

CAT Bonds: Finding Reassurance in Reinsurance

Disruptive Forces in Investing

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Anu Rajakumar: Catastrophe bonds, better known as CAT bonds, are complex, insurance-linked securities that traditionally transfer risk against natural disasters such as tornadoes, volcanoes, hurricanes, and floods, among others, from sponsor to investors. CAT bonds can provide differentiated risk characteristics from traditional asset classes, as well as potential diversification benefits, to investors' portfolios. New issuance of CAT bonds hit record levels in 2021, but as climate concerns and the ongoing pandemic continue to impact the world and, thereby, the CAT bond landscape, what might investors want to take into consideration? My name is Anu Rajakumar, and today I'm joined in the New York studio by Cedric Drui, a managing director, and Sophie Ware, a senior vice president who's based in London, on our insurance-linked securities team here at Neuberger Berman, to shed light on how CAT bonds operate and thrive today. Cedric, Sophie, thank you very much for joining me.

Cedric Drui: Good to be here.

Sophie Ware: Thanks for having us.

Anu: So, as I mentioned in the opening, CAT bonds can be considered a niche, complex type of a bond, so maybe we can start by giving our listeners a better understanding of how they work. What is a catastrophe bond, and what are some of the characteristics that investors should be aware of when considering them in an investment portfolio?

Cedric: Sure, I'm happy to start with that. So catastrophe bonds, they can sometimes be seen as complex or daunting; in their basic form, they're a simple way to transfer natural catastrophe risk – think hurricanes, earthquake, floods, or even tornado risk – from a protection buyer, who's typically an insurance company but can also be a corporate or even local and government entities, to protection sellers, who take on that risk in exchange for a fixed-income type of return, typically, over a period of three to four years.

From a technical standpoint, they're most often 144A fixed-income securities, which means that they're offered for purchase to qualified investment buyers such as pension fund or specialized investment funds like ourselves. Overall, it's an asset class that's grown tremendously from its humble beginnings, which date back to the mid to late '90s, to what we're seeing today; where we see approximately 200 catastrophe bonds currently in the market, and they total just over \$30 billion in notional limit. Sophie, perhaps did you want to take us through a few interesting example and specifics?

Sophie: Thanks, Cedric. Sure. Maybe I can add a little bit of color onto who issues CAT bonds and why. So, as Cedric mentioned, CAT bonds can cover a range of natural-catastrophe events, and although U.S. wind and earthquake are typically the most common risks covered, simply because these are the events that have the potential to result in the largest insured losses, as the market continues to develop, and particularly as new sponsors look to issue CAT bonds, we're seeing new types of perils and regions come to market.

So for example, in the first half of this year, an Italian regional insurer issued a bond which included Italian earthquake risk, and also the World Bank issued a bond to cover Jamaica against hurricanes. The most prolific issuers of CAT bonds are still the insurance and reinsurance companies looking to transfer some of their risks off balance sheet into the capital markets. This includes some of the big national insurers, including household names like USAA and Allstate; but increasingly we're seeing new types of sponsors enter the market. Actually, in 2020, we had 10 new sponsors come to market--and this year, seven already. I think one of the most interesting types of new entrants has been the corporate entities. Last year, Alphabet came to the market with a bond to cover their corporate real estate assets against earthquake risk in California. Other examples we've seen have been the energy company, Sempra, who came to market last year with a bond, looking to protect them against losses from wildfire, where they're found liable due to faulty equipment. In a similar vein, over the course of the market's life, we've seen a number of transportation-related deals. I think the most interesting of these is the New York MTA, who come to market looking to protect against losses arising from flooding or earthquake impacting the network. I think we'll continue to see issuance growth here, as many entities have potential exposure to losses resulting from natural catastrophes.

Anu: Yeah, thanks Sophie, and very interesting to see how the CAT bond space is evolving, and very timely that you mention the New York MTA also getting into the space, given that Hurricane Ida just ravaged the city fairly recently. Would love it if you could just take a moment to compare and contrast CAT bonds to traditional fixed-income assets, and also maybe just touch on how CAT bonds can be structured to avoid losses.

