

## PART II

### *Chapter 10*

# **The Potential for New Derivatives Instruments to Cover Terrorism Risks**

*by*

Michele David\*

The Bond Market Association

This chapter begins by a brief overview of the credit derivatives market and the structures of credit default swaps (which are highly relevant to our discussion of catastrophe-linked derivatives). It then looks at catastrophe-linked derivatives and two ideas for new instruments to cover terrorism risk—catastrophe risk swaps and swaptions—and some of the challenges and advantages to the development of these products. It, finally, discusses the Association’s members’ perspective on catastrophe-linked derivatives as a viable source of capacity for terrorism coverage.

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\* Vice President and Assistant General Counsel of The Bond Market Association, Principal Staff Advisor to the Association’s Corporate Credit markets.

## 1. Introduction

The Bond Market Association, through its offices in New York, Washington DC and London, represents securities firms and banks that underwrite, trade and sell debt securities and other financial products on a global basis. Members of the Association account for the overwhelming majority of fixed-income securities underwritten and dealt in the United States, and also include the 23 primary dealers of U.S. Treasury Securities as recognized by the Federal Reserve Bank of New York and the 20 leading primary dealers in Euro government securities through one of the affiliates of the Association, the European Primary Dealers Association.

As the voice of the global fixed-income markets, the fundamental mission of The Bond Market Association is to advocate public policies before legislative and regulatory bodies that will enhance market efficiency, integrity and safety. The Association also plays an important role in establishing standard market practices and documentation for common transactions, as well as promoting guidelines for the business conduct of market participants. In addition, the Association is committed to the goal of investor education, both through the Association itself and through The Bond Market Foundation, our educational partner.

The Association operates and interacts with its members through a committee structure, which includes a Risk-Linked Securities Committee established in 2000, whose members include all of the major underwriters and dealers in the primary and secondary risk-linked securities markets. This Committee serves as a forum for member firms to exchange ideas and build consensus on legislative, regulatory and market practice issues affecting the risk-linked securities market, issues such as the Terrorism Risk Insurance Act, and the U.S. General Accounting Office's Report on Insuring Terrorism Risk. Our Committee also hosts an annual Risk-Linked Securities Conference, held most recently in New York last month, to promote the development and growth of the market to potential issuers and investors.

The Association's member firms have a substantial interest in dealing with the issue of managing terrorism risk, since they play significant roles in critical financial markets whose disruption or failure could present systemic risk. The Association also works on a broad range of initiatives related to terrorism risk, including business continuity planning, the tracking of terrorist financing, and support of recovery and redevelopment efforts, and is a member of the Coalition to Insure Against Terrorism, which represents a broad coalition of insurance consumers.

This note begins by a brief overview of the credit derivatives market and the structures of credit default swaps (which are highly relevant to our discussion of catastrophe-linked derivatives), it then looks at catastrophe-linked derivatives and two ideas for new instruments to cover terrorism risk—catastrophe risk swaps and swaptions—and some of the challenges and advantages to the development of these products, and, finally, discusses the Association’s members’ perspective generally on catastrophe-linked derivatives as a viable source of capacity for terrorism coverage

## 2. Credit Derivatives and Credit Default Swaps

The undeniable trend in the financial markets over the past decade has been the development of risk management tools and strategies which allow market participants to price, hedge and manage different types of risk separately. Credit derivatives, and credit default swaps in particular, have been one of the most popular and effective products of this kind and have meant huge advancements in the segregation and management of risk. In the past year alone the global market in credit derivatives more than doubled in notational amount outstanding, from \$2.6 trillion in the first half of 2003 to \$5.44 trillion in the first half of 2004,<sup>1</sup> and it is expected to rise to \$8.2 trillion by the end of 2006.<sup>2</sup>

The International Swaps and Derivatives Association (ISDA) has established and defined standard credit events (bankruptcy, failure to pay, restructuring, etc.) and standardized terms of credit default swap contracts through its Master Agreement and related definitions.

Major players in the credit default swaps market include commercial and investment banks, securities firms, insurance companies and, in increasing numbers, hedge funds.

