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Catastrophe Bonds

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Catastrophe Bond Overview

A Catastrophe Bond (aka cat bond) is an Insurance-Linked Security (ILS) developed by the Property & Casualty (P&C) insurance industry during the 1990s in the aftermath of Hurricane Andrew in Florida and the Northridge earthquake in California. These financial instruments were seen as a way to protect the P&C insurance and reinsurance markets from catastrophic losses by transferring risk exposures to investors in the capital markets. The primary ILS instrument developed for this purpose was the catastrophe bond. The catastrophe bond market is concentrated around property risks with underlying exposures to U.S. perils, including hurricanes, earthquakes and windstorms.

Catastrophe bonds are similar to traditional bonds where an issuer borrows a principal amount from investors and repays the principal plus a specified amount of interest at maturity. Catastrophe bonds can be issued as public offerings or private placements, and can trade in secondary markets. The distinguishing feature of catastrophe bonds is the investor requirement to forgive some or all payments of interest or principal if a specified triggering event occurs. The triggering event can be defined in various ways, but typically reflects a situation where the issuing insurer experiences catastrophic losses. If no triggering event occurs, the bond principal and accrued interest is returned to the investor at maturity.

Catastrophe bonds are transferred to capital market investors through a Special Purpose Vehicle (SPV). The use of an SPV protects both the issuing insurer and investors. The SPV deposits proceeds received from a bond issuance into a trust account to secure the insurer's repayment obligation. The proceeds are typically invested in high-quality assets such as money market or U.S. Treasury securities. The SPV benefit to the insurer is that bond proceeds are readily available upon occurrence of a triggering event. The SPV benefit to the bond investor is low counter-party credit risk as the insurer's solvency does not impact recoupment of the bond principal and accrued interest.

Catastrophe Bond Risks

As with other fixed-income securities, catastrophe bonds are often rated by rating agencies, such as Standard & Poor's and A.M. Best. A higher rating allows a bond to be issued at prices competitive with the cost of traditional reinsurance. Because of the potential for large losses, catastrophe bonds are typically rated at below investment grade (BB or B ratings), similar to high-yield ("junk") bonds. There have been catastrophe bonds issued with investment grade ratings when the triggering event was considered remote. However, as demand for catastrophe bonds continues to grow, issuers are increasingly able to avoid the cost of a credit rating.

Catastrophe modeling allows an issuer to structure a bond to transfer risks that



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are remote enough (lower probability of occurrence) to facilitate higher ratings. Ratings are primarily based on a bond's probability of default as determined by its 'triggering event'. The triggering event defines the type and magnitude of loss sufficient to require the bondholders' loss of principal and interest.

There are four primary types of catastrophe bond triggers:

Parametric - This trigger is a parameter of a catastrophic event, such as wind speed in a hurricane or earthquake magnitude and location. The issuer's recovery depends solely on the intensity and location of the physical event. This type of trigger has an advantage to investors because the trigger is simple to determine, allowing for rapid and transparent resolution of losses. This trigger creates a 'basis risk' to the issuer as bond recoveries may be less than actual losses incurred.

Industry Losses - This trigger is based on estimates of total insurance industry losses from a catastrophic event. The industry loss estimates are determined by a third-party service unaffiliated with the bond issuers or investors. The issuer recovers a percentage of total industry losses in excess of a predetermined attachment point. This type of trigger has an advantage to investors as losses are determined by an independent third-party and claims can be settled quickly once industry loss estimates are complete. This trigger creates a basis risk to the issuer as bond recoveries may be less than its share of industry losses.

Modeled Losses - This trigger is based on modeling of the issuer's catastrophe exposures. When a catastrophic event occurs, expected losses are calculated by an independent third-party running the model with parameters from the event (such as wind speed in a hurricane or earthquake magnitude). The bond is triggered if modeled losses exceed a predetermined attachment point. This type of trigger has an advantage to investors as losses are determined by an independent third-party and claims can be settled quickly once modeled loss estimates are complete. This trigger creates a basis risk to the issuer as modeled loss estimates may be less than actual losses incurred.

Indemnity - This trigger is based on the issuer's actual claims incurred from a catastrophic event and is similar to traditional excess-of-loss reinsurance contracts. The bond is triggered when the insurer's losses exceed a predetermined attachment point. For example, a bond could cover losses of \$100 million in excess of \$200 million, meaning that the bond will be triggered if the insurer's losses exceed \$200 million, and will fully default if the insurer's losses exceed \$300 million. This is the most common type of trigger used by issuers as it has the advantage of no basis risk. However, this



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lack of basis risk results in a 'moral hazard' to investors as the issuer may have less incentive to avoid underwriting excess catastrophe risks. This trigger is also less advantageous to investors as it does not facilitate rapid resolution of losses as repayment must wait for insurer claims to be settled.

Catastrophe Bond Rewards

Catastrophe bonds have historically offered higher yields than similarly rated fixed-income securities. This is due to factors that include modeling risk (actual investor losses exceed modeled losses) and limited demand from a small pool of potential investors, such as hedge funds and reinsurers. However, as traditional investment yields have persisted at historical lows, investor demand has shifted to alternative asset classes. This has led to lower yield spreads on ILS and catastrophe bonds when compared to traditional corporate bonds. Catastrophe bond investors today are more likely to include institutional investors (such as pension funds), dedicated ILS funds and mutual funds. Rating agencies and catastrophe modeling firms have also had roles in increasing the confidence of investors by providing analysis of catastrophe bond transactions.

