

# Insurance-Linked Securities

## Alternative Capital Fortifies Its Position

September 2018

Aon Securities Inc. and Aon Securities Limited (collectively, “Aon Securities”) provide insurance and reinsurance clients with a full suite of insurance-linked securities products, including catastrophe bonds, contingent capital, sidecars, collateralized reinsurance, industry loss warranties, and derivative products.

As one of the most experienced investment banking firms in this market, Aon Securities offers expert underwriting and placement of new debt and equity issues, financial and strategic advisory services, as well as a leading secondary trading desk. Aon Securities’ integration with Aon Benfield’s reinsurance operation expands its capability to provide distinctive analytics, modeling, rating agency, and other consultative services.

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# Foreword

It is my pleasure to bring to you the eleventh edition of Aon Securities' annual Insurance-Linked Securities (ILS) report. The study aims to offer an authoritative review and analysis of the ILS asset class, and an overview of mergers and acquisitions activity, which represent two key areas of focus for our team.

Along with our quarterly ILS Updates, the report is intended to be an important and useful reference document, both for ILS market participants and those with an active interest in the sector. Unless otherwise stated, its analyses cover the 12-month period ending June 30, 2018, during which time substantial progress was made in the ILS market.

In the period under review, USD9.7 billion of catastrophe bond issuance was secured and overall alternative capital continued to grow across ILS products—reaching a new height of USD98 billion. By June 30, 2018, catastrophe bonds on-risk had reached USD30 billion, an increase of USD4.2 billion from June 30, 2017. During this period, a record level of maturities brought repeat sponsors back to the market while the favorable terms and conditions also prompted several new sponsors to issue bonds. The record amount of capacity also allowed the market to test additional perils and structures proving the continuing adaptability of the space.

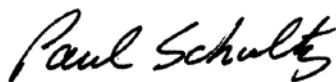
The 2018 edition of this annual ILS report, *Alternative Capital Fortifies Its Position*, covers a wide range of topics in the ILS market, including:

- Aon Securities' comprehensive review of the catastrophe bond market and its key drivers;
- A review of ILS investor activity;
- Our exclusive Aon ILS Indices;
- A summary of mergers and acquisitions (re)insurer activity;
- An overview of ILS-related markets, including trends in ILW, sidecars, surplus notes, and subordinated debt;
- A review of North America, Europe, and Asia Pacific activity;
- A dedicated section on catastrophe bond collateral solutions; and
- In-depth discussions with our ILS market participants panel

In the period under review, the catastrophe bond market experienced growth but capital markets investors continued to access risks through additional channels—collateralized reinsurance, sidecars, start-up vehicles, and managing general agencies. This growing capital deployment demonstrates the commitment of the alternative markets to the reinsurance and insurance industries.

The last several weeks of 2017 saw tremendous activity in not just the ILS markets, but further in the broader reinsurance market following the late year catastrophe events. There was a sustained focus on i) “trapped collateral”, ii) the ability of collateralized managers to underwrite treaties for January 1 inception, and iii) the dynamic pricing environment, which had a significant impact on the perception of sustainability and influence of the ILS market.

We hope you will find this report useful and informative, and if you have any questions relating to the data herein, or any queries regarding any aspect of the ILS sector, please contact me or my colleagues.



Paul Schultz,  
Chief Executive Officer, Aon Securities Inc.

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# Aon Securities' Annual Review of the Catastrophe Bond Market

## Overview

Catastrophe bond issuance in the 12 months ending June 30, 2018 recorded a strong issuance volume of USD9.7 billion. This represents a decrease of USD1.6 billion of activity over the preceding period, which should not be confused with a lackluster performance in the period. Contributing to this strong year were not only repeat sponsors looking to renew maturing bonds, but also new sponsors testing the capital markets for the first time. In addition, the capital markets welcomed new perils from new geographies providing diversification to the broader market.

The catastrophe events plaguing the end of 2017 brought increased attention and concern over ILS-related trapped collateral, ILS manager ability to “reload” at renewals, and the pricing environment. The volume of transactions remained high while catastrophe bonds continued to both upsize and price at the low end of, if not further below, initial guidance. With both supply and demand remaining strong, total outstanding volume of the market has reached its highest level at USD30.0 billion.

While the third and fourth quarters of 2017 saw relatively modest issuance volume, the real driver of the trailing 12-month period was a fairly even combination of the first

