impact from Hurricane Ian, which will likely become one of the most expensive natural catastrophes in US history, default activity throughout the past year can be considered as moderate thus highlighting the overall resilience of the asset class.

twelve CAPITAL

Issuance Activity

Issuance activity during 2022 was less compared to the previous year, both by deal count but also by notional. This decrease in issuance activity was primarily driven by a lack of investor demand. There were several transactions that were shown to the market and ended up being withdrawn. It is probably a fair assessment, that issuance willingness from cedants was higher than the appetite from Cat Bond investors to absorb it.

Table 2: Primary Market Activity

	2021	2022
Total Primary Deals	79	71
Total Notional (USD bn)	12.7	9.6

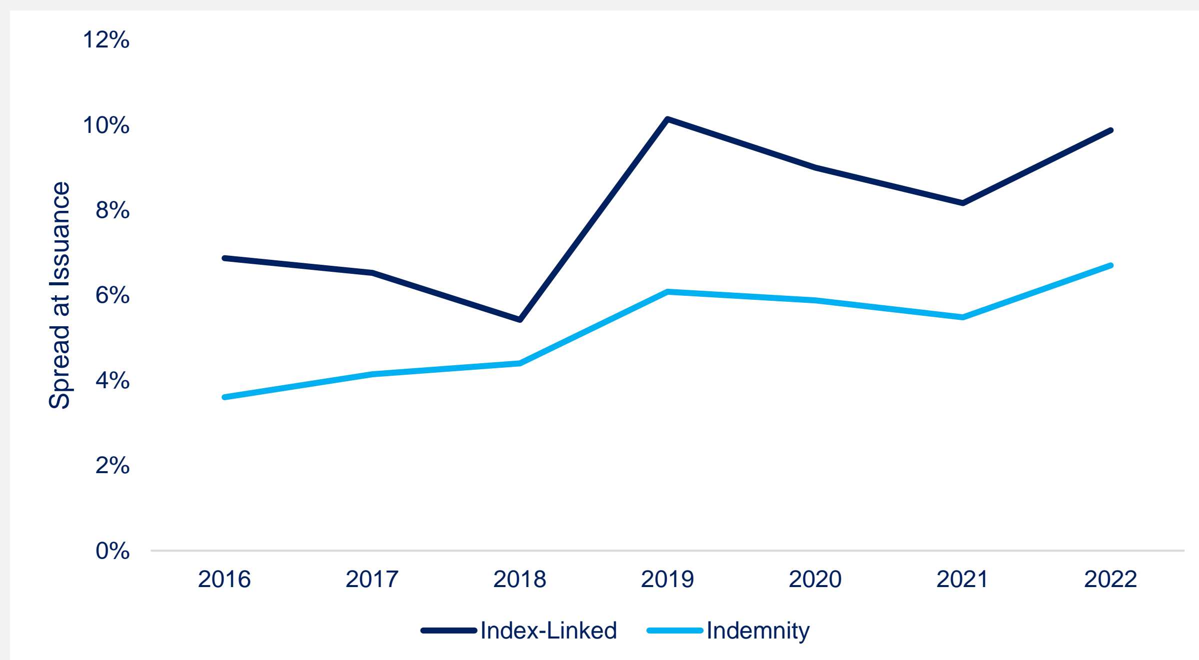
Source: Twelve Capital. As at 24 January 2023.

Whilst there can be no definitive proof as to what has caused this imbalance between Cat Bond supply and investor demand, there are a few possible explanations:

- The sudden and significant increase in geopolitical and macro-economic uncertainty has led to a spike in credit spreads and ultimately also in higher interest rates globally. Equity and credit markets have reacted with substantial negative performance, often in excess of minus 10%. This has in some instances led to rebalancing of the tactical asset allocation in an institutional investor's portfolio, who have reduced Cat Bond holdings which have, in relative terms, increased. Also, new investments have been muted as people were waiting for more clarity around geopolitical tensions and the direction of the global economy. This has reduced the appetite for making allocations in the Cat Bond asset class.
- The strong appreciation of the USD against the EUR and CHF has led to notable liquidity drains within the Cat Bond asset class. As many investors in Cat Bond funds invest into EUR or CHF hedged share classes, an appreciation of the USD might be performance neutral, but it is by no means liquidity neutral for the Fund. At the latest at the roll date, the (negative) hedging PnL would need to be covered by cash. Whilst no exact figures exist on what the impact for the Cat Bond market has been during 2022, it is likely to be far in excess of one billion USD. Consequently, that liquidity was missing to absorb new issuances in the primary market.
- Whilst one could argue that Cat Bonds are fundamentally not, or at worst only weakly, correlated to financial markets, one cannot ignore that the Cat Bond asset class is always in competition for capital against other segments of the alternative fixed income market. One cannot deny that Cat Bonds are not the only asset class that has become more attractive over the course of last year. Subordinated bonds, corporate hybrids, structured credit and many other semi-liquid fixed income instruments have also exhibited significant increases in spreads and as such might have managed to attract capital which otherwise would have been allocated to the Cat Bond market.
- Questions about modelling quality, climate change, terms and conditions of Cat Bonds as well as regulatory reforms, such as in Florida, might still cause hesitance amongst potential investors. Whilst Twelve Capital believes that there are good answers for many of these concerns, one should not forget that these topics (and others) still have the potential to cause disruptions to the asset class and that continuous improvements are needed to ensure that the Cat Bond market remains attractive also in the future.

