

**THE BENEFITS OF CAT BONDS FOR CEDING INSURERS
AND THE POTENTIAL FOR LIFE AND ANNUITY RISK BONDS**

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This has been an extraordinary year for cat bonds, with the largest single cat bond issue ever sold by a special purpose vehicle, the \$750 million Everglades Re Florida hurricane risk cat bond, and a near record aggregate amount of risks placed in the market in a single year. While investors may think that cat bonds exist primarily for their benefit, the indispensable goal of a cat bond is of course to transfer risks off the books of ceding insurers. So what are the attractions of cat bonds for ceding insurers, and why has there not been similar development of a securitized bond market for the transfer of risks found in life and annuity policies?

I. CAT BONDS: ATTRACTIONS FOR CEDING INSURERS AND SOME MARKET ISSUES

Why do ceding insurers participate in the cat bond market? Obviously, these financially sophisticated insurance companies see an advantage in doing so, and an opportunity to help accomplish some of their risk transfer goals. What are some of the benefits of cat bonds for ceding insurers and related market issues?

A. Potential benefits of cat bonds for ceding insurers

Cat bonds may have a number of potential benefits for ceding insurers compared to traditional reinsurance.

- Multi-year commitments – capacity and pricing

It has been typical that most traditional indemnity-based reinsurance has been issued for one year coverage periods. Ceding insurers must re-negotiate with their reinsurers each year for the new “season.” There may be capacity and pricing uncertainties from year to year. Typically, cat bonds are issued for a two or three year maturity period, providing fully collateralized coverage at a fixed price for that period of time. Depending upon pricing considerations when a cat bond is taken to market, the multi-year capacity and pricing certainty provided by a cat bond may be very attractive to a ceding insurer.

- Reinsurance trigger familiarity

Early cat bonds were largely based upon parametric or other non-indemnity triggers,¹ a basis for reinsurance with which many ceding insurers may have had relatively little experience. The majority of recent cat bonds, however, provide indemnity-based reinsurance cover.² Since the reinsurance cover provided by indemnity-based cat bonds are, from the standpoint of the ceding insurer, much more like their traditional reinsurance than index trigger cat bonds, they may facilitate a cedent considering cat bonds as an alternative risk transfer mechanism, removing what some ceding insurers might have viewed as a disadvantage or obstacle to considering the use of cat bonds as an alternative risk transfer mechanism. Furthermore, from the standpoint of a ceding insurer, it is much easier to position an indemnity-based cat bond as part of an overall risk transfer program than an index-based cat bond, as it is easier to match up attachment points and structure a program which avoids potential coverage gaps. It also is simpler for a ceding insurer to train its staff to administer an indemnity-based cat bond reinsurance agreement than a cover with a trigger with which the staff lacks experience.

- Credit for reinsurance increased certainty

It may be critical for a cedent to be able to claim full credit on its financial statements for all risk transfers, including cat bonds. The reinsurance industry has gone through some consolidation, and after major events it is not uncommon for some less strongly capitalized reinsurers to experience financial stress. With the recent amendments to the Model Credit for Reinsurance Model Act and Model Regulation and similar statutory and regulatory adoptions by a number of states, the trend in rules for credit for reinsurance is away from fully collateralized reinsurance to a ratings-based system of reinsurance credit which focuses on the financial strength of the reinsurers.

Cat bonds are, by their very structure, fully collateralized risk transfer facilities, with all collateral normally acceptable from a credit for reinsurance standpoint. Typically, all of the funds paid by bond purchasers are deposited into a reinsurance trust

¹ For examples of index triggered cat bonds, see SR Earthquake Fund Ltd. (1997) (industry index trigger) and Concentric Ltd. (1999) (parametric index trigger). Some of the larger early cat bonds were indemnity-based trigger bonds, *e.g.*, Residential Reinsurance Ltd. (1997, 1998 and 1999) and XL Mid-Ocean Re Swap (1998). Basic details regarding these and other cat bonds may be found in the deal directory on the Artemis web site at http://www.artemis.bm/deal_directory/.

² See Swiss Re analysis at http://media.swissre.com/documents/ILS_Market_Update_public_July_2012.pdf.

account, the primary purpose of which is to fund the payment of reinsurance claims (if any) submitted by the ceding insurer during the term of the bond. Until the maturity date of the bonds, payments from the reinsurance trust are restricted to the payment of reinsurance claims from the ceding insurer. Due to this structure, a ceding reinsurer should be able to claim full credit for the reinsurance provided by cat bonds. The cat bond structure should also prevent the ceding insurer from losing reinsurance in the event of a reinsurer's insolvency.

- Collection risk avoidance

Since cat bonds are fully collateralized with the bond proceeds protected by a reinsurance trust for the benefit of the ceding insurer, if the documentation is drafted appropriately, and the facility administered as required, the ceding insurer should face relatively minimal collection risk in the collection of reinsurance claims in cat bonds.