Credit default swaps, which make up the majority of credit derivatives market, are privately negotiated bilateral contracts under which one party, usually known as the “protection buyer,” pays a fee or premium to another, generally referred to as the “protection seller,” to protect itself against the loss that may be incurred on its exposure to an individual loan or bond as a result of a defined credit event. The premium, or default swap spread, reflects the credit risk of the reference credit, and is usually quoted as a spread over a reference rate such as LIBOR, to be paid upfront, quarterly or semi-annually. If no credit event occurs before the end of the contract, the contract is terminated, with the protection seller having received the premium payments. If a credit event occurs during the contract period, it triggers a contingent payment to the protection buyer, made by either physical or cash settlement.

The Securities Industry Association (SIA)<sup>3</sup> and others have recently suggested that the credit derivatives market could potentially be a source of significant new capacity for insuring catastrophic risk, and that catastrophe risk swaps could be developed under the type of structure and standardized documentation used in credit default swaps, with a terrorism event, rather than a credit event, defined as the triggering event. Despite various regulatory and other obstacles and challenges to developing this type of a product and market, given the size, depth, and dramatic growth of the credit default swaps market in the last ten years it is certainly an idea worth exploring.

### **3. Catastrophe-Linked Derivatives**

#### ***3.1. Exchange Traded Derivatives***

There have been several unsuccessful attempts in the last fifteen years to establish markets in exchange traded derivatives contracts. The Bermuda Commodity Exchange traded catastrophe options based on the Guy Carpenter Catastrophe Index (GCCCI) for catastrophe property losses beginning in 1997, but suspended trading in 1999 due to sluggish trading volume over the preceding two years. The Chicago Board of Trade (CBOT) traded catastrophic futures contracts based on quarterly losses reported by the Insurance Services Office (ISO), futures and options contracts based on the catastrophe risk index established by Property Claims Service (PCS). These products were introduced in 1992, expanded in 1995, and finally delisted in 2000 due to lower than expected demand. The Catastrophe Risk Exchange International, Inc. (CATEX), begun in 1994, is a global electronic notice board that was originally designed as the world's first Internet based, business to business reinsurance exchange for standardized reinsurance contracts. However, trading in the standardized exchange contracts ended due to low interest and trading volumes, and CATEX is now used by companies to execute specific catastrophic risk transactions and reinsurance placements.

A number of possible reasons for the limited interest and liquidity in these derivatives contracts have been cited by the industry, including the substantial basis risk of index-based contracts, issues related to the frequency of settlement and index calculation, the inflexibility of standardized contracts, and the need for investors in exchange traded derivatives to have significant knowledge of and insight into the catastrophe reinsurance market<sup>4</sup>.

### ***3.2. Catastrophe Risk Swaps***

Catastrophe risk swaps are used today by insurance and reinsurance companies seeking to manage and diversify their natural catastrophic risk exposures. A relatively small number of risk swaps are executed between insurance companies to exchange one type of catastrophic risk exposure for another, usually in the form of two privately negotiated reinsurance agreements.<sup>5</sup> Insurance companies also enter into catastrophe risk swaps with various counterparties—including other insurers and institutional investors—using standardized ISDA documentation. Similar to the type of swap proposed by the SIA, these instruments involve premium payments by a ceding party to a counterparty in exchange for protection against future claims and losses.

## **4. Developing Risk Swaps Covering Terrorism Risk**

Aside from the challenge of being able to successfully model for terrorism events, which will be discussed at greater length below, the development of risk swaps covering terrorism risk poses several significant challenges. First, tapping the credit markets for new capacity for terrorism risk would mean having non-insurance company counterparties, and formal regulatory restrictions mandate that only chartered insurance and reinsurance companies can enter into an instrument deemed to be an insurance contract (i.e., a contract that provides coverage on an indemnity basis). However, there could be ways to design and structure catastrophe risk swaps so that they are not deemed insurance contracts and could be executed with non-insurance company counterparties. For example, designing parametric or other objective triggers, or transferring the risk on an index basis, might be possibilities.

Developing triggers for terrorism risk would present an additional challenge, but, as the SIA has suggested, could be accomplished perhaps through the use of objective measures resulting from a terrorist event, such as business or revenue stream interruption for a particular entity or asset destruction or impairment measured by predetermined criteria<sup>6</sup>.

Factors which may increase the premiums for these products should be considered as well. For example, protection sellers (investors) may charge a higher premium to buyers (insurance companies) if they believe those buyers have an informational advantage over them with respect to terrorism risk—for example if they do not believe they have sufficient information about the extent to which an insurance company covers high risk terrorism targets, or have a lack of information about insurer underwriting and practices. These informational issues could increase the premiums and

potential legal costs for doing a transaction as well as the potential for securities litigation in the event of a triggering event. Investors may also have concerns about strategic behavior by terrorists with respect to targets they know are covered. Such fears, even though unsubstantiated, could also increase premiums.