Pricing-wise, the imbalance of capital supply and demand has led to a strong increase in spreads at issuance across both major trigger types. At the same time, as might be expected in such a "hard" market environment, term and conditions have also improved to the benefit of the investor.

Figure 3: Index-Linked vs Indemnity Spread at Issuance



Source: Twelve Capital. As at 24 January 2023.

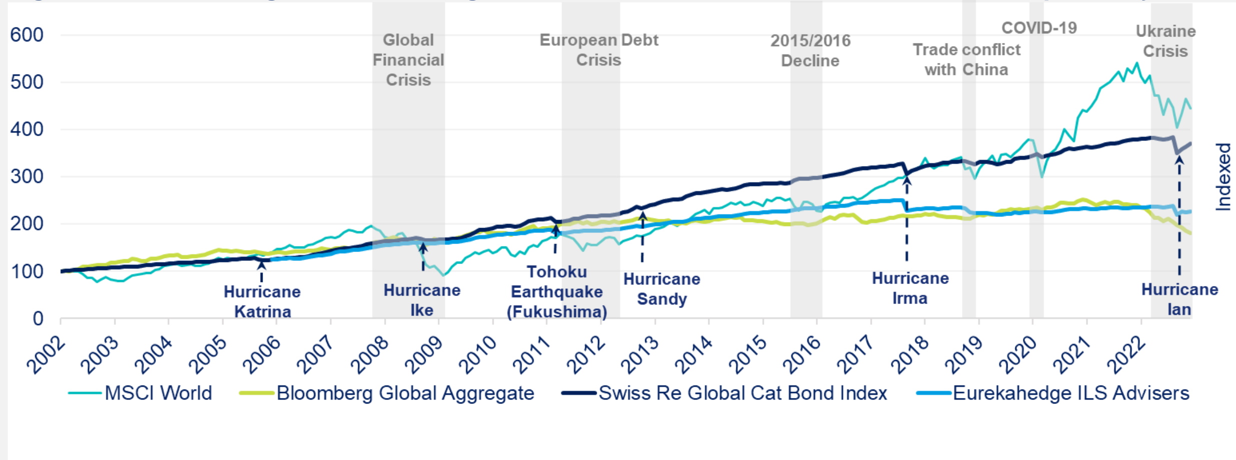
Overall, the primary market offered investors with capital to deploy plenty of attractive opportunities to pick-up risk at increased spreads and solid legal terms.

Cat Bond Market Performance

The Swiss Re Cat Bond Index has ended the year negative with a performance of -2.2%. The index does not have any fees nor does it hold any cash. This marks the first year since the index was started where annual performance was negative.

The negative performance of the index was partially driven by actual defaults or the expectation thereof from Hurricane Ian and the loss creep from Hurricane Ida, but the biggest impact was felt from the spread widening. The spread widening, which was felt across primary and secondary markets, has left to sometimes sever markdowns even of bonds completely unaffected by any of the recent catastrophe events.

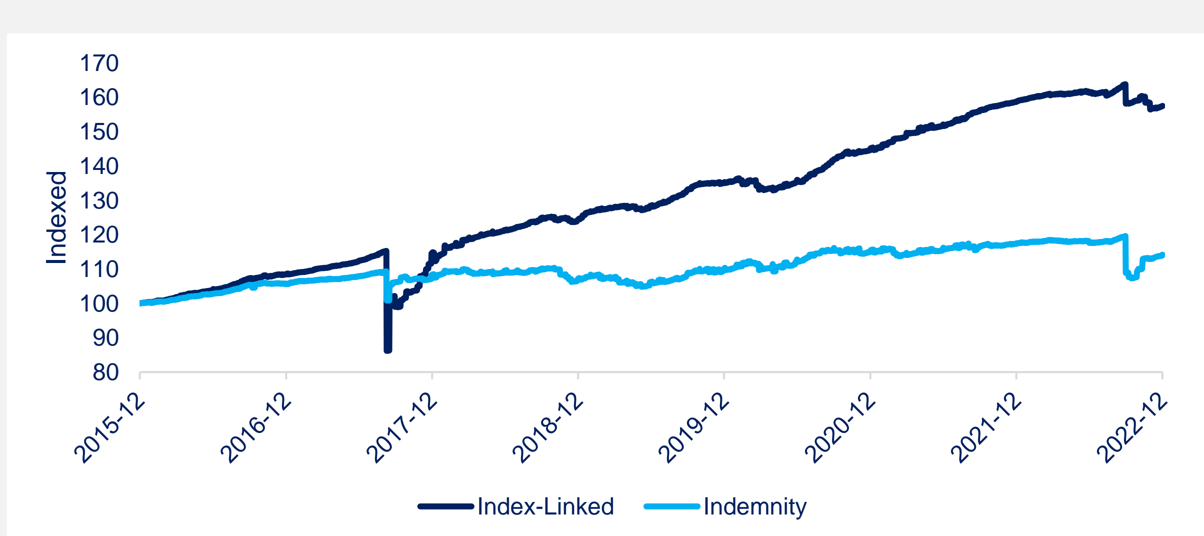
Figure 4: Cat Bonds generated strong and stable returns of more than 6% over the past 20 years