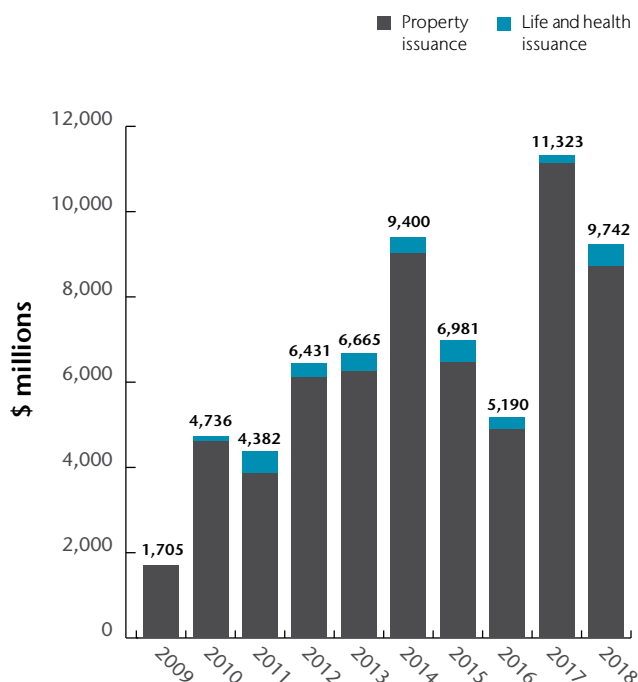
and second quarters of 2018. Aiding in the strong first quarter issuance was the largest ever sovereign risk transfer and the second largest issuance in the history of the ILS market at USD1.4 billion, facilitated by the World Bank on behalf of the Pacific Alliance countries.

The strong first quarter 2018 issuance of USD3.6 billion was followed by a stronger second quarter, which brought an additional USD4.0 billion of catastrophe bonds to market.

While USD5.5 billion of catastrophe bonds reached maturity since the quarter ending June 2017 through the quarter ending June 30, 2018, the supply once again outpaced the outgoing maturities. In each of the last four quarters, new issuance volume easily replaced the next cycle of maturing catastrophe bonds, with a positive influx of USD4.2 billion in volume.

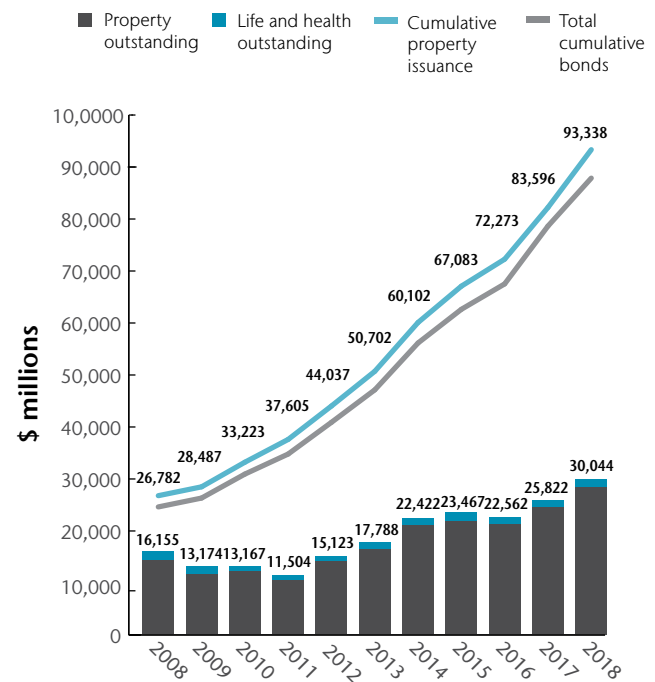
The 12-month period in review is most noted for the resiliency demonstrated by the investment community as investors reloaded capital bases following the catastrophic events at the tail end of 2017.

**Exhibit 1: Catastrophe bond issuance by year, 2009 to 2018 (years ending June 30)**



Source: Aon Securities Inc.

**Exhibit 2: Outstanding and cumulative catastrophe bond volume, 2008 to 2018 (years ending June 30)**



Source: Aon Securities Inc.

Almost immediately following the 2017 hurricane events and during the active wildfire events, new transactions were launched into the market with the catastrophe bond sector seeing approximately USD1.4 billion of initial issuance activity immediately following Harvey, Irma, and Maria (HIM). The first issuance post-HIM (Galileo Re Ltd 2017-1), expanded coverage from its prior transactions, receiving broad investor interest, while demonstrating the resiliency of the market post-event. The final transaction of 2017 (Tailwind Re Ltd 2017-1) was broadly syndicated, upsized from USD300 million to USD400 million, and each class of notes priced below initial guidance.

Bermuda continued to be the special purpose insurer (SPI) preferred domicile for the 12-month period as 19 issuances used the jurisdiction, with the Cayman Islands only accounting for 5 and Ireland 2 of the 29 new issues. However, new legislation passed in the United Kingdom helped two ILS transactions come to market in the jurisdiction. Overall, as was the case in the prior year's review, the expertise in Bermuda continued to attract SPI domiciliation, suggesting a favorable outlook for Bermuda service providers, banks, and the Bermuda Stock Exchange.

Overall, strong 2018 issuance has allowed alternative capital to grow just over USD9.0 billion to a total of USD98 billion for an overall increase of 10.2 percent. This growth came despite the third and fourth quarter events of 2017. However, the period of growth also came with new structural features, risk profiles, perils, and sponsors.

