

ILS Glossary

Attachment Probability

The attachment probability is the likelihood a cat bond will suffer some losses over the course of a one-year period.

Basis Risk

Basis risk is the difference between the expected recovery from a risk transfer mechanism and the actual recovery of the cedant.

Catastrophe Bond

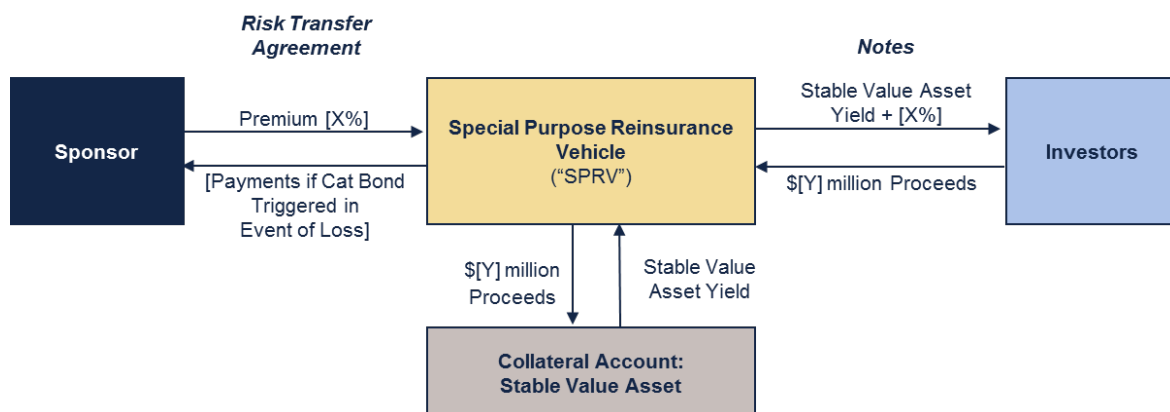
Catastrophe bonds are securities sold to provide collateral to support collateralized (re)insurance usually protecting against low-frequency / high severity events such as natural catastrophe and life / mortality disasters and transferring such risks to investors.

Bond Size and Term

Cat bonds typically have a two to five year term, three years being most common. They usually have a size of \$100 million to \$300 million, although the market will sometimes support deals as large as \$1-2 billion.

Structure

In the classic structure, a special purpose reinsurer vehicle ("SPRV") is set up solely to issue the bond. The SPRV is typically set up in Bermuda or the Cayman Islands (or Ireland for European deals).



After issuing the bond, the SPRV will hold the proceeds in a collateral account to collateralize the reinsurance agreement. The proceeds will be deposited in the collateral account and invested in highly rated stable value assets. Investors receive the investment income on the collateral, plus an amount equal to the premium payments from the sponsor. In the event of a reinsurance claim, the SPRV will liquidate the collateral to pay the claim to the sponsor.

Catastrophe Bond Light

Cat bond light structures are typically used for transactions smaller than the efficient scale for a Rule 144A cat bond. The product has a high level of flexibility and can be tailor-made depending on investor and sponsor needs. In a cat bond light, investors might not receive either third party modeling or a bond rating to help evaluate the deal. A cat bond light uses simplified documentation usually resulting in lower fixed issuance costs. As a result, the investor universe shrinks. Additionally, the cat bond light bonds typically have significant securities law based transfer restrictions, and sometimes do not trade. These factors cat bond light deals less liquid than a Rule 144A cat bond.

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Cat-in-a-Box

A cat-in-a-box trigger is a simple parametric trigger mechanism which depends on the physical parameters of the event. In the case of earthquake risk, three criteria are usually set as a trigger: the location of the epicenter within a specific geographic zone (box), its magnitude and the depth of the actual fault rupture. If these three criteria are met, the transaction triggers resulting in a claims payment. This structure is very transparent to investors as these parameters are publically reported by national and international agencies. It also has the advantage of providing prompt claims payment following the event. On the other hand it may create substantial basis risk for the sponsor.

Collateralized Reinsurance

This is a reinsurance contract where the reinsurer puts collateral in a collateral account at inception to secure its obligation to pay the ceding company. Typically, an ILS investor is the source of the collateral. Collateralized reinsurance has also come to refer to situations where a ceding company faces a fronting reinsurer and then the front in turn enters into collateralized risk transfer with an ILS investor. In this second situation notwithstanding the common usage, the name is technically incorrect as no collateral is posted for the direct benefit of the ceding company. Any of an insurer, a reinsurer, or a captive insurer for a corporate can act as the ceding company for collateralized reinsurance.