Source: Twelve Capital, Bloomberg. As at 31 December 2022. Past performance is not indicative of future returns. The money placed in the fund can both increase and decrease in value and investors may not get back the full invested amount.

An interesting observation can be made when looking at the performance difference between various trigger types. Whilst index-linked Cat Bonds have generally outperformed indemnity bonds in the past years, the volatility around Hurricane Ian has resulted in a somewhat more complex picture.

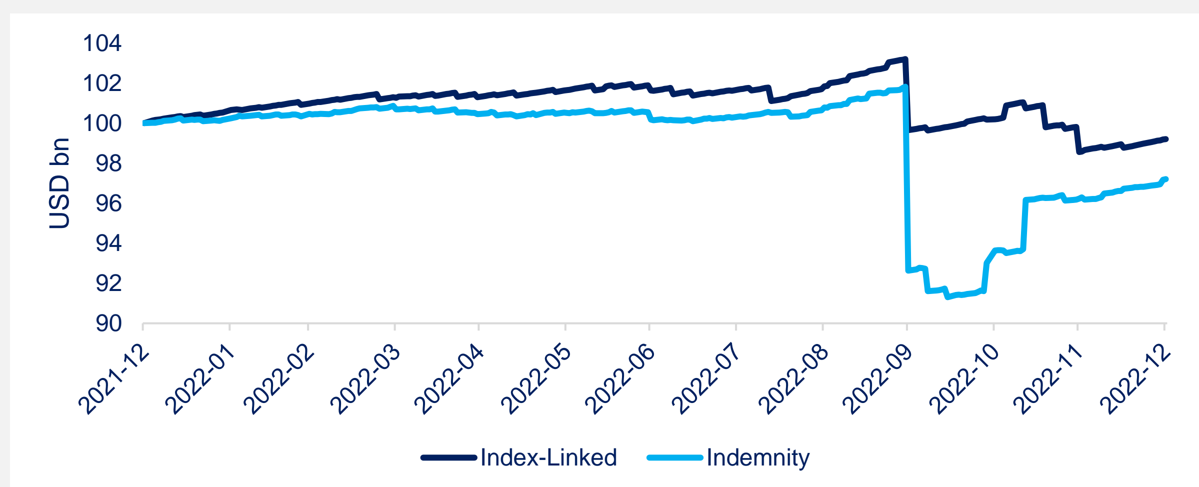
Figure 5: Relative performance Index-Linked vs Indemnity



Source: Twelve Capital. As at 31 December 2022.

Just before Hurricane Ian was making landfall and in the immediate aftermath, Cat Bonds with an index-linked structure outperformed indemnity bonds. This is due to the fact that most index-linkers have relatively high attachment levels (i.e. the available buffers before suffering from the first loss), sometimes even in excess of USD 100bn of insured losses, which Hurricane Ian was never expected to reach. On the indemnity side, several transactions covering Florida hurricane risk were believed to have a substantial risk of attaching. In particular, the FloodSmart transactions covering US flooding risk were believed to be at high risk of losses, in particular in the junior tranches. These bonds are sponsored by the National Flood Insurance Programme ("NFIP") and cover the risk of US inland flooding.