## Key drivers of market activity

### US catastrophic loss activity in 2017<sup>1</sup>

2017 marked the second costliest year ever recorded for natural disasters, at USD353 billion. USD220 billion, or 66 percent, of losses came from just three hurricanes: Harvey, Irma, and Maria. The losses from these disasters were 66 percent higher than the 16-year median annual loss of USD132 billion, while total 2017 losses were 93 percent higher than the average for the 21st century.

Catastrophe activity led to insured losses that were 163 percent higher than the 2000-2016 average. This led to economic losses in excess of USD300 billion, surpassed only by the economic losses of 2011. Sixty-two percent of this economic loss came from just three storms during one of the costliest Atlantic Hurricane seasons. Adding to this substantial loss was the most destructive wildfire event ever recorded in the state of California, which caused USD13 billion in damages last October. Furthermore, USD12 billion in losses were recorded due to flooding in the Yangtze River Basin in China, while two earthquakes in Mexico caused a cumulative USD6 billion in damages.

Catastrophe losses, however, were lower during the first half of 2018, with only USD45 billion in losses, down 64 percent compared to the previous decade's average and down 22 percent compared to the median losses during the 21st century. This low level of losses can be attributed to no loss in the first half of the year exceeding USD10 billion. Although the number of events was on par with historic averages, this lack of a large catastrophe kept losses to a minimum.

With regard to ILS losses, 30 catastrophe bonds saw bid prices decline in excess of 25 percent due to the events of 2017. Despite many recovering by the beginning of 2018, a number of these bonds experienced principal reduction due to losses sustained in 2017 and furthermore, some bonds face potential principal reduction as losses continue to develop.

<sup>1</sup> Aon Benfield Impact Forecasting. 2017 Weather, Climate & Catastrophe Insight, Jan 2018; and Global Catastrophe Recap: First Half of 2018, July 2018, and Global Catastrophe Recap: First Half of 2017, July 2017.

### Supply and demand

The size of the alternative market increased to USD98 billion in the 12-month period ending June 30, 2018. The ILS market continues to provide investors with an attractive risk-return profile, while maintaining its diversifying benefit to investors. Interest spreads have remained fairly constant despite catastrophic losses in 2017, with an average weighted by size of 5.0 percent. In turn this also allows for additional perils and more favorable bond structures, such as aggregates, to be covered.

The trend of utilizing the World Bank's International Bank for Reconstruction and Development (IBRD) as collateral continued for the trailing 12 months. This year, 45 percent of the notional amount issued used IBRD notes in the year under review versus 56.8 percent the year prior. This collateral solution offers a way to enhance yield for investors as the IBRD notes generally offer 3-month LIBOR minus a spread of 16 to 40 basis points, representing a premium of around 40 to 50 basis points over money-market funds.

Sixty one percent of deal classes experienced upsizing during the process for an average increase of 34 percent of the volume issued or an average increase of USD37.6 million per class of notes. Not only did the market experience a significant amount of upsizing but many deals were also initially marketed at higher notational levels at the onset of marketing, allowing for the large amount of growth in the catastrophe bond market.

### Enhanced coverage

Cumulative coverage offered by the alternative markets once again expanded in the 12 months ending June 30, 2018 with increased issuance sizes (up to USD30 million from USD25.8 million) and more covered perils. This multi-year facet of catastrophe bond coverage allows sponsors to lock-in current year pricing and later reset the bonds coverage while pricing moves along the current curve to reflect change in risk. Many sponsors found catastrophe bond market solutions effective at covering aggregate structures. With 64 percent of the limit of bonds placed using some type of aggregate structure, the 12-month period is the first time the majority of deals were not structured on a per occurrence basis. This change is further appreciated when compared to the prior 12 months where aggregate structures accounted for just 30 percent of the year's issuance.

Sixty-six percent of new issuances utilized indemnity protection versus industry index protection. Only one transaction with four sponsors, The Republic of Chile, The Republic of Colombia, The Fund for Natural Disasters and The Republic of Peru, used a parametric solution to secure earthquake catastrophe bond protection. Additionally, several returning reinsurers came to market with index transactions as a way to complement their retrocessional protection programs, including XL Catlin (Galileo Re Ltd Series 2017-1) and Everest Re (Kilimanjaro Re Ltd Series 2018-1 and 2018-2) with USD150 million and USD525 million transactions, respectively. Meanwhile, first-time sponsors Validus (Tailwind Re Ltd 2017-1) and TransRe (Bowline Re Ltd 2018-1) offered three classes of notes for USD400 million and one class of notes for USD250 million of capacity, respectively.

## Aon Securities transaction review

### Third quarter 2017

While issuance volume in the third quarter was relatively small, as is common, there was noteworthy activity across three transactions, which totaled USD780 million of issuance. The third quarter saw first-time sponsor AmTrust Financial Services, the ceding of pandemic risk to the ILS market, and a new issuance from long-time sponsor FONDEN / AGROASEMEX S.A. Interestingly, an earthquake event occurred within 60 days of those issuances on behalf of FONDEN / AGROASEMEX S.A., which ultimately caused a full principal reduction of one of its classes of notes.