Cedric: Sure. The key feature that makes CAT bond an attractive investment is their low correlation to global financial markets. Obviously events occurring, when we talk about hurricanes and earthquake, just aren't related to global financial events, so we really want to focus on that natural-event risk premium. And as a result, the other types of risk are typically mitigated, so the use, for example, of a fully collateralized trust to hold the funds, which removes, or at least avoids, most of the credit and counterparty risk, so that we focus on that natural-event risk only. I'll probably let Sophie, in a little bit, go into more detail on how investors think about CAT bonds, how they allocate them to their portfolio, and take you through the risk side first on how we analyze and think about that risk. Since we mentioned they are risk-transfer instruments, the natural, underlying event risk must be analyzed, and that's typically done through the use of specialized catastrophe-modeling software, as well as simulation tools, not just historical events. What we're trying to do here is really stress test our assumptions, such that we go beyond the historical record, and really analyze the potential for large, extreme events. We need to be able to quantify the probability of those bonds attaching and calculate the expected value of potential impairments or payout if qualified events were to occur. As an example, one would compute the probability of a hurricane causing \$100 billion in insured losses to the state of Florida, or instead, just focus on the county of Miami-Dade and quantify the probability of a \$5 billion event occurring, but only in that specific region. That goes to show that CAT bonds can cover both a large number of perils in region, but also geographic areas that can be broad, as well as narrowly defined. There's really an embedded diversification potential in CAT bonds that's very attractive, in addition to their uncorrelated-risk nature.

Sophie: I think this market has an appealing profile to investors for quite a few reasons. CAT bonds should provide investors with a relatively consistent return profile over time, in the absence of major natural-catastrophe events, and also with a differentiated return profile from other asset classes, as Cedric mentioned, given they're capturing a natural-event risk premium. It's important to note that, unlike in other segments of the reinsurance market, CAT bonds have the advantage that they're also liquid and tradable. Spreads paid by cedents to issue CAT bonds actually look pretty competitive, given the cedents' need to hedge major-catastrophe risks on their balance sheets; and, as a result, compare very favorably to corporate bonds. For example, the current weighted average spread in what we define as the CAT bond universe is in excess of 6.5 percent. That compares very favorably to corporate high yield. CAT bonds are also a floating rate, which could be an attractive profile in a rising-rate environment, because if short-term rates go up, so will overall yield, and that could be quite topical at the moment.

Another advantage is that CAT bond-issued spreads, and their risk profile, does vary dramatically. You can see issued spreads anything from 2.5 to 20 percent, and that allows mandates to be customized, depending on risk/reward requirements. I think it's also important to highlight that the current outlook for CAT bonds is very compelling in terms of pricing. While other markets seem to have suffered from spread compression due to the global hunt for yield, the CAT bond market has actually remained relatively immune from this because of the relatively high barriers to entry. Similar to other segments of the reinsurance market, CAT bond pricing is broadly correlated to global insured losses. We've had several recent years of high losses, and already, in 2021, as listeners will be aware, we've had the Texas winter storm in February, floods in Europe, and also, most recently, Hurricane Ida, which, after making landfall in Louisiana as a Cat-4 hurricane, then continued inland to the Northeast to generate record-breaking rainfall and flooding. It's going to take a little while for initial losses to officially be released for Ida, but I think the event is set to be significantly bigger than any hurricane losses we've seen since 2017; and that should help support CAT bond pricing in 2022.

Anu: Great. Thank you very much for that, Sophie, very helpful context, particularly characteristics of catastrophe bonds. Cedric, as you were speaking about catastrophe-modeling software and hurricanes in Florida, it did make me think of the ESG link, which is a key topic for investors. What should investors know about catastrophe bonds as it relates to ESG?

Cedric: Sure. That's a very, very good question, and catastrophe bonds are actually very interesting from an ESG standpoint. I think, think there's a couple of different layers to it. I think first, on the, on the sponsor side, every time a potential sponsor thinks about natural-event risk, it forces them to acknowledge and quantify and assess their environmental and climate exposure, which is obviously a good thing from a governance standpoint.