No Fronting

The ceding company cedes reinsurance to a cell company authorized to engage in collateralized reinsurance in the cell company's domicile. The cell company could be an unrated reinsurer owned by an investor fund or a rented cell in a third party unrated reinsurer. The collateral is explicitly linked to each deal: the investors invest in the cell to collateralize the obligation of that cell company.

Fronting

The ceding company cedes reinsurance to an authorized reinsurer and the investors enter into a financial contract with the reinsurer either directly or indirectly through a cell company. The collateral is dealt with behind the scenes: the investors post collateral either directly to the fronting company or behind the cell company.

Exchange-Traded Contracts

Parties may also trade (re)insurance event risk (natural catastrophe risk, longevity risk etc.) using index triggers on recognized financial exchanges (e.g., the Chicago Board of Trade) using standardized exchange-traded contracts such as futures contracts. To date, none of the exchange-traded contracts have reached sufficient scale to achieve meaningful liquidity and substantial commercial success.

Expected Loss

The expected loss of a cat bond is the average loss that investors can expect to incur over the course of a period (usually one year) divided by the principal amount invested (which typically equals the reinsurance limit). The expected loss for cat bonds is usually estimated by a third-party modelling agent such as AIR, RMS and EQECAT.

Extension Period

A sponsor may cause the SPRV to extend a bond past the scheduled maturity to calculate reinsurance recoveries for events which took place during the risk period. This period from the scheduled maturity to the final maturity is called the extension period. Only events happening during the risk period rather than the extension can give rise to claims.

Extension Spread

During the extension period, the sponsor continues to pay premium but at a reduced rate in comparison with the risk premium corresponding to the risk spread. This spread is known as the extension spread.

Industry Loss Warranties

Often referred to as ILWs, they can be purchased in reinsurance or derivative form. ILWs are protection contracts based in part (or in their entirety if a derivative) on the total loss arising from an event to the entire insurance industry rather than the ceding company's own ultimate net loss (UNL). Losses are reported by index providers, e.g., PERILS for European natural catastrophe risks and Property Claim Services for US natural catastrophe losses.

ILWs are used extensively as a form of retrocessional reinsurance (i.e., reinsurance of reinsurers) not only for natural catastrophe risk but also in other lines of reinsurance such as marine & energy, aviation, terrorism and satellite. Where an appropriate and market recognized index supports a class of business ILW capacity can be sourced. ILS investors have become significant buyers and sellers of ILW protection and traditional (re)insurers continue to participate in this market. Note that technically an ILW is a form of reinsurance but market practice is to refer to an industry index derivative (where no actual ceding company losses (UNL) are required if the industry trigger is met) also as an ILW.

Institutional Investor

Only institutional investors may invest in cat bonds and sidecars. An institutional investor is a professional investor with large availability of resources and specialized knowledge. The most common institutional investors are mutual funds, pension funds, endowment funds, insurance companies, commercial banks and hedge funds.

Institutional investors are exempt from many security regulations designed to protect smaller investors as they are considered resourceful and knowledgeable enough to protect themselves. Many cat bonds and sidecars are restricted to Qualified Institutional Buyers, or QIBs, a category of Institutional investor specifically defined under the U.S. Securities Laws.

Primary Trade (New Issue)

A primary trade happens when investors buy a newly issued cat bond. The money received helps fund the SPRV's collateral account.

Reset

For multiyear cat bonds (and multiyear collateralized reinsurance) with an indemnity / UNL or an industry loss trigger, changes in a sponsor's book of business could expose investors to a changed risk profile. These cat bond deals usually address this by adjusting the trigger (usually on an annual basis) to hold the risk to investors constant (or in variable reset deals to keep the risk/return relationship relatively constant). Resets are also used in other types of cat bonds for various reasons including to mitigate basis risk (e.g., the index weightings for a parametric index deal may need to shift to reflect changes in risk exposures).

Risk Perils

Cat bonds may provide collateral to support coverage for a single peril such as hurricanes within a specific region or for multiple perils such as hurricanes and earthquakes across multiple territories. U.S. hurricane risk dominates the market but other peak-perils include U.S. earthquake, European windstorm, Japanese earthquake and typhoon. The market has been accessed for non-peak perils such as Australian cyclone, Mediterranean earthquake and Mexican earthquake.

Cat bonds have also transferred life, accident and health risks among others.