Derivatives with these types of structures would have significant basis risk and counterparty risk, but the development of such a market could have numerous advantages. The potential new capacity from the credit derivatives market (at \$5.44 trillion), could be much larger than traditional reinsurance capacity, and utilizing ISDA standard documentation would also provide advantages in terms of flexibility and speed in entering into these swaps.

A second idea recently proposed by the SIA is that municipal and other public financing issuers could issue bonds to finance stadiums and other public spaces with an embedded option on a terrorism risk swap (a “swaption”)<sup>7</sup>. At the issuer’s option, it could enter into a terrorism risk swap with the bondholder. We believe there are a number of significant obstacles to developing this type of an instrument. First, because interest payments on most municipal bonds are tax-exempt in the U.S., many municipal bonds are held by individual, retail investors. These types of investors are not likely counterparties for a risk swap, since they lack the sophistication, market knowledge, and access to information of most institutional investors. This type of instrument would also put municipal issuers—with limited or no experience in such matters—in the position of measuring and pricing the cost of the terrorism risk, since it removes reinsurance and insurance companies from the equation entirely.

## **5. TBMA Members’ Perspective: The Need to First Develop Reliable Models To Assess Terrorism Risk**

The Association’s members believe that, while one could develop any number of derivative instruments to transfer terrorism risk, the primary challenge in the short term to derivatives instruments as a source of terrorism capacity—and to the capital markets in general as a source of terrorism capacity—is that accepted models do not yet exist to assess terrorism risk. Until there is acceptance of credible and reliable models by rating agencies and investors, the issuance of catastrophe bonds or catastrophe-linked derivatives covering terrorism in the United States will be unlikely and probably unrealistic.

The members of the Association believe that the current unavailability of affordable terrorism insurance is not due to a lack of capacity as much as to a mismatch in the perception of risk between protection buyers and

sellers. Until there is a way to accurately measure and price terrorism risk, it is not likely that derivatives and other capital markets instruments will provide a viable solution.

## 6. Conclusion

While the development of new derivatives instruments and markets to cover terrorism risk is possible, the use of derivatives to transfer terrorism risk is probably not feasible until we have a way to accurately measure and price terrorism risk. Market participants would like to find a new form of capacity, but without a way to price the risks involved the premiums for these types of derivatives would likely be cost prohibitive. The mismatch in the perceived level of risk needs to be resolved through the use of reliable and widely accepted models before derivatives can provide a viable source of capacity for terrorism risk.

## Notes

- 1 International Swaps and Derivatives Association's 2004 Mid-Year Market Survey.
- 2 British Bankers Association Credit Derivatives Report, published September 22, 2004.
- 3 See Terrorist Risk: Insurance Market Failures and Capital Market Solutions, Research Reports Vol. 5, No. 1, January 31, 2004 ("SIA Research Report").
- 4 See SIA Research Report at page 9; International Financing Solutions to Terrorism Risk Exposures, Toben Juul Andersen, at pages 21-22.
- 5 See e.g., the August 2003 USD 100 million catastrophe risk swap between Swiss Re and Mitsui Sumitomo (Swiss Re News Release dated August 4, 2003).
- 6 See SIA Research Report at page 10.
- 7 Id.

## *Annex 1*

### **List of Speakers and Presentations at the Conference\***

#### **Session 1 - Insurability of catastrophic risks**

- Economics of catastrophe risk insurance, *Christian Gollier (University of Toulouse)*.
- Insurability of terrorism risk: challenges and perspectives, *Howard Kunreuther and Erwann Michel-Kerjan (Wharton School, University of Pennsylvania)*.
- Industrial, technological and other catastrophes, *Christian Lahnstein (Munich Re)*.
- Recent trends in the catastrophe risk insurance/reinsurance market, *Patrick Murphy O'Connor (Benfield)*.
- Role of the reinsurance industry in the management of weather related risks, *Peter Zimmerli (Swiss Re)*.
- Issues and options in the management of terrorism risk through insurance, *Robert Reville (Rand Corporation)*.
- Current state of the coverage for war and terrorism risks - including NBC - in the aviation sector, *Eugene Hoeven (IATA)*
- Free market solutions for terrorism risks coverage, *Ben Garston (MAP Underwriting and Lloyd's Terrorism Panel)*.