One noteworthy transaction during third quarter of 2017 was the launch of the Pandemic Emergency Financing Facility (PEF) by the World Bank. This facility was created to act as a rapid-response financing mechanism designed to protect the global population against deadly pandemics. It was built and designed in collaboration with the World Health Organization and the private sector. The structure responds on a purely parametric system of defined triggering mechanisms. The catastrophe bond placement raised USD320 million of coverage across two classes of notes.

**Exhibit 3: Third quarter 2017 catastrophe bond issuance**

Beneficiary	Issuer	Series	Class	Size (millions)	Covered perils	Trigger	Recovery	Collateral
Pandemic Emergency Financing Facility	IBRD CAR		Class A	\$225.0	WW Pandemic, Flu & Coronavirus	Parametric	Occurrence	MTN
	IBRD CAR		Class B	\$95.0	WW Pandemic, Flu & Coronavirus	Parametric	Occurrence	MTN
AmTrust Financial Services	Fortius Re II Ltd.	Series 2017-1		\$100.0	US HU, EQ and CAN EQ	Multiple	Occurrence	MTN
The Fund for Natural Disasters	IBRD CAR	Series 113	Class A	\$150.0	MEX EQ	Parametric	Occurrence	MTN
	IBRD CAR	Series 114	Class B	\$100.0	MEX NS	Parametric	Occurrence	MTN
	IBRD CAR	Series 115	Class C	\$110.0	MEX NS	Parametric	Occurrence	MTN
<b>Total</b>				<b>\$780.0</b>				

Source: Aon Securities Inc.

**Legend**

CAN — Canada  
MEX — Mexico  
US — United States  
WW — Worldwide

EQ — Earthquake  
HU — Hurricane  
NS — Named Storm

MTN — Medium Term Notes



## Fourth quarter 2017

As we approached the end of the year, five transactions closed during the fourth quarter of 2017, totaling USD1.4 billion. Three of the sponsors were veterans of the catastrophe bond market, while the remaining two sponsors were first-time issuers – Covéa Group and Validus Holdings.

A selection of transactions issued in the fourth quarter of 2017 includes:

- At the start of the third quarter 2017 and nearly immediately following the major catastrophic events in the quarter, XL Catlin returned to the capital markets with Galileo Re Ltd., which issued both 2017-1A and 2017-1B notes. This provided an additional USD150 million in coverage bringing Galileo's total outstanding to USD450 million and XL Catlin's total outstanding to USD1,725 million. These notes are on an annual aggregate basis for each risk period.
- As part of its continued use of capital markets capacity, the California Earthquake Authority (CEA) came to market for the second time in 2017 under its Ursa Re Ltd. program. The two classes of 2017-2 notes provided USD400 million of coverage for its California earthquake exposure on an annual aggregate indemnity basis.
- The USD400 million Tailwind Re Ltd. Series 2017-1 transaction on behalf of Validus closed out the 2017 calendar year. The new sponsor brought the USD400 million to market through three classes of notes, each providing annual aggregate coverage over a four-year term. As a first-time sponsor, Validus leveraged Aon's CATstream® platform to efficiently enter the market. Even just months removed after the HIM events, abundant capacity was available at attractive pricing, allowing for the transaction not only to upsize, but to be priced below the initial guidance for each class.

## Exhibit 4: Fourth quarter 2017 catastrophe bond issuance

Beneficiary	Issuer	Series	Class	Size (millions)	Covered perils	Trigger	Recovery	Collateral
XL Insurance (Bermuda) Ltd	Galileo Re Ltd.	Series 2017-1	Class A	\$75.0	US HU, EQ, ST, EU Wind, and AU TC, EQ	Industry Index	Annual Aggregate	MMF
	Galileo Re Ltd.	Series 2017-1	Class B	\$75.0	US HU, EQ, ST, EU Wind, and AU TC, EQ	Industry Index	Annual Aggregate	MMF
United Services Automobile Association	Residential Re Limited	Series 2017-II	Class 1	\$55.0	US TC, EQ, WS, ST, WF, VE, MI, OP	Indemnity	Occurrence	MMF
	Residential Re Limited	Series 2017-II	Class 2	\$110.0	US TC, EQ, WS, ST, WF, VE, MI, OP	Indemnity	Occurrence	MMF
	Residential Re Limited	Series 2017-II	Class 3	\$130.0	US TC, EQ, WS, ST, WF, VE, MI, OP	Indemnity	Occurrence	MMF
California Earthquake Authority	Ursa Re Ltd.	Series 2017-2	Class C	\$200.0	CAL EQ	Indemnity	Annual Aggregate	MMF
	Ursa Re Ltd.	Series 2017-2	Class D	\$200.0	CAL EQ	Indemnity	Annual Aggregate	MMF
Covea Group	Hexagon Reinsurance DAC	Series 2017-1	Class A	\$54.0	EU Wind	Indemnity	Annual Aggregate	MTN
	Hexagon Reinsurance DAC	Series 2017-1	Class B	\$54.0	EU Wind	Indemnity	Annual Aggregate	MTN
Validus Holdings	Tailwind Re Ltd.	Series 2017-1	Class A	\$150.0	CAN EQ, HU; US HU, EQ	Industry Index	Annual Aggregate	MMF
	Tailwind Re Ltd.	Series 2017-1	Class B	\$150.0	CAN EQ, HU; US HU, EQ	Industry Index	Annual Aggregate	MMF
	Tailwind Re Ltd.	Series 2017-1	Class C	\$100.0	CAN EQ, HU; US HU, EQ	Industry Index	Annual Aggregate	MMF
Total				\$1,353.0				

Source: Aon Securities Inc.