Figure 6: Attachment levels Index-Linked vs Indemnity

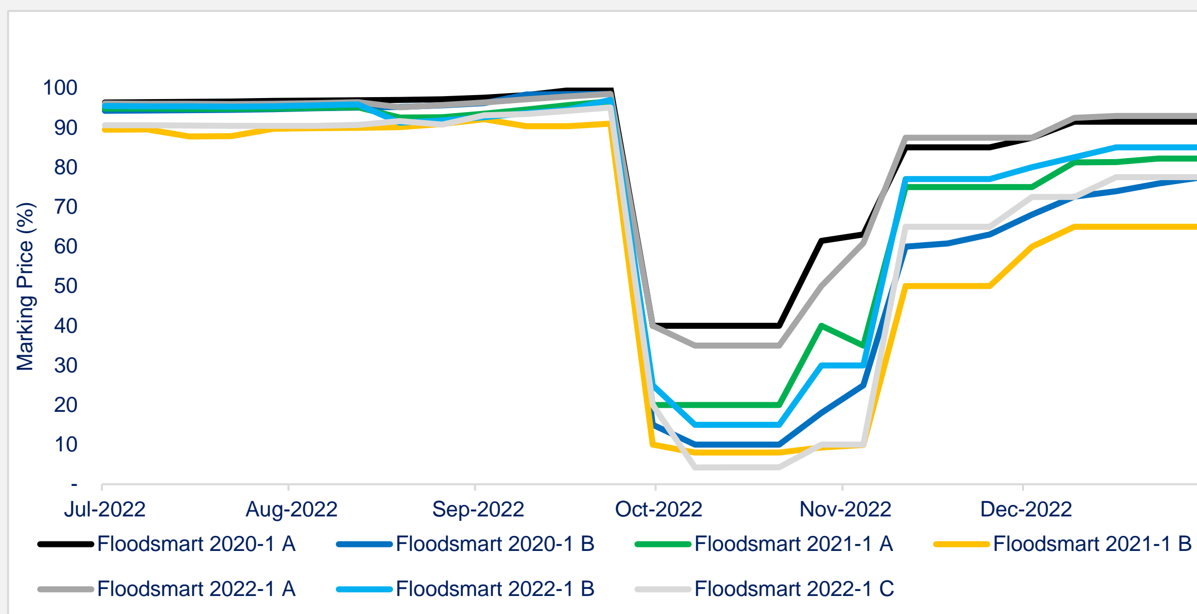


Source: Twelve Capital. As at 31 December 2022.

When it became clear in recent weeks, that the damage caused by Hurricane Ian will likely not be as bad as initially feared, many of the indemnity bonds which were previously trading at significant discounts to their pre-Ian valuations, started to recover. This is in particular true for the FloodSmart transactions, where the market price is now implying a very remote possibility of these taking a loss from Hurricane Ian. Preliminary claim counts data released by the FloodSmart's sponsor, the NFIP[1], seems to confirm that assessment. As the FloodSmart bonds have a combined outstanding notional of more than USD 1.4bn, they make up around 4.2% of the Cat Bond market and hence their recovery had a significant impact on the overall performance of the Cat Bond market as a whole, but specifically on the indemnity portion of the Cat Bond market.

[1] National Flood Insurance Program

Figure 7: Marking prices of FloodSmart bonds throughout H2 2022

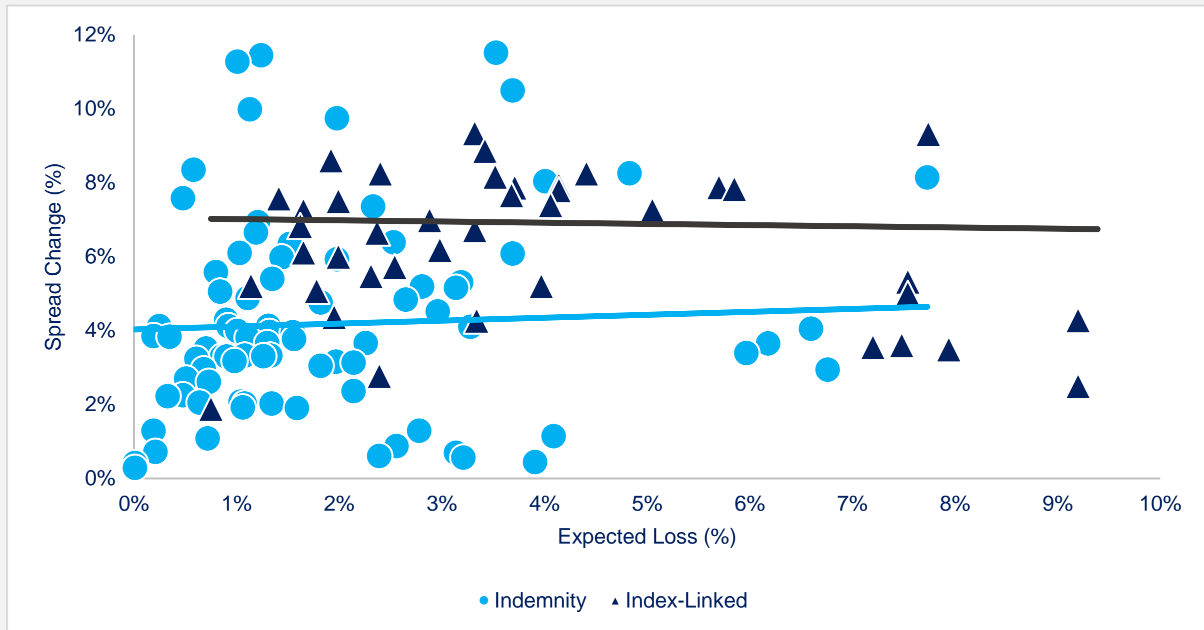


Source: Twelve Capital. As at 31 December 2022.

Index-linked Cat Bonds, however, did not recover in any meaningful form after Hurricane Ian, despite the fact that apart from some smaller high-risk index-linked tranches, most of these bonds will, with a high degree of certainty, not be affected by Hurricane Ian. Instead, the main cause of this lack of recovery is a substantial spread widening in index-linked Cat Bonds that is significantly larger than what can be witnessed across the indemnity space.