The second thing that it makes me think about is the investor side. When you think of equities or fixed-income ESG screens, they're typically screens where you narrow down and filter the type of company you want to invest in. Here, instead, there's a very direct link into the ESG world through your investment, because it protects against losses linked to those type of extreme event[s]. So the risk transfer is very direct, capital participants sharing a portion of the claims; and that, overall, strengthens

the global insurance market. What we've seen in the past, most notably after 1992 following Hurricane Andrew, was a number of insurance company becoming insolvent and unable to pay claims. The fact that capital market now exists helps avoid this type of situation. It ultimately adds resilience to the space, and all the way down to the homeowner level, you see a benefit from a more robust system. Without a way to transfer risk out, the cost of insurance would most likely increase.

And finally, you also see CAT bonds being issued not just in the developed markets but also in emerging economies, most notably by the World Bank. In those markets, the underlying insurance is not as deep and robust, and CAT bond for those emerging economies can provide much-needed financial assistance in the immediate aftermath of an event. So that, all together, helps address a number of the U. N. Sustainable development goals.

Anu: You know, Cedric, that's interesting, that you mentioned emerging markets here. Just out of curiosity, which markets, specifically, have you seen, um, bonds we issued for?

Sophie: So the World Bank has quite a developed issuance program, dating back to 2017. Currently, in terms of outstanding bonds still in the market, there's a bond covering Mexico, the storm and earthquake risk, and also the Philippines for wind and earthquake risk as well. Interestingly, they actually came to market this year for the first time to cover Jamaica against hurricane risk. But if you look back historically to other bonds they've issued, which have since matured, you can see that they've covered regions such as Peru, Colombia, Chile, and obviously there's significant scope for further geographies to be added over time.

Anu: Yep, terrific. Thank you very much. Now, just want to speak about CAT bonds in the context of asset allocation. Could you talk a little bit about what CAT bonds bring in terms of diversification and how investors allocate to CAT bonds, as well as what some of the risks are, other than the – obviously –the unknowable risk of natural disaster?

Sophie: Sure. The diversification angle here is actually very key and multifaceted; both in terms of the diversification benefits of the asset class versus other risk assets, but also the ability to construct a diversified portfolio within the CAT bond universe itself. One of the reasons why CAT bonds have appealed to investors is undoubtedly that they may provide portfolios with a source of diversifying returns. The promise of CAT bonds, as we've discussed, is driven by natural catastrophes such as hurricanes and earthquakes, which are by definition, uncorrelated to any macro or company-level drivers. And therefore, in the medium term, they should demonstrate very low correlation to other risk assets such as fixed income, equity markets, and also hedge funds. This diversification effect has actually been tested in a number of periods; including during the Financial Crisis, 2008 to 2009, and again at the beginning of the pandemic in 2020, over which the CAT bond market remained resilient. We talk about this in more depth in our CAT bond white paper, where some comparative performance numbers are also provided.

The low correlation to other fixed-income markets is undoubtedly helping drive demand for CAT bonds from dedicated fixed-income players as part of their broader mandates, but also within the more specialized alternative investment buckets, given their low correlation to other hedge fund strategies. Then, in terms of intra-asset-class diversification, this is also an important consideration. Think it's somewhat a misconception that a single U.S. hurricane or earthquake event will automatically result in a major loss of the strategy. It is, in fact, possible – and indeed, desirable – to build diversification into a portfolio of CAT bonds, and this can be through a number of ways. Typically, we think of it in four dimensions. So first would be peril type such as wind, earthquake, fire; secondly, geographical area, including state and regional exposure within the U.S., but also non-U.S. exposure, so regions such as Japan and Europe. And it's also possible to diversify by CAT bond trigger type and structure, and again, we go into that in a lot more detail about the various types of CAT bonds and their payout mechanisms in our white paper.

