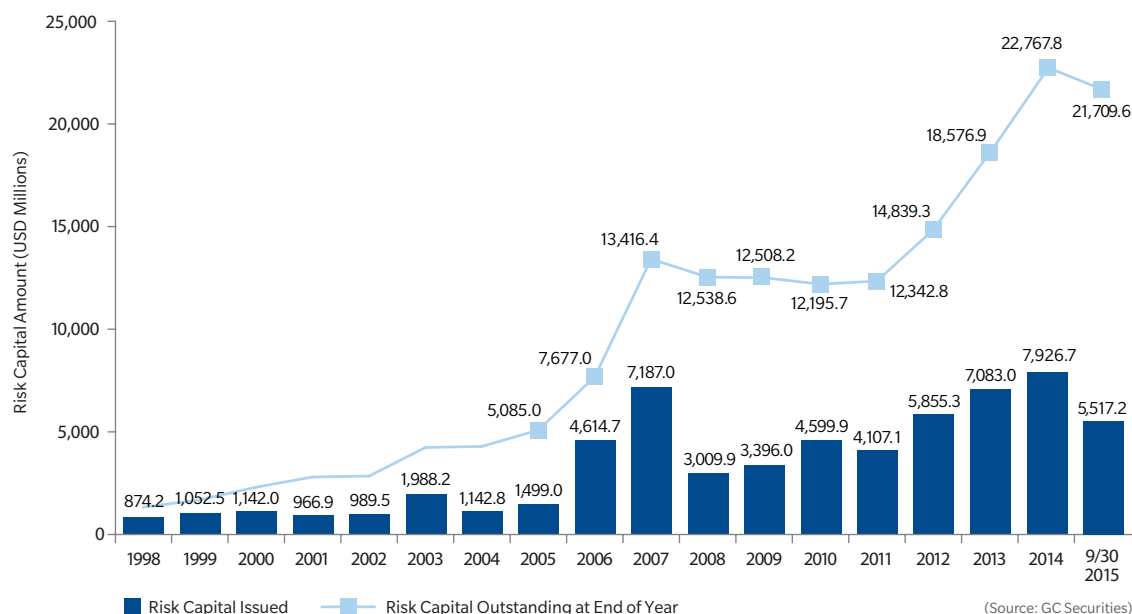




## CATASTROPHE BOND UPDATE: THIRD QUARTER 2015

Three primary issuance 144A property/casualty (P&C) catastrophe bonds were successfully executed in the third quarter totaling USD 650 million, which brings the total 2015 144A P&C catastrophe bond issuance through September 30, 2015, to USD 4.492 billion. This was the fourth highest third quarter 144A catastrophe bond issuance historically. As of September 30, 2015, total outstanding 144A P&C catastrophe bonds were USD 21.709 billion, down 4.65 percent from the 2014 year-end all-time high.

## F-1 | 144A P&C CATASTROPHE BOND RISK CAPITAL ISSUED AND OUTSTANDING – 1998 TO 9/30/2015



## PRIMARY ISSUANCE BONDS: A THIRD QUARTER OVERVIEW

Two interesting parametric bonds were successfully placed with investors in the third quarter of 2015:

- Acorn Re Ltd. to benefit Hannover Rück SE and its (re)insureds including Kaiser Permanente's Vermont captive, Oak Tree Assurance. This represents a key development for corporate cedents in obtaining meaningful coverage at cost effective terms and investors accepting structure designed for corporate cedents.
- Bosphorus Ltd. to benefit the Turkish Catastrophe Insurance Pool (TCIP) – their second catastrophe bond issuance. Repeat sponsors renewing their protection in the catastrophe bond market provide confirmation that the catastrophe bond product continues to be an effective tool. With positively differentiated terms, it provides catastrophe coverage for clients while remaining complementary to their traditional purchases.

### Acorn Re Ltd. — Corporate Sponsor Innovation

Acorn Re Ltd. was the first parametric trigger 144A catastrophe bond to be completed in 2015 and the first using the refined cat-in-a-box trigger developed by Guy Carpenter's CAT Risk Studio (CRS). The Series 2015-1 Notes provide three years of per occurrence risk transfer protection from earthquakes occurring within the area delineated by latitudes north 26 degrees and north 54 degrees and by longitudes west 110 degrees and west 132 degrees. This area is within the region of the states of California, Oregon, Washington, Idaho, Utah, Nevada and Arizona in the United States; the province of British Columbia in Canada and the states of Baja California, Baja California Sur and Sonora in Mexico. Hannover Re uses the cat bond to provide reinsurance protection to its (re)insureds including Oak Tree Assurance, Ltd., a wholly owned subsidiary of Kaiser Foundation Health Plan, Inc.