Below charts shows the spread change of all Cat Bonds which have been in existence throughout the entire calendar year of 2022, split into indemnity and index-linked trigger structures.

Figure 8: Spread change in Cat Bonds throughout 2022

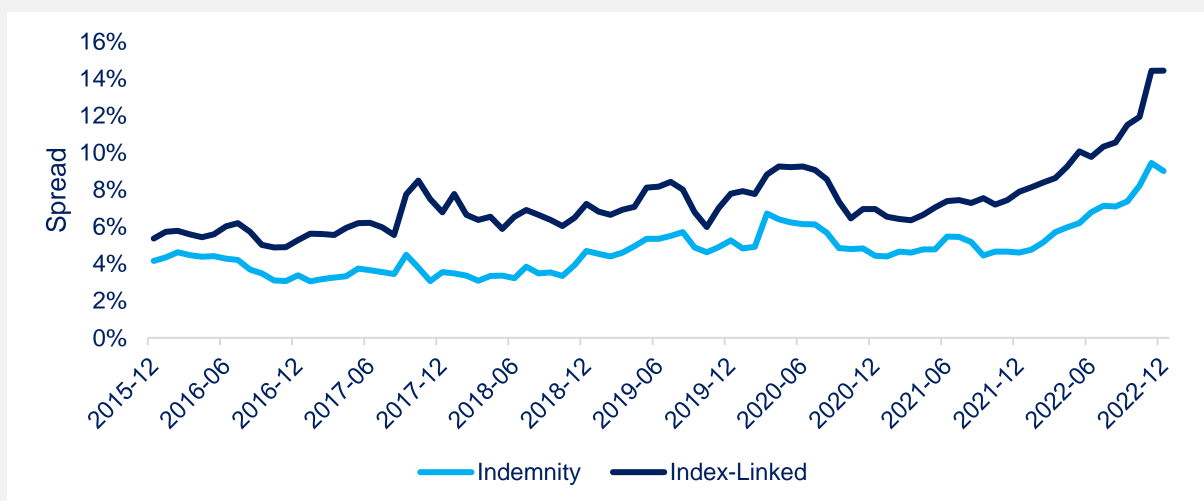


Source: Twelve Capital. As at 31 December 2022.

As seen, Cat Bonds with an index-linked trigger structure have widened considerably more compared to indemnity transactions. Across our tracked universe of Cat Bond transactions, indemnity Cat Bonds widened by an (unweighted) average of +418bps during 2022, whilst index-linked Cat Bonds widened by +692bps during the same observation period.

Assuming an average credit spread duration of around two years, this would translate into a pricing drop of around -8% for indemnity Cat Bonds, compared to -13% for index-linked transactions. Of course, any fund with an overweight into these index-linked transactions would hence appear as underperforming against benchmark indices or competitors.

Figure 9: Spread comparison of index-linked vs indemnity structures



Source: Twelve Capital. As at 31 December 2022.

As per the time of writing, index-linked Cat Bonds now exhibit spreads that are significantly wider compared to indemnity transactions. Whilst ultimately the spread is a reflection of a market price which in itself is a function of supply and demand, there are a couple of possible reasons why index-linkers have higher spreads.

- Different risk levels: On average, index-linkers tend to have slightly higher expected losses compared to indemnity bonds.
- Peak risk vs diversifying: Index-linkers almost always cover US peak risks, such as named storms and earthquakes. These tend to be the perils with the highest spread level compared to their fundamental riskiness across the Cat Bond market. On the other hand, almost every diversifier in the Cat Bond market is structured as indemnity transaction.
- Reinsurance vs retro: Most indemnity bonds are sponsored by primary insurance companies and are as such reinsurance products. Index-linkers in contrast, are often sponsored by reinsurance companies and are hence retrocession ("retro") products. As such, indemnity bonds are in competition with regulated reinsurance balance sheets, which can increase leverage and thus supply of capital whenever an opportunity arises. This effectively dampens any up-ward pricing movements in the reinsurance market. In the retro market, on the other hand, the use of leverage is typically limited with fully-funded ILS investors being one of the most significant source of capital. As such, the retro market needs to attract new investor capital before being able to offer capacity to interested sponsors.