### Legend

AU — Australia  
 CAL — California  
 CAN — Canada  
 EU — Europe  
 US — United States

EQ — Earthquake  
 HU — Hurricane  
 MI — Meteorite Impact  
 OP — Other Peril  
 ST — Severe Thunderstorm  
 TC — Tropical Cyclone  
 WF — Wildfire  
 WS — Winter Storm

MMF — US Treasury Money Market Fund  
 MTN — Medium Term Notes

## First quarter 2018

Catastrophe bond issuance in calendar year 2018 began with an active first quarter. Seven transactions resulted in a combined USD3.6 billion of coverage, with a repeat sponsor leading the charge. Further, the market expanded into a previously unrepresented region in ILS – Latin America – through the International Bank for Reconstruction and Development (IBRD) CAR program issuances. Investor appetite remained healthy, as reflected in spread compression along with the repeated upsizing of transactions from initial guidance.

A selection of transactions issued in the first quarter of 2018 includes:

- At the start of 2018, the World Bank facilitated the Pacific Alliance's sponsorship of the largest sovereign catastrophe bond, which was made across five tranches of notes—one each for Chile, Colombia, and Peru, and two for Mexico. Under the issuance, Chile received USD500 million, Colombia received USD400 million, Peru received USD200 million, and Mexico received USD260 million in earthquake risk protection. The bond's parametric trigger is based on the US Geological Survey data. Coverage is provided on a three-year basis for the Chile, Colombia, and Peru notes, and on a two-year basis for the Mexico notes. The transaction brings the total amount of risk transfer facilitated by the World Bank to USD3.6 billion and is part of the organization's broader work to support Colombia, Chile, Mexico, and Peru—all member countries of the Pacific Alliance—in managing risk from natural disasters.
- A Japan indemnity deal came to market in the first quarter of 2018 that combined two separate cedents into the same special purpose vehicle. This deal benefitted the sponsors in the event of typhoon, earthquake and flood losses. A total of USD320 million was taken up by investors on this transaction. A second Japan earthquake deal also came to market for the National Mutual Insurance Federation of Agricultural Cooperatives that solely covered earthquake risk, which was a much larger transaction at USD700 million.
- The Merna Re Ltd. Series 2017-1 transaction, on behalf of State Farm Fire and Casualty Company (State Farm), is the third catastrophe bond transaction from the Merna Re Ltd. program and the sixth overall on behalf of State Farm to exclusively cover the New Madrid Earthquake exposure. The single class of notes provides USD300 million of collateralized reinsurance protection on an indemnity per occurrence basis for losses arising from earthquakes (including fire following). The New Madrid Covered Territory was expanded to include the state of Oklahoma. The transaction was well received by the market, pricing at the lower end of initial price guidance at 2.00 percent. This represents a 25 basis point reduction from the initial risk interest spread of Merna Re Ltd. Series 2016-1, which covers similar exposure and risk levels and priced in March 2016.

## Exhibit 5: First quarter 2018 catastrophe bond issuance

Beneficiary	Issuer	Series	Class	Size (millions)	Covered perils	Trigger	Recovery	Collateral
Aetna Life Insurance Company	Vitality Re IX Limited	Series 2017	Class A	\$140.0	US MBR	Indemnity	Annual Aggregate	MMF
			Class B	\$60.0				
Republic of Chile	IBRD CAR	Series 116	Class A	\$500.0	Chile EQ	Parametric	Occurrence	MTN
Republic of Colombia		Series 117	Class A	\$400.0	Columbia EQ	Parametric	Occurrence	MTN
The Fund for Natural Disasters		Series 118	Class A	\$160.0	Mexico EQ	Parametric	Occurrence	MTN
		Series 119	Class B	\$100.0				
Republic of Peru		Series 119	Class B	\$200.0	Peru EQ	Parametric	Occurrence	MTN
Zenkyoren	Nakama Re Ltd.	Series 2018-1	Class 1	\$500.0	JP EQ	Indemnity	Term Aggregate	MTN
			Class 2	\$200.0				
Tokio Marine & Nichido Fire Insurance Co., Ltd.	Kizuna Re II Ltd.	Series 2018-1	Class A	\$150.0	JP EQ, EQFF	Indemnity	Team Aggregate	MMF
			Class B	\$50.0				
Mitsui Sumitomo Insurance Co., Ltd	Akibare Re Ltd.	Series 2018-1	Class A	\$220.0	JP TY, FL, EQFF	Indemnity	Occurrence	MTN
Aioi Nissay Dowa Insurance Co., Ltd			Class B	\$100.0	JP TY, FL			
State Farm Fire and Casualty Company	Mema Re Ltd.	Series 2018-1	Class A	\$300.0	New Madrid EQ	Indemnity	Occurrence	MMF
Allstate Insurance Company	Sanders Re Ltd.	Series 2018-1	Class A	\$500.0	US, NS, EQ, SW, FL, OP	Indemnity	Occurrence & Agg	MMF
Total				\$3,580.0				

Source: Aon Securities Inc.