Another factor in catastrophe bond pricing is available capacity in the traditional reinsurance market. Reinsurers have been experiencing 'soft market' pricing for several years. A soft market is characterized by an oversupply of reinsurance capacity, leading to a downward pressure on pricing. As the pricing of reinsurance softens, the yields offered to catastrophe bond investors also soften to match pricing in the reinsurance market.

Growth in the ILS market itself has been a factor in the soft pricing of traditional reinsurance. The total value of ILS and catastrophe bond issuances outstanding as of year-end 2015 was approximately \$26 billion. This represents a new all-time market high, as has been the trend each year since 2010 when approximately \$14 billion were outstanding (source: Artemis.bm Deal Directory). ILS and catastrophe bond issuances during 2014 and 2015 were approximately \$9 billion and \$8 billion, respectively (source: Artemis.bm Deal Directory).

Examination Considerations - Statutory Accounting

The NAIC's regulatory requirements allowing credit for reinsurance transactions are designed to ensure meaningful transfer of risk and collectibility of reinsurance receivables. Statutory reinsurance accounting for P&C companies is discussed in detail within SSAP No. 62R (Property and Casualty Reinsurance) and is addressed specifically for ILS within SSAP No. 74 (Accounting for the Issuance of Insurance-Linked Securities Issued by a Property and Casualty Insurer through a Protected Cell). SSAP No. 74 provides statutory accounting guidance solely for indemnity-triggered ILS conducted through a protected cell (such as an SPV). Statutory accounting treatment is not allowed for non-indemnity based ILS triggers. Risk transfer through an indemnity-triggered ILS is achieved when the SPV absorbs



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losses suffered by the issuing insurer without any basis risk. The collectibility of reinsurance is achieved when the trust account is established to cover potential default under the bond, along with the insurer's ability to withdraw trust account funds to pay covered losses.

The statutory accounting treatment for premiums ceded through ILS and premiums ceded through traditional indemnity-based reinsurance contracts is similar. SSAP No. 74 allows the insurer to reduce their written and earned premiums by amounts paid to the SPV for underwriting insurance risks. Premiums ceded under ILS or traditional reinsurance contracts are reported individually as Reinsurance Premiums Ceded in Schedule F - Part 3 (Ceded Reinsurance).

The statutory accounting treatment for reinsurance recoverables is less favorable for ILS than for traditional indemnity-based reinsurance contracts. This is because ILS transfer of risk, and the related reduction in claim liabilities, is allowed only when losses attach through a triggering event. Under traditional reinsurance contracts, the insurer reflects transfer of risk, and the related reduction in claim liabilities, when the contract is effective. As such, Schedule F - Part 3 (Ceded Reinsurance) reporting for ILS should not indicate reinsurance recoverable amounts unless a triggering event has occurred.

The NAIC's Statutory Accounting Principles (E) Working Group adopted the following non-substantive changes that impact reporting and disclosure of ILS effective with December 31, 2015 financial statements:

- SSAP No. 1 now requires specific ILS-related narrative disclosures in the financial statements. These disclosures require information that includes the number of outstanding ILS contracts and potential ILS proceeds as of the financial statement date.
- SSAP No. 74 now requires reporting of ILS-related transactions through the designated 'protected cell' lines in the balance sheet and income statement, instead of through the 'aggregate write-in' accounts.

Examination Considerations - Other Topics

Specific guidance within the NAIC's Financial Condition Examiners Handbook necessitates an understanding and review of an insurer's use of ILS and catastrophe bonds.

Exhibit DD - Critical Risk Categories' is a tool created by the NAIC to facilitate assessment of critical solvency risks. This exhibit includes critical risk categories that may involve direct or indirect consideration of ILS and catastrophe bonds:



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- **Appropriateness/Adequacy of Reinsurance Program** - An insurer's issuance of indemnity and non-indemnity triggered ILS may be part of an overall reinsurance strategy.
- **Reinsurance Reporting and Collectibility** - An insurer's financial statement presentation of ILS issuances may require consideration of statutory accounting guidance.
- **Underwriting and Pricing Strategy/Quality** - An insurer's issuance of ILS may be part of an overall strategy to manage underwriting capacity.
- **Capital Management** - An insurer's issuance of ILS may be part of an overall strategy to manage capital and financial solvency.

The NAIC's guidance regarding Own Risk and Solvency Assessment (ORSA) reporting (if applicable to an insurer) is also likely to necessitate an understanding of an insurer's use of ILS and catastrophe bonds. ILS may be an integral component of an insurer's.

About the Author



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Darin Benck, CFE, CPA, CIA, RHU, CRMA, Director, Financial Examinations at RRC, performs financial examinations on behalf of state insurance departments. He leads the examination team providing examination administration, planning, staff supervision, review, on-the-job training and report writing on all types of insurance companies. Darin's role also involves keeping pace with changing regulatory environments to provide targeted, up-to-date advice to his regulatory clients.

Prior to joining RRC, Darin was a Senior Accountant at Walpert & Wolpoff, LLP where he performed audits, reviews and compilations for real estate companies