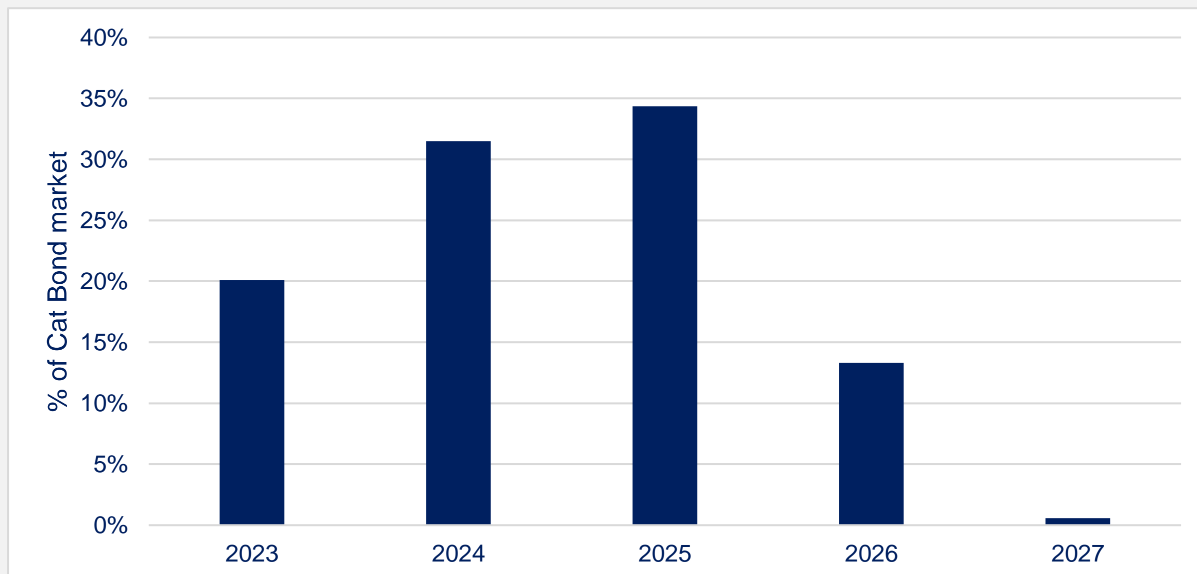
Given the current dislocation in spreads between index-linked and indemnity transactions, Twelve Capital believes that significant relative value can be gained from being overweight the index-linked transactions. In most cases, these transactions have less modelling risk and are more transparent during and after an event, which also translates into better secondary market liquidity. Of course, such a positioning requires an investor's willingness to accept the fact that index-linked transactions tend to have a higher correlation, in particular during severe tail events.

twelve CAPITAL

Cat Bond Market Outlook 2023

Another approximately 20% of the Cat Bond market are expected to mature during 2023. Further maturities of around 30% are expected for 2024 and around 35% for 2025, which implies that the vast majority of Cat Bonds will mature within the next 36 month. As such, any spread widening resulting in bonds trading below par will lead to significant performance generation if those bonds mature at par within the envisioned timeframe.

Figure 10: Cat Bond Market Portfolio Maturity Schedule



Source: Twelve Capital. As at 31 December 2022.

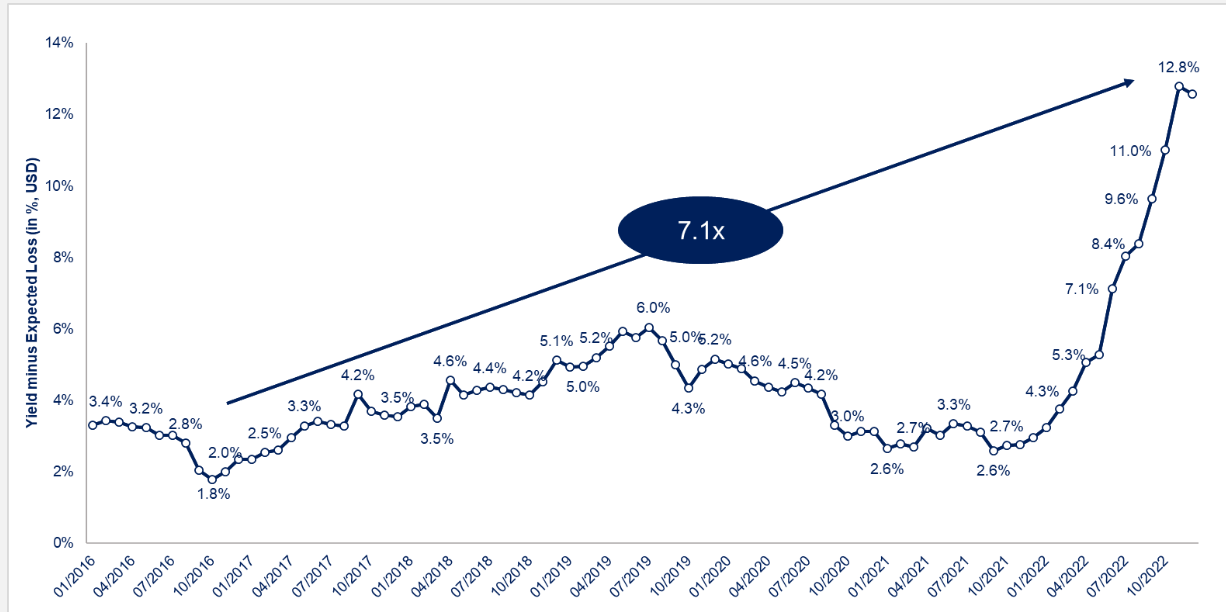
The primary market has also started to become active towards the end of 2022 with several transactions having priced. The wider spreads seen in secondary market valuations have also found their way into these transactions, with significant return pick-ups visible across trigger types, perils, sponsors and geographies.