The Series 2015-1 Notes provide USD 300 million of protection and have an expected loss of 0.74 percent and an interest spread of 3.4 percent. Further, using an unsubordinated, unsecured note issued by the International Bank for Reconstruction and Development (IBRD), pursuant to its existing Global Debt Issuance Facility as the collateral solution embedded within the catastrophe bond, it maintained the highest quality and transparent permitted investments. The Series 2015-1 Notes prudently diversified the type of collateral solution for investors given that approximately 90 percent of the catastrophe bonds issued in 2015 through the third quarter of 2015 have utilized U.S. Treasury Money Market Funds. The Series 2015-1 Notes deliver a superior return to investors (over other collateral solutions) without any reduction in the quality of the investment for the benefit of the sponsor.

## T-1 | ACORN RE DEAL PROFILE

Series 2015-1 Notes	
Issuer	Acorn Re Ltd.
Peril	Earthquake
Covered Areas	California and the Pacific Northwest
Trigger	Parametric
Risk Period	3 years
Modeling Firm	Risk Management Solutions, Inc.
Rating (Fitch)	BB(sf)
Collateral	IBRD Note
Expected Loss	0.74% (year 1)
Attachment Point	P(attach) = 0.97% (year 1)
Exhaustion Point	P(exhaust) = 0.52% (year 1)
Issuance Amount	\$300M
Initial Spread	3.40%

Source: GC Securities



## Bosphorus Ltd. and Ursa Re Ltd. — Increased Capital Markets-Sourced Limit

The 2015-1 Notes from Bosphorus Ltd. represent the second time that TCIP has utilized the capital markets to obtain earthquake protection on a parametric basis. TCIP, managed by Eureko Sigorta A.Ş., first accessed the catastrophe bond market in 2013 via the issuance of Bosphorus 1 Re Ltd. and has now sourced USD 500 million in total of catastrophe bond capacity from capital market investors.

The Series 2015-1 Notes provide three years of per occurrence protection for earthquakes affecting the Istanbul region and are triggered based on certain ground motion measurements captured at certain ground motion seismometers that are part of the Istanbul Early Warning and Rapid Response System operated by Boğaziçi University Kandilli Observatory and Earthquake Research Institute with logistical support from the Istanbul Governorate, Istanbul Metropolitan Municipality and First Army Headquarters.

The Series 2015-1 Notes provide USD 100 million of protection and have an expected loss of 1.5 percent and interest spread of 3.25 percent. Similarly to Acorn Re Ltd., the transaction utilized an unsubordinated, unsecured note issued by the IBRD as the collateral solution.

Finally, the California Earthquake Authority (CEA) returned to the insurance-linked securities (ILS) market in the third quarter of 2015 to access USD 250 million of protection derived from the Series 2015-1 Notes issued by Ursa Re Ltd. Such protection against earthquakes affecting its policies issued to constituents of California is provided on an indemnity, annual aggregate basis. The CEA

has been a frequent issuer of catastrophe bonds, having issued USD 1.25 billion of bonds via either the Embarcadero Re Ltd. or Ursa Re Ltd. catastrophe bond vehicles since 2011. The Series 2015-1 Notes have an expected loss of 2.62 percent and an interest spread of 5 percent.

## T-2 | TURKISH CATASTROPHE INSURANCE POOL DEAL PROFILE

Series 2015-1 Notes	
Sponsor	Turkish Catastrophe Insurance Pool
Peril	Earthquakes Affecting Turkey
Trigger	Parametric: Per Occurrence
Modeling Firm	RMS
Expected Loss	1.50%
Issuance Amount	\$100M
Pricing	3.25% (decreased from 3.50% – 4.00%)