### Legend

JP — Japan  
US — United States

EQ — Earthquake  
EQFF — Earthquake Fire Following  
FL — Flood  
HU — Hurricane

MBR — Medical Benefit Ratio  
NS — Named Storm  
OP — Other Peril  
SW — Severe Weather  
TY — Typhoon

MTM — Medium Term Notes  
MMF — US Treasury Money Market Funds

## Second quarter 2018

Catastrophe bond issuance in the second quarter of 2018 totaled over USD4.0 billion, representing the third largest second quarter issuance total in history. Given the 2017 US wind loss events, this strong result evidenced the continued utility of catastrophe bonds for sponsors and investors alike, and demonstrated the robustness of the insurance-linked securities sector as in the approach to the 2018 wind season.

A selection of transactions issued in the second quarter of 2018 includes:

- Allstate's return to the ILS market with Sanders Re Ltd. 2018-1, which provides per occurrence and annual aggregate protection on an indemnity basis to Allstate's personal property and auto business, emphasized the ability for the alternative markets to participate in a way similar to their traditional counterparts. With coverage terms among the broadest in the catastrophe bond market, covering not only peak perils like named storm and earthquake, but also severe weather, fires and other perils, the bond was consistent with the traditional placement. ILS capital providers have shown their increased sophistication and eagerness to support risk in a variety of different ways, as indicated by the aforementioned transaction upsizing 25 percent from its initial guidance.
- In the second quarter, Everest Reinsurance Company (Everest Re) sponsored the Kilimanjaro Re Limited Series 2018-1 and Series 2018-2 noted, representing the fourth issuance of notes for Kilimanjaro Re Limited and fifth overall for Everest Re. The 2018-1 notes provide aggregate protection against US, Puerto Rico, US Virgin Islands, and Canada-weighted industry insured hurricane and earthquake losses for a four-year term, while the Series 2018-2 offer the same protection for a five-year term. Upon closing, Kilimanjaro Re Limited combined with the prior outstanding Kilimanjaro Re Limited and Kilimanjaro II Re Limited issuances to total USD2.9 billion in outstanding limit, maintaining Everest's position as the largest sponsor in the catastrophe bond market.
- Marking the seventh catastrophe bond utilized by Travelers, Long Point Re III Ltd. returned to the capital markets, issuing USD500 million of indemnity, per occurrence, protection. The Northeast insurer benefited from competitive pricing, allowing for Long Point Re III Ltd.'s largest issuances to date.
- Nationwide Mutual Insurance Company came to market for its seventh time with Caelus Re V Limited. This deal, similar to the last iteration of Caelus, is an annual aggregate covering the perils of hurricane, earthquake, severe thunderstorm, winterstorm, wildfire, volcanic eruption, meteorite impact, and other peril. Nationwide was able to secure USD450 million from the capital markets, for a total of USD1,125 million outstanding.