Based on broker comments, 2023 is likely to bring a well-filled pipeline of new Cat Bond issuances from past, existing and new Cat Bond sponsors. As such, Twelve Capital also expects the attractive pricing environment to persist well into the new year. Yet, we would also expect some normalisations in premiums towards the end of the issuance window in the second quarter, as more capital finds its way into the ILS market.

The strict documentation in newly issued Cat Bond transactions paired with the substantial increase in risk premiums make the current environment an interesting entry opportunity for investors. With risk-adjusted Cat Bond yield levels in the market of currently around 12%, almost no interest rate duration and fundamentally low correlation to broader financial markets, the opportunity set in Cat Bond looks compelling.

twelve CAPITAL

Figure 11: Risk-adjusted Cat Bond yield since 2016 (Yield in USD minus expected loss)*



Source: Twelve Capital. As at 31 December 2022. *The Twelve Cat Bond Market Portfolio is a hypothetical portfolio of Cat Bonds tracked by Twelve Capital. Each known public Cat Bond is represented in this portfolio with its full outstanding notional. Past performance is not indicative of future returns. Performance figures are gross of fees and costs. The money placed in the fund can both increase and decrease in value and you may not get back the full invested amount.

Twelve Capital AG
Dufourstrasse 101
8008 Zurich, Switzerland
Phone: +41 (0)44 5000 120

Twelve Capital (UK) Ltd
Moss House, 15-16 Brook's Mews
London W1K 4DS, United Kingdom
Phone: +44 (0)203 856 6760

Twelve Capital (DE) GmbH
Theatinerstrasse 11
80333 Munich, Germany
Phone: +49 (0)89 839316 110

info@twelvecapital.com
www.twelvecapital.com

About Twelve Capital

Twelve Capital is an independent investment manager specialising in insurance investments for institutional clients. Its investment expertise covers the entire balance sheet, including Insurance Bonds, Insurance Private Debt, Catastrophe Bonds, Private Insurance-Linked Securities and Equity. It also composes Multi Asset portfolios. It was founded in October 2010 and is majority-owned by its employees. It has offices in Zurich, London and Munich.

twelve CAPITAL

Indices

Swiss Re Cat Global Bond Index – The index calculated by Swiss Re Capital Markets, is a market value-weighted basket of natural cat bonds tracked by Swiss Re Capital Markets, calculated on a weekly basis. (SRGLTRR)

Bloomberg Global Aggregate Total Return Index – The index is a measure of global investment grade debt from 24 local currency markets. This benchmark includes treasury, government-related, corporate and securitized fixed-rate bonds from both developed and emerging markets issuers. (LEGATRUU)

Eurekahedge ILS Advisers Index – The index is ILS Advisers and Eurekahedge's collaborative equally weighted index of 25 constituent funds. The index is designed to provide a broad measure of the performance of underlying hedge fund managers who explicitly allocate to insurance linked investments and have at least 70% of their portfolio invested in non-life risk. (EHFI300 Index)

MSCI World Index – The index is a market cap weighted stock market index of more than 1'550 companies throughout the world in USD. (MXWO)

Disclaimer

This material has been prepared by Twelve Capital AG, Twelve Capital (UK) Limited, Twelve Capital (DE) GmbH or their affiliates (collectively, "Twelve Capital"). This material has been furnished solely upon request and is intended for the recipient personally and may not be reproduced or otherwise disseminated in whole or in part without prior written consent from Twelve Capital. It is expressly not intended for persons who, due to their nationality or place of residence, are not permitted access to such information under local law as the product may not be authorised or its offering may be restricted in certain jurisdictions. It is the responsibility of every investor to satisfy himself as to the full observance of such laws, regulations and restrictions of the relevant jurisdiction. This is an advertising document.

This information was produced by Twelve Capital to the best of its knowledge and belief. However, the information herein may be based on estimates and may in no event be relied upon. All information and opinions contained in this document are subject to change without notice. Twelve Capital's analyses and ratings, including Solvency II compliance analysis, Twelve Capital's Counterparty Credit Rating and Twelve Capital's Legal Rating, are statements of Twelve Capital's current opinions and not statements of fact. Source for all data and charts (if not indicated otherwise): Twelve Capital. Twelve Capital does not assume any liability with respect to incorrect or incomplete information (whether received from public sources or whether prepared by itself or not). This material does not constitute a prospectus, a request/offer, nor a recommendation of any kind, e.g. to buy/subscribe or sell/redeem investment instruments or to perform other transactions. The investment instruments mentioned herein involve significant risks including the possible loss of the amount invested as described in detail in the offering memorandum(s) for these instruments which will be available upon request. Investments in foreign currencies involve the additional risk that the foreign currency might lose value against the investor's reference currency. Investors should understand these risks before reaching any decision with respect to these instruments. The information does not take account of personal circumstances and therefore constitutes merely promotional communication, and not investment advice. Consequently, Investors are advised to take all necessary legal, regulatory and tax advice on the consequences of an investment in

twelve CAPITAL

the product. Past performance is no indication or guarantee of future performance. The performance shown does not take account of any commissions and costs associated with subscribing to and redeeming shares.