And then the obvious consideration to point out for CAT bond investing is that, if a covered event occurs, individual CAT bonds can pay out up to 100 percent of principal. This is rare, but it has actually occurred on a number of occasions following large individual events. So following Katrina in 2005, the Fukushima earthquake in Japan in 2011 and, somewhat topically, the payout of the World Bank pandemic bond due to COVID-19 in 2020. I think it's, however, important to point out that, at the universe level, so if you look at the Swiss Re CAT bond index, the performance impact of these events was limited, which speaks to the sort of magnitude of natural-catastrophe events that the CAT bond market typically underwrites. I think it does, however, point to the need for an element of portfolio diversification rather than, say, investing in one single CAT bond and also the importance of specialized expertise when investing in this market.

Anu: Yep, that's terrific and certainly interesting to hear about diversification within the CAT bond space as well, so thank you for sharing that. You know, I mentioned in the opening that new issuance of CAT bonds hit record levels in 2021. I'd love to hear, just as we wrap up now, you know, what are your comments on the outlook for CAT bonds going forward. Do you foresee

that issuance continuing to grow at the same pace? How do you see growth in terms of the global nature of CAT bond offerings? Maybe you could just speak a little bit about that and just general outlook comments.

Cedric: Sure. We, we do believe that CAT bonds are not only here to stay, but see continued growth in, in, in many years to come. First, they still represent a very small fraction of the global insurance market. We mentioned briefly in the opening, CAT bonds market still stands at about \$30 billion, compared to the trillions of insurance capital that's at risk. And overall, the current limitations of insurance coverage are still pretty high, which as a number of perverse effects, leads to large under-insured market. So for example, in the state of California, most people still do not have earthquake coverage, given the cost of the underlying exposure, and it also leads to underserved market altogether. As we briefly noted, in emerging economies, there are entire regions where there's not sufficient coverage for just about anybody. So we believe that transferring some of the risk out to the global capital market is a very efficient use of capital, allowing the investors who are willing to take on that risk to have an interesting and largely uncorrelated return stream.

Sophie: I agree with Cedric that the capital market will continue to grow; both as new cedents come to market, but also as we see traditional insurer and reinsurers look increasingly to the capital markets. While the capital market might seem small compared to other asset classes, the total ILS market size is now back at a record \$97 billion, and some of this can definitely, potentially, be redirected into the capital market. There are several advantages for sponsors for going that route. We're also currently seeing a lot of demand for regions and perils which are regarded as diversifying away from U.S. wind, so I think we'll see more bonds covering Japan, Europe, Australia, and maybe even more developing countries; as well as, potentially, newer perils. So the recent floods in Germany is an obvious example of a protection gap, and also, while it's out of our universe, as we focus on natural-catastrophe events, cyber and other manmade perils are likely to be a big growth area. Generally the market growth is very positive for us as investors, as it allows increasingly diversified portfolios; but it's also very helpful to create a liquid secondary market for the asset class.

And finally, we've already talked about the role of ESG in the capital market; but I think this has the potential to be a strong growth area as other developing nations and global agencies see the utility of securing disaster financing. For example, in the private-bond market, we've already seen a transaction from the Danish Red Cross, covering volcanic eruptions; so we know there's a lot of potential demand out there. And another area of growth could be for specific ESG labeled CAT bonds. For example, in June, we saw a €200 million issuance from Generali in Europe, marketed specifically as a green bond, in that the collateral be invested in assets defined as having a positive environmental impact.

Anu: Great. Thank you so much, Cedric and Sophie, really appreciate your insights into this unique and growing asset class; particularly some of the innovations that we're seeing in the CAT bond space. For our listeners, if you're interested in learning more about catastrophe bonds, as Sophie mentioned a couple of times, the team did release a white paper, which is available at nb.com. Its name is "[Catastrophe Bonds: Natural Diversification](#)," and explains what catastrophe bonds are, how they work, et cetera. So please check that out if you're interested. Once again, Cedric, Sophie, thanks for joining me.

Sophie: Thank you for having us.

Cedric: Thank you very much.

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