Risk Period

The reinsurance agreement and the cat bond only cover events taking place during the risk period. The risk period typically commences the day following the issuance of the cat bond (but it is possible to indicate a risk period start date at a later point in time) and terminates a few days before the scheduled maturity (e.g., the risk period might end on December 31st for a bond scheduled to mature on January 8th). Usually the risk period lasts between three and five years.

Risk Spread

The risk spread is a fixed rate paid to investors on the principal amount of the bonds. The risk spread is determined at issuance and it is generally constant throughout the life of the bond. The principal amount may vary based on loss activity etc.

Note that most cat bonds are “floaters” meaning the coupon paid floats based on the interest rate environment. As such the actual coupon is the sum of a fixed component (the risk spread) and a floating component such as the actual yield on the collateral (e.g., U.S. Treasury money market funds).

Rule 144A Catastrophe Bond

Rule 144A refers to the type of placement. Rule 144A cat bonds represent the vast majority of the cat bonds publicly known in the market. In a Rule 144A placement a securities underwriter will act as the initial purchaser of the bonds from the SPRV and immediately resell them only to large institutional investors, often only those who qualify as QIBs. These placements are not subject to the SEC's registration and disclosure requirements for public offerings, although there is typically an offering document and the bonds are usually made eligible some electronic trading systems. A Rule 144A deal (as opposed to a cat bond light) is currently the most liquid type of cat bond offering and therefore tends to have tighter spreads than cat bond lights.

Secondary Market Price / Secondary Trade

The reselling of bonds among investors constitutes a secondary trade. Securities broker-dealers facilitate this secondary trading activity and sometimes may also hold inventory. The money paid for bonds in the secondary market (less a trading margin) goes to the selling party, not to fund the SPRV collateral account which remains unaffected.

The price at which the bond is being sold on the secondary market is the secondary market price. The secondary market price will vary depending on investors' appetite for the bond and in particular their assessment of the risk transferred. As a result, secondary market prices often differ from the new issue price.

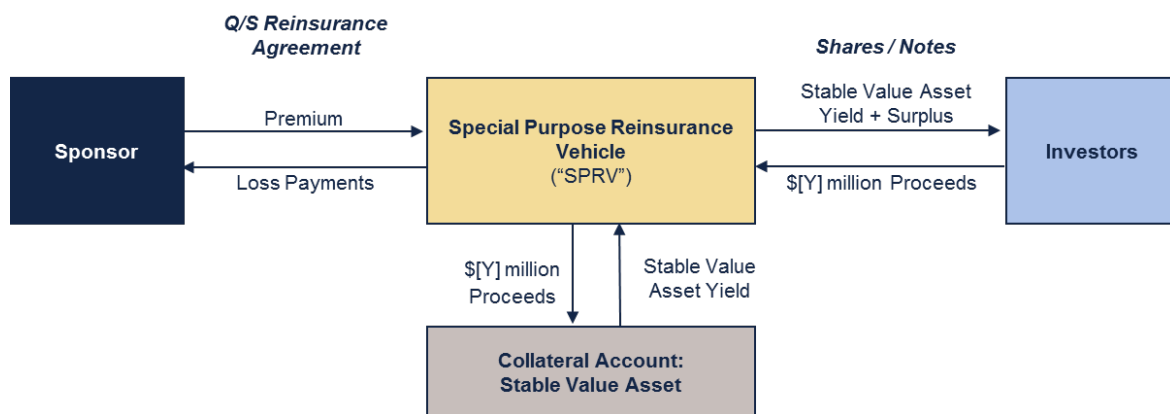
Cat bonds are one of the only products transferring (re)insurance risk in liquid form (with exchange traded contracts the other). This is a significant advantage for investors over other forms of reinsurance risk taking as they can eliminate their obligation by selling their bond without having to enter into a cumbersome novation process. Another advantage of the secondary market is the ability for intermediaries and their clients to follow pricing trends and monitor changing investor appetite and perceptions of risk.

Sidecar

A sidecar is a financial structure which allows investors to be exposed to a quota share reinsurance agreement. The sidecar recovery amount is capped by the size of the sidecar; so there is an exit point, usually set at the maximum of capital requirements of the cedant. In traditional reinsurance terms, this is a capped quota share. Typically the sidecar’s ability to pay claims comes from both the net ceded premiums and the invested capital.

Sidecars are very flexible in terms of business mix, size and modelling requirements. In terms of business mix, sidecars allow the transfer of worldwide exposures. Non-property cat lines of business (LoB) and retro indemnity are possible. Long tail LoBs where full development is required are not very suitable due to the cost of holding capital (i.e. the collateral) over a long period.