## Exhibit 6: Second quarter 2018 catastrophe bond issuance

Beneficiary	Issuer	Series	Class	Size (millions)	Covered perils	Trigger	Recovery	Collateral
Safepoint Insurance Company	Manatee Re II Ltd	Series 2018-1	Class A	\$160.0	US WS, SCS	Indemnity	Occurrence	MMF
			Class B	\$40.0				
American Coastal Insurance Company	Armor Re Ltd.	Series 2018-1	Class A	\$100.0	US HU, EQ	Indemnity	Occurrence-1st Event	MMF
Everest Reinsurance Company	Kilimanjaro Re Ltd.	Series 2018-1	Class A-1	\$63.0	US, CAN, PR HU and EQ	Industry Index	Annual Aggregate	IBRD
			Class B-1	\$200.0				
		Series 2018-2	Class A-2	\$63.0				
			Class B-2	\$200.0				
American Integrity Insurance Company of Florida	Integrity Re Ltd	Series 2018-1	Class A	\$75.0	FL HU, SCS	Indemnity	Occurrence-2nd and subsequent	IBRD
			Class B	\$4.0				
Aspen Insurance Limited	Kendall Re Ltd.	Series 2018-1	Class A	\$225.0	US NS, EQ, ST, WF, WS, CAN EQ, EU WS	Industry Index	Annual Aggregate	EBRD
Louisiana Citizens Property Insurance Corporation	Pelican IV Re Ltd.	Series 2018-1	Class A	\$100.0	LA HU, ST	Indemnity	Occurrence	MMF
United Services Automobile Association	Residential Re Limited	Series 2018-1	Class 11	\$100.0	US TC, EQ, WS, ST, WF, VE, MI, OP	Indemnity	Annual Aggregate	MMF
			Class 13	\$200.0				
Citizens Property Insurance Corporation	Everglades Re II Ltd.	Series 2018-1	Class A	\$250.0	FL HU	Indemnity	Annual Aggregate	MMF
Nationwide Mutual Insurance Company	Caelus Re V Limited	Series 2018-1	Class A	\$125.0	US HU, EQ, ST, WS, WF, VE, MI, OP	Indemnity	Annual Aggregate	MMF
			Class B	\$75.0				
			Class C	\$175.0				
			Class D	\$75.0				
Texas Windstorm Insurance Association	Alamo Re Ltd.	Series 2018-1	Class A	\$400.0	TX HU, SCS	Indemnity	Annual Aggregate	MMF
The Travelers Indemnity Company	Long Point Re III Ltd.	Series 2015-1	Class A	\$500.0	Northeast HU, EQ, ST, WS	Indemnity	Occurrence	MMF
Transatlantic Reinsurance Company	Bowline Re Ltd.	Series 2018-1	Class A	\$250.0	US, PR, VI, DC, CA NS, EQ, ST	Industry Index	Annual Aggregate	MMF
SCOR Global P&C SE	Atlas Capital Plc	Series 2018	ISPV1	\$300.0	US NS, EQ, CA EQ, EU WS	Industry Index	Annual Aggregate	EBRD
Frontline Insurance	Frontline Re Ltd.	Series 2018-1	Class A	\$250.0	US NS	Indemnity	Occurrence	MMF
			Class B	\$100.0				
Total				\$4,029.0				

Source: Aon Securities Inc.

### Legend

CAN — Canada  
DC — District of Columbia  
EU — Europe  
FL — Florida  
JP — Japan  
LA — Louisiana  
PR — Puerto Rico  
TX — Texas  
US — United States  
VI — US Virgin Islands

EQ — Earthquake  
HU — Hurricane  
MI — Meteorite Impact  
NS — Named Storm  
OP — Other Peril  
SCS — Severe Conductive Storm  
ST — Severe Thunderstorm  
TC — Tropical Cyclone  
VE — Volcanic Eruption  
WF — Wildfire  
WS — Winter Storm

EBRD — European Bank for Reconstruction and Development  
IBRD — International Bank for Reconstruction and Development Notes  
MMF — US Treasury Money Market Funds

### Private catastrophe bond market

Over the past year, there has been an uptick in private transactions that have come to market. Though potentially harder to place given the more stringent primary and secondary trading requirements, the less comprehensive need for legal review allows for a large decrease in cost for the sponsor, which is imperative for smaller limits being placed. In the 12 months under review, private deals have been as small as USD5 million; however there is also interest for larger bonds, with the largest private placement being over USD424 million. The decreased need for disclosures can be attractive to sponsors.

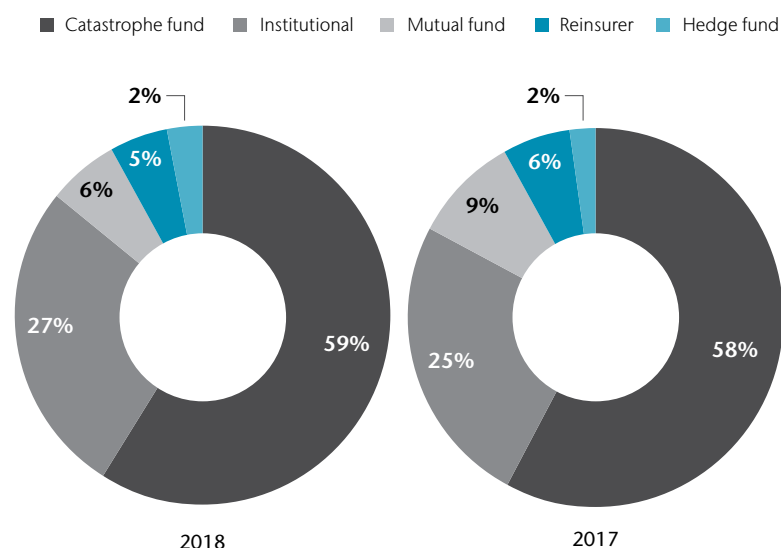
Several platforms have been developed to facilitate these private catastrophe bond transactions. Of note, Allianz Risk Transfer secured USD14.5 million in notes, covering risks associated with warmer-than-expected winters across Europe. This bond uses a parametric trigger that is measured against temperatures across various weather stations in Europe. Notably, this is only the third catastrophe bond ever to cover temperature-related weather risks.

Private deals have also covered more standard property catastrophe linked catastrophe bonds, which can be seen in Alpha Terra Validus II, a renewal transaction issued through Aon Insurance Managers' White Rock Insurance (SAC) Ltd. reinsurance company. This deal stood at only USD5 million, the smallest catastrophe bond issued in the preceding 12-month period. This deal provides protection against Latin American property catastrophe risks. Interestingly, this deal is structured as a zero-coupon note, which means that the cedent provides the premiums upfront, potentially allowing for better investor returns.