August 2015

**\$100,000,000**  
**Bosphorus Ltd.**  
 Series 2015-1 Principal At-Risk  
 Variable Rate Notes  
 due August 17, 2018

**TCMP**  
 TURKISH  
 CATASTROPHE  
 INSURANCE  
 POOL

Sole Bookrunner

**GC SECURITIES**

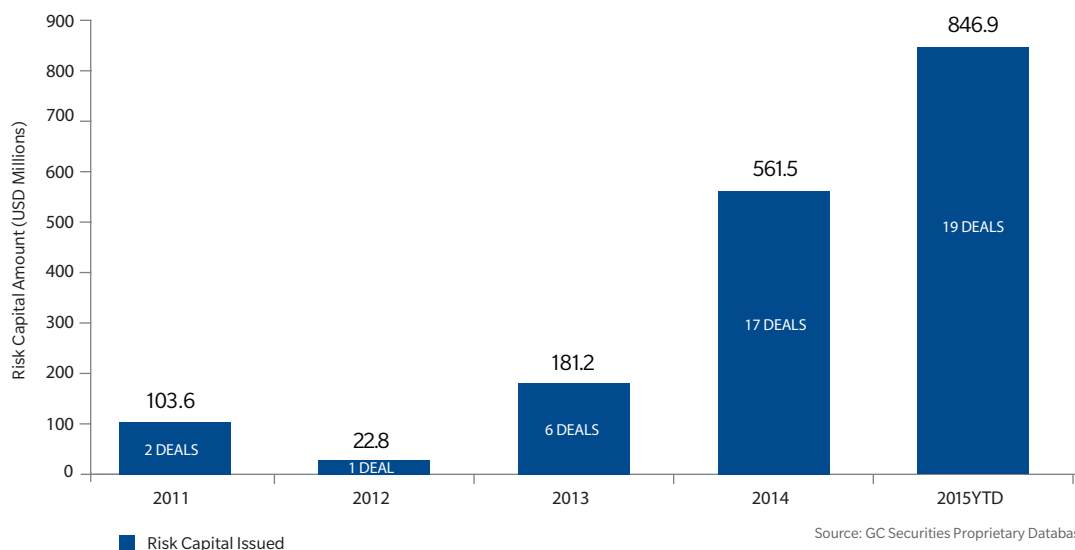
Source: GC Securities

## THE PRIVATE CATASTROPHE BOND MARKET

The Rule 4(2), Regulation D and Regulation S markets (collectively known as the private catastrophe bond market) saw no publicized new issuances in the third quarter. However, the market has already grown at a rate of approximately 50 percent from 2014 to 2015 year-to-date (YTD).

The growth of the private cat bond market this year is a function of sponsors with lower limit needs or those sponsors testing the alternative capital market for the first time looking to access capital markets-based capacity to gain the same benefits as larger sponsors using 144A catastrophe bonds. Private catastrophe bonds differ from 144A catastrophe bonds in that there is no formal offering prospectus, no expert risk analysis from a third party modeling firm or rating on the notes. Private cat bond structures result in lower expenses relative to 144A offerings, which offset the smaller pool of capital market investors that consider such private cat bond opportunities (relative to the larger pool 144A cat bond investors). An increase in “private” cat bond issuance is promising and in our view, it indicates that sponsors and investors are becoming increasingly comfortable with using insurance-linked securities to either buy or sell protection, respectively.

## F-2 | PRIVATE CATASTROPHE BONDS: RISK CAPITAL ISSUED



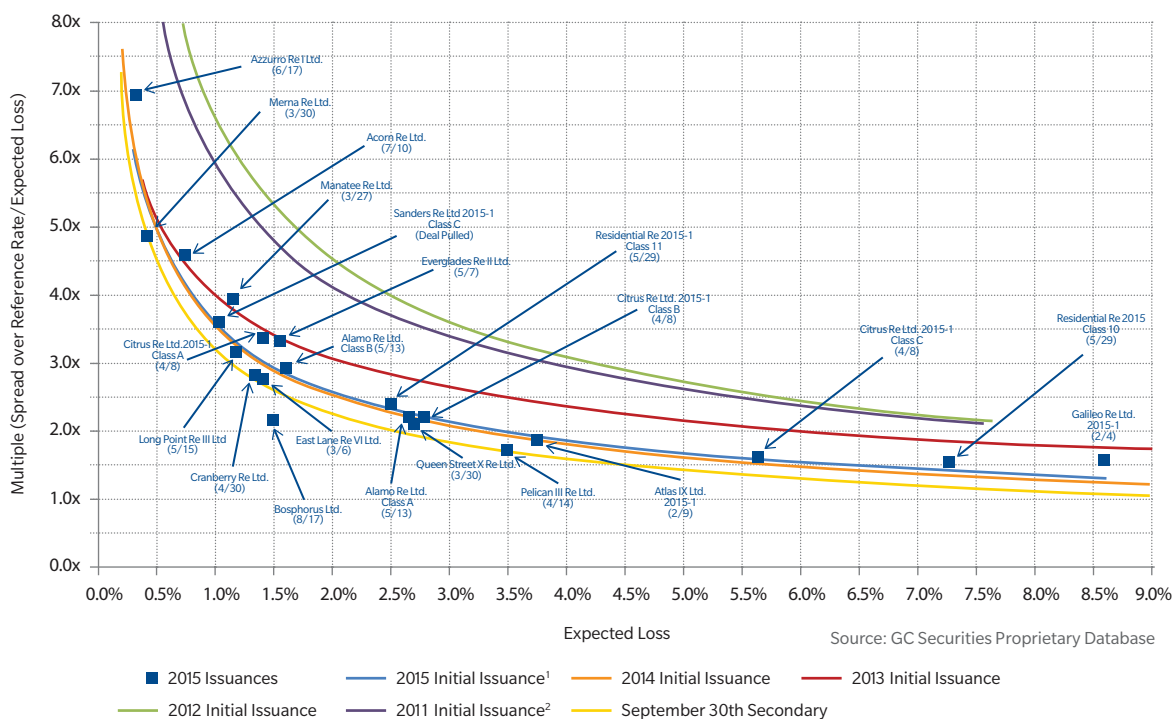
Note: Private catastrophe bonds as of September 30, 2015 excluding deals currently being marketed.