- Rating risk avoidance

The claims paying or other financial strength rating of a reinsurer may be significant to a ceding insurer for a number of reasons. For example, with respect to reinsurance which is not fully collateralized, a ceding insurer may have a business practice of only contracting with reinsurers which have a certain minimum claims paying or financial rating. Moreover, in a traditional reinsurance agreement, cedents typically reserve the right to terminate the reinsurance agreement at any point during its term as a result of the reinsurer's rating downgrade. Cat bonds provide a structure in which the claims paying or other financial strength rating of the reinsurer, which typically is an off-shore special purpose vehicle, is not relevant. With a fully collateralized structure, the reinsurer's rating is irrelevant. With a cat bond, a ceding insurer should not have to be concerned about potential rating downgrades of its reinsurer.

- Increased market capacity

Cat bonds are intended for investment only by institutional investors, and a number of hedge funds and institutional investors which do not ordinarily participate in the reinsurance market reportedly have purchased cat bonds.³ Ceding insurers prefer to develop a relationship with a number of reinsurers, in order to develop stable sources of risk transfer capacity from year to year. Hedge funds, however, tend to be somewhat fickle in that respect. They may be a source of risk transfer funding one year, but not the

³ One \$200 million cat bond issued in 2012 had three classes of notes, one of which was given an investment grade rating of "Baa1(sf)" by Moody's. This bond was unique in that it was issued on behalf of two ceding insurers, with two reinsurance trusts, with the insured risks being spread over a broad geographic area and encompassing a number of different perils. To the extent that the ratings of cat bonds improve, the market may expand further.

next, or in differing amounts from year to year. Such participants may have different financial and documentation interests and requests compared to traditional reinsurers, thereby increasing the transactional cost to a ceding insurer. The increased transactional costs, however, may not be as great as the potential costs from being dependent solely on the traditional reinsurance market. Cat bonds provide occasional participants in the risk transfer market vehicles in which they may participate and provide additional capacity based upon their own business plan, without the disruptions and additional costs which may obtain should they participate in traditional reinsurance facilities.

Cat bonds also provide a structure in which reinsurers that do not have a claims paying or other financial rating sufficient to qualify for participation in a ceding insurer's reinsurance program can participate. The rating of a purchaser of a cat bond is of no relevance to a ceding insurer. As long as a purchaser pays the purchase price for their portion of the bond issue for deposit into the reinsurance trust account, the rating of the purchaser is of no import. This structure therefore potentially expands the market for a ceding insurer's risks to lower rated reinsurers and investors which do not participate in the traditional reinsurance market. Several articles have noted that cat bonds are being treated by some institutional investors as a separate asset class, and are being used by investors such as pension funds to add diversity to their investment portfolios.

- Lower long-term transactional costs

The longer duration of coverage of cat bonds compared to traditional reinsurance provides a ceding insurer the opportunity essentially to spread some of its transaction costs of putting a risk transfer mechanism in place over more than one year, potentially resulting in cost efficiencies. Furthermore, many cat bonds are issued as part of a bond series, meaning that the majority of the documentation and structure may be used for a successor bond with relatively modest supplementation. Traditional reinsurance programs may have fewer common features and documentation from year to year. The market is not mature enough, however, for there to be empirical data to compare the true overall transactional costs of cat bonds and traditional reinsurance.

B. Risk transfer pricing considerations

There have been several articles written concerning whether and the extent to which there is a relationship between the pricing of cat bonds and the pricing of traditional reinsurance. Some writers have speculated that the additional risk transfer capacity provided by cat bonds may have a moderating effect on the pricing for traditional reinsurance. Other articles have speculated that there is an emerging de-coupling of the pricing of cat bonds and traditional reinsurance due to the different pricing considerations of participants in those different risk transfer spaces.

These stories are based upon predominantly anecdotal evidence. A more analytical assessment of this issue will have to await the further development of the cat bond market.

C. Purchaser considerations and the role of modeling

Cat bonds appear to be developing as a separate asset class for investment purposes, adding diversity to an investment portfolio. Cat bonds are attracting an increasingly diverse mix of institutional purchasers, including hedge funds, pension plans, life insurance companies and reinsurers. The returns of cat bonds are not as sensitive to economic conditions as are the returns of corporate obligations, and obtaining a two or three year rate on a cat bond may provide some added stability as well as diversification to an investment portfolio. One recent article posted on Bloomberg on-line discusses comments from Goldman Sachs and others to the effect that investment returns on cat bonds have been exceeding those on corporate debt due to the record low yields on corporate debt.⁴

Cat bonds may also serve other needs, such as increasing reinsurance coverage and financial statement relief at a time when capital levels are under pressure. For example, Japanese insurers, hit hard by the March 2011 earthquake and tsunami, have supposedly expressed greater interest in cat bonds as a method of improving their capital position. It also has been suggested that cat bonds may help some insurance companies cope with the increased capitalization requirements of Solvency II in the European Union.