The size of sidecars can change over time as price and terms are typically renegotiated every year.



A sidecar can take multiple forms – the above shows only one iteration.

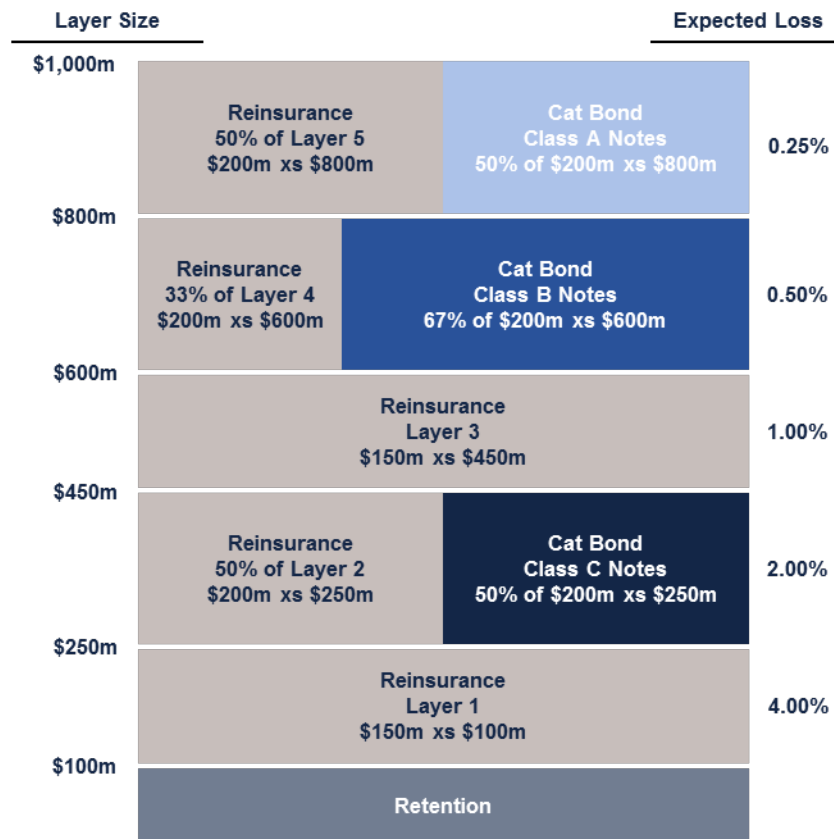
The special purpose reinsurance vehicle (SPRV) is formed solely to issue the shares / notes and hold proceeds in a collateral account to collateralize a quota share reinsurance agreement. At issuance of the shares / notes, proceeds are deposited in the collateral account and invested in highly rated assets. Although there have been some Rule 144A sidecars, the sidecar securities are more often issued in a traditional private placement to Institutional Investors and are not eligible for any electronic trading systems and therefore less liquid.

Throughout the year, the portion of the premium allocated to the quota share reinsurance agreement netted of the ceding commission, is paid to the SPRV. The sponsor keeps the ceding commission and, in addition, a profit commission can also be included to further incentivize the sponsor to generate excess returns. In addition to any surplus, investors receive the investment income on the collateral.

Tranches

The cat bond placement process often splits large deals into multiple pieces called tranches with different risk / return profiles (similar to different layers in a reinsurance program). Tranching broadens appeal by providing risk-return choices to investors and therefore can improve the economics for the sponsor.

In the example below, different bond tranches provide collateral for different excess of loss reinsurance layers.



Trigger

Many cat bonds provide protection on an indemnity (or ultimate net loss) basis similar to traditional reinsurance. Alternative index-based triggers have developed to help investors assess and price cat bonds more efficiently for sponsors with more opaque and often volatile portfolios.

Triggers for cat bonds include the followings:

- Indemnity: base recovery on the actual losses of the sponsor (ultimate net loss)
- Parametric and parametric index: use actual reported parameters (e.g., wind speed, earthquake magnitude or location, reported deaths by age and gender cohort by jurisdiction) to determine loss
- Industry loss index: use estimated insured industry losses (e.g., PCS in the U.S. and PERILS in Europe) to determine loss
- Modeled loss: determine pay-out by inputting actual physical parameters into a predetermined cat model and running the model for an escrowed portfolio to produce an event loss
- Hybrid: use combined approaches (e.g., mixing modeled loss and industry index into one trigger)

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