This material contains information about Twelve Capital and its products as at the date of this material. The information contained herein is of a general nature and does not purport to be complete or contain all the information that an investor should consider when making an investment decision nor does it contain all the information which would be required in a disclosure document or prospectus prepared in accordance with the requirements of the Australian Corporations Act 2001 (Cth) ("Corporations Act"). To the maximum extent permitted by law, Twelve Capital makes no representation or warranty (express or implied) as to the accuracy or completeness of the information contained herein and disclaims all responsibility and liability for the information (including without limitation, liability for negligence). This material is for information purposes only and is not a prospectus, disclosure document, product disclosure statement or other offering document under Australian law or any other law (and will not be lodged with the Australian Securities and Investments Commission ("ASIC")). The material is not and should not be considered an offer or an invitation to subscribe for or acquire securities or any other financial products. The material is available to persons who are "wholesale" investors (as defined in sections 708 and 761G of the Corporations Act). Determination of eligibility of investors for the purposes of the Offer is by reference to a number of matters, including legal requirements and the discretion of Twelve Capital. To the maximum extent permitted by law, Twelve Capital disclaims any liability in respect of the exercise of that discretion or otherwise. The distribution of this material in other jurisdictions outside Australia may also be restricted by law and any such restrictions should be observed. Any failure to comply with such restrictions may constitute a violation of applicable securities laws. By accepting this material you represent and warrant that you are entitled to receive such material in accordance with the above restrictions and agree to be bound by the limitations contained herein. This material contains certain "forward looking statements". Forward looking statements can generally be identified by the use of words such as, "expect", "anticipate", "likely", "intend", "should", "could", "may", "believe", "forecast", "estimate", "target" "outlook" and other similar expressions and include, but are not limited to, indications of, or guidance or outlook on, future earnings or financial position or performance of the funds or Strategies mentioned. The forward-looking statements contained in this material are not guarantees or predictions of future performance and involve known and unknown risks and uncertainties and other factors, many of which are beyond the control of Twelve Capital, and may involve significant elements of subjective judgement and assumptions as to future events, which may or may not be correct. There can be no assurance that actual outcomes will not differ materially from these forward-looking statements. A number of important factors could cause actual results or performance to differ materially from the forward-looking statements, including the risk factors set out in this material. Investors should consider the forward-looking statements contained in this material in light of those disclosures and not place reliance on such statements. The forward-looking statements are based on information available at the date of this material. Except as required by law or regulation, Twelve Capital undertakes no obligation to provide any additional or updated information whether as a result of new information, future events or results or otherwise. Indications of, and guidance or outlook on, future earnings or financial position or performance are also forward looking statements. Twelve Capital does not guarantee any particular rate of return or performance nor does it guarantee the repayment of capital invested or any particular tax treatment.

This is marketing material in the meaning of MiFID II.

This is marketing material in the meaning of FIDLEG.

Note to EEA investors: when distributed in the EEA, this information has been distributed by Twelve Capital (DE) GmbH in accordance with the terms of its authorisation and regulation by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin).

Note to US investors: Neither this information nor any copy thereof may be sent, taken into or distributed in the United States or to any U.S. person (within the meaning of Regulation S under the US Securities Act of 1933, as amended). The products and services described herein may not be offered to or purchased directly or indirectly by US persons.

Twelve Capital AG is licensed as "Manager of collective investment schemes" by the Swiss regulator FINMA. Twelve Capital AG is incorporated in Switzerland, registered number 130.3.015.932-9,

registered office: Dufourstrasse 101, 8008 Zurich. Twelve Capital (UK) Limited is incorporated in England & Wales: company number 08685046, registered office: Moss House, 15-16 Brook's Mews, London, W1K 4DS. Twelve Capital (UK) Limited is authorised and regulated by the UK Financial Conduct Authority and is registered as a commodity pool operator ("CPO") with the U.S. Commodity Futures Trading Commission ("CFTC") and is a member of the National Futures Association (the "NFA") in such capacity. Such registrations and membership in no way implies that the FCA, the CFTC or the NFA have endorsed Twelve Capital (UK) Limited's qualifications to provide the advisory services described in this document. Twelve Capital (DE) GmbH is authorised and regulated by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) in Germany. Twelve Capital (DE) GmbH is incorporated in Munich, Germany, commercial register number (registry court: Munich) HRB 252423, registered office: Theatinerstrasse 11, 80333 Munich. Disclosure Brochures with further regulatory information about our entities can be found in the "Regulatory" section on our website.

© 2023 Twelve Capital. All Rights Reserved