## PRICING

Pricing conditions in the third quarter generally held steady with investors spending time on portfolio management. With the comparatively light primary issuance, discussions shifted towards the fourth quarter pipeline and expectations for 2016. Investors remain keen on the returns (and other diversifying attributes) of the asset class though, at the same time, focus is as high as ever on the ongoing margin compression. While current spread levels appear supportable, dramatic spread reductions from current levels seem less likely than at this time last year. Exceptions to this general trend may be available for unique risks that are able to serve a particularly valuable role within a portfolio construct. Ample capital remains available and conversations with managers indicate most are continuing to grow pragmatically, grow assets under management or hold at constant levels. Fund redemptions remain far more the exception than the rule. On balance, the market continued to show slightly more robust demand for transactions carrying higher risk spreads and away from lower spread, very low risk paper. To the extent current conditions persist, the catastrophe bond will continue to serve as a valuable (and fairly priced) source of stable risk transfer capacity for market participants wherein sponsors can secure multi-year fixed priced capacity while capital providers can generate a fair risk adjusted return on capital. These trading conditions should continue to attract new and repeat sponsors as well as new transaction structures and risk, both of which will contribute to continued growth for the asset class.

### F-3 | PRICING TRENDS



1. Kizuna Re II Ltd. not displayed (EL 0.018%, 11.1x).

2. Excludes Combine Re Class A

Note: P&C catastrophe bonds as of September 30, 2015 excluding private transactions.



## WHERE TO NEXT?

As we approach the close of the fourth quarter, the fact that 71 percent of the outstanding 144A P&C catastrophe bonds in the cat bond market are exposed to the perils of U.S. tropical cyclone and U.S. earthquake demonstrates that the largest of the peak perils continues to drive the ILS marketplace. However, the focus by cedents and ILS investors to further expand the application of ILS to risks beyond natural perils grows stronger each day. While we expect the U.S. peak perils to continue to be a driver of the ILS marketplace, 2016 will see new perils, new geographies, new types of protection structures and new sponsors.

Sourcing diversifying risk can be challenging given the competitive interest of traditional reinsurers for such risks as well. As (re)insurance penetration in regions we see as diversifying (Europe, Asia, Latin America) grows, we believe it is a matter of time before these regions “open up” to alternative capital. One example is China Re’s second quarter Panda Re Ltd., a USD 50 million Rule 4(2) Note that provides China Re with protection against Chinese earthquake. GC Securities is proud to have structured and placed the first Chinese cat bond and introduced the first Chinese peril to the capital markets. We see Asia and Latin America as high growth regions and look forward to bringing similar structures for new geographies and risks to the ILS marketplace in the future.

Lastly, we feel that the ILS market will continue to grow; albeit its growth slowed slightly in 2015 YTD. Looking back at the ILS marketplace over the last five years, the 144A P&C cat bond market has grown roughly 15 percent to 20 percent each year. We would have expected this rate to plateau at some stage, especially given the cumulative premium rate reduction that the ILS space has led in the (re)insurance space since 2013. Additionally, we have had an extraordinary long period of few major natural catastrophe losses (particularly in the United States), a persistent low interest rate environment and record levels of merger and acquisition activity in 2015 YTD. As a result, we feel that (re)insurance companies are focusing on optimizing their operating strategies in this complex environment. We believe that alternative capital structures will be a consistent source of risk capital for (re)insurance and corporates and expect to see sustained high growth to continue in this sector.

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