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\* Power point presentations summarising papers included in this publication as well as other presentations made at the conference are available on the OECD Insurance homepage: <http://www.oecd.org/daf/insurance>.



- Improving insurability and affordability: the role of insurance in hazard identification, risk assessment, risk prevention and mitigation for industrial/chemical accidents, *Satyananda Mishra, IAS, Disaster Management Institute, Bhopal - Government of Madhya Pradesh, India*).

## **Session 2 - Financial market solutions to manage catastrophic risks**

- International financing solutions to catastrophic risk exposures, *Torben Juul Andersen (Copenhagen Business School)*.
- The use of risk linked securities to manage catastrophic risks, including terrorism, *Christian Mumenthaler (Swiss Re)*.
- Current challenges in terrorism risk securitization, *Gordon Woo (RMS)*.
- Financing catastrophic risks in non-OECD countries: challenges and perspectives, *Reinhard Mechler (IIASA)*.
- Current market trends for catastrophe bonds and risk linked securities, *Christopher McGhee (MMC Securities, Guy Carpenter)*.
- The potential for new risk transfer instruments to cover terrorism risks, *Michele David (The Bond Market Association)*.
- Rating agency's perspective on catastrophe bonds and risk linked securities, *Rodrigo Araya (Moody's)*.

## **Session 3 - Role of governments and development of public-private partnerships for catastrophe risk management**

- Role of governments in natural catastrophe risk management and financing in OECD countries, *Paul K. Freeman (University of Denver)*.
- Catastrophe insurance programs in emerging countries: field experience, *Eugene Gurenko (World Bank, Financial Sector Operations and Policy Department)*.
- Potential role for governments in terrorism coverage, *Dwight Jaffee (Haas School of Business, UC Berkeley)*.
- Public-private partnerships to cover terrorism risks in OECD countries, *John Cooke (International Economic Relations Consultant, London)*.

- Role of the US government in the prevention and mitigation of terrorism risks, *Robert Liscouski (Infrastructure Protection Office, Department of Homeland Security, USA)*.
- Disaster risk management policy in Japan, *Kazuhiro Kawachimaru (NIPPONKOA Insurance Company Ltd)*.
- The Spanish experience in the management of extraordinary risks, including terrorism, *Ignacio Machetti (Consorcio de Compensación de Seguros)*.
- A stakeholder approach for developing a public-private partnership: the Hungarian case, *Reinhard Mechler (IIASA)*.
- Disaster risk management policy in China, *Yuanchang Zheng and Jianguo Mu (Department of Disaster and Social Relief, Ministry of Civil Affairs)*.
- The French experience in natural catastrophe risk management, *Suzanne Vallet (Caisse Centrale de Réassurance)*.
- Earthquake risk management policy in Indonesia, *Werner Bugl (PT Asuransi, MAIPARK Indonesia)*.
- Disaster risk management policy in Mexico, *Carlos Bayo Martinez (FONDEN)*.
- Disaster risk management policy in the Philippines, *Ronald I. Flores (Department of National Defense, Office of Civil Defense, National Disasters Coordinating Council)*.
- Disaster management in India, *D. Madan (Under Secretary, National Disaster Management Division, Ministry of Home Affairs, Government of India)*.
- Management of extraordinary risks, including terrorism, in India: achievements and perspectives, *C. S. Rao (Indian Insurance Regulatory and Development Authority)*.

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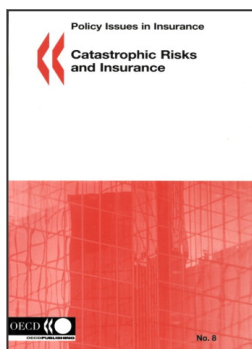
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\* Background Note of Mr Kawachimaru's presentation (NIPPONKOA Insurance Company Ltd), based on *Governmental Earthquake Insurance System in Japan*, from *Earthquake Insurance in Japan*, written and published in March 2003 by Non-Life Insurance Rating Organization of Japan.



**From:**  
**Catastrophic Risks and Insurance**

**Access the complete publication at:**  
<https://doi.org/10.1787/9789264009950-en>

**Please cite this chapter as:**

David, Michele (2006), "The Potential for New Derivatives Instruments to Cover Terrorism Risks", in OECD, *Catastrophic Risks and Insurance*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/9789264009950-11-en>

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