As this market continues to develop, it should be noted that one milestone in the development of the cat bond market has been the development of a methodology for risk modeling which is transparent, tested, relatively uniform and acceptable to investors. One modeling firm, AIR Worldwide, has provided modeling services for perhaps in excess of 90% of the cat bonds issued during 2011 and 2012.⁵ AIR describes its cat risk modeling as the “first fully probabilistic catastrophe model capable of providing credible, scientifically-based loss estimates for thousands of potential scenarios representing the complete probability distribution of losses—including losses for the most extreme events and extreme years that may not have occurred historically.”⁶

The risk modeling that is a part of cat bond transactions may help both rating agencies and potential purchasers evaluate the bonds by providing an analysis of the probability that the reinsurance provided by the bond will face claims (resulting in “losses” for bond holders). In a multi-year bond, modeling may help to determine the attachment point for coverage after the

⁴ It should be noted that Goldman is one of the large underwriters and placers of cat bonds.

⁵ See note 2 above.

⁶ See <http://www.air-worldwide.com/Models/Overview/>.

first coverage year. Some commentators have opined that the maturing of the modeling has substantially contributed to greater investor acceptance of this class of assets. It should be pointed out that AIR's cat bond-related modeling is not new. In addition to modeling risks for cat bonds, AIR has provided modeling services to some insurers for their own internal use, which no doubt has provided AIR a greater breadth of experience and data which may inform its cat bond-related modeling.

II. INSURANCE-LINKED SECURITIES FOR LIFE AND ANNUITY-RELATED RISKS

The insurance-linked securities market for life and annuity-related risks is not nearly as developed as the market for property and casualty cat risks. While it is beyond the scope of this article to analyze the reasons for the disparate development of the markets, a general review of the market for transfer of life and annuity risks may be of interest.

A. Life and annuity-related risks which might be securitized

Two types of risk have been identified which are of concern to companies writing life and annuity policies, and which might be appropriate for securitization: mortality risks; and longevity risks. To this point, market participants have not been able to develop a securitized bond structure for such risks that has been acceptable to a broad range of institutional investors. While the predominant trigger for cat bonds used to be various indices, but has changed to be predominant a fairly traditional indemnity concept, the predominant trigger for mortality and longevity risk bonds to date has been a form of index-based trigger. It is as yet unclear whether a market will develop for the securitization of such risks apart from traditional reinsurance, and the extent to which such a market will be used for risk transfers by ceding insurers or by others concerned about longevity risks, such as large pension plans.

B. Mortality and longevity risk bonds to date

The most recent modeling for both longevity and mortality risk bonds seek to apply actuarial techniques to medical and social research and data points. Swiss Re has placed a series of mortality risk bonds with an aggregate amount of over \$2.25 billion, which provide fully collateralized multi-year coverage, with the trigger being based upon a mortality index, with payments to the ceding insurer being triggered when there is an increase in age and gender weighted mortality rates that exceeds a specified percentage of a predefined mortality index value for the term of the bonds. Other mortality bonds have used a trigger that is based upon increases in mortality measured against an index using pre-defined points on the index for different amounts of payments.

Later issues have been based upon a more sophisticated multi-factor trigger mechanism, involving an index modeled on data concerning, among other factors, mortality, pandemics, infectious diseases, cat events, terrorism, and causes of death obtained from the United States

Center for Disease Control and the comparable United Kingdom agency. This approach seeks to model the potential increase in mortality rates resulting from multiple identifiable causes using what the modeler claims to be a “fully probabilistic framework.”

Articles cite to only one longevity risk bond, a relatively modest size \$50 million issue placed by Swiss Re and issued by special purpose vehicle Kortis Capital Ltd. The trigger for that bond was a longevity index based upon the difference between annualized mortality improvement of UK and US groups over eight years.

C. Market issues

One major difference between cat bonds on the one hand and mortality and longevity risk bonds on the other hand is with regard to modeling. While the development of modeling has contributed to the development of the cat bond market, the absence of transparent, tested and uniform modeling for mortality and longevity bonds may be one reason that the market for those bonds has not developed. Recent articles reflect a perception that the modeling of mortality and longevity risks is developing, becoming more sophisticated and, hopefully, reliable. However, it remains to be seen the extent to which modeling methodologies will develop such that potential investors are more comfortable participating in the market for mortality and longevity risk bonds. Of perhaps greater importance is the extent to which ceding insurers begin to view the insurance-linked securities market as an acceptable alternative or supplement to the traditional reinsurance market for the transfer of these kinds of risks.

CONCLUSION

The cat bond market is relatively healthy, although currently focused largely on U.S. and European wind and earthquake risks. Additional development, and possibly broadening, of this market seems likely. The market for life and annuity-related longevity and mortality risks is much less developed. It is too early to know if and when this market will develop, and whether the current modeling methodologies are sufficient for the development of a mature market for such bonds.

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