# ILS Investor Activity

## Capacity providers<sup>2</sup>

Exhibit 7: Investor by category (years ending June 30)

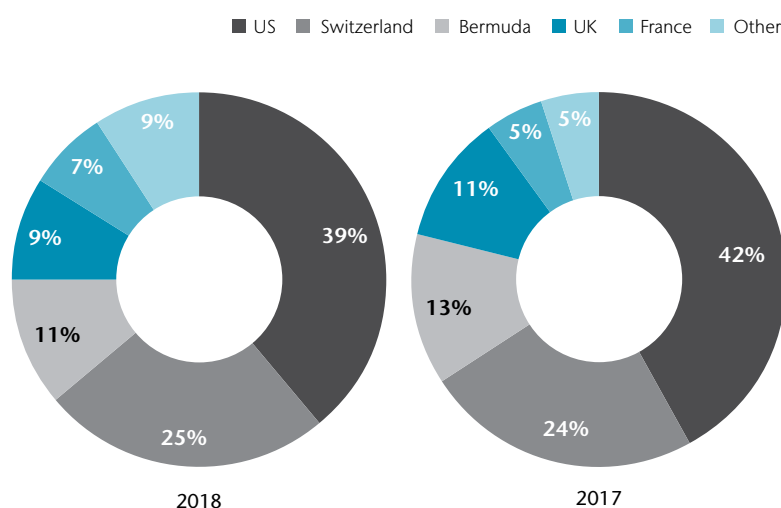


Source: Aon Securities Inc.

Generally, the capacity providers of ILS capital remained relatively consistent from 2017 to 2018. Institutions and dedicated catastrophe funds remained the largest providers of capacity during the 12 months ending June 30, 2018. Combined, the two categories provided 85 percent of the total capacity compared to 83 percent the year prior. The largest change came from the mutual fund category as dedicated ILS mutual funds continue to grow. Hedge fund and mutual fund participation remained consistent year over year.

## Capital origins<sup>3</sup>

Exhibit 8: Investor by country/region (years ending June 30)



Source: Aon Securities Inc.

Similarly to the investor categories, the geographic mix of catastrophe bond investors in 2018 remained relatively consistent year over year. The US remains the primary source of capital with a 39 percent market share in 2018, which is a slight decrease from 41 percent in 2017. Capital from Bermuda and the UK also decreased each by 2 percentage points to end 2018 with 11 percent and 9 percent, respectively. The catch-all “Other” category showed a strong increase contributing 9 percent of ILS capital in 2018, up from 5 percent in 2017. While there were several countries responsible, the growth was primarily driven by increases in Sweden and Japan.

<sup>2</sup> Aon Securities’ analysis of investor category includes only those transactions in which the firm participated

<sup>3</sup> Aon Securities analysis of geographic attributes includes only those transactions in which the firm participated

# The Aon ILS Indices

The Aon ILS Indices are calculated by Bloomberg using month-end price data provided by Aon Securities.

In a year that was marked by significant catastrophic losses, the All Bond index was able to post positive results during the 12 months ending June 30, 2018, while the US Hurricane index posted a negative return of -1.13 percent, driven by losses from Hurricane Irma. The Aon All Bond Index outperformed all comparable fixed income benchmarks for the 12-month period, only falling short of the 12.17 percent return posted by equities as represented by the S&P 500 index. Both developed and emerging economies experienced economic expansion in 2017. US equities posted strong results for the 12 months ending June 30, 2018, as economic data remained positive and unemployment at historically low levels.

The annual returns for all Aon ILS Indices were lower than the prior year's annual returns due to the catastrophic events in 2017. The 5- and 10-year average annual return of the Aon All Bond Index—5.11 and 6.53 percent respectively—compare favorably to other fixed income benchmark. On a 5-year basis, the Aon All Bond Index outperformed all comparable benchmarks. On a 10-year basis the Aon All Bond Index outperformed all but the 3-5 year BB US High Yield Index. We continue to believe that there is a strong benefit to adding a diversified book of pure insurance risks to an investors' portfolio over the long term.

## Exhibit 9: Aon ILS Indices<sup>4</sup>

Index title	Return for annual period ended June 30		5-year average annual return	10-year average annual return
Aon ILS Indices	2018	2017	2013-2018	2008-2018
All Bond Bloomberg Ticker (AONCILS)	2.72%	5.45%	5.11%	6.53%
US Hurricane Bond Bloomberg Ticker (AONCUSHU)	-1.13%	6.03%	5.37%	7.28%
Benchmarks				
3-5 Year US Treasury Notes (BEUSG2)	-0.98%	-1.18%	1.13%	2.66%
3-5 Year BB Cash Pay US High Yield Index (J2AI)	1.00%	7.86%	4.95%	7.18%
S&P 500 Index (SPX)	12.17%	15.46%	11.09%	7.82%
ABS 3-5 Year, Fixed Rate Index (R2A0)	0.77%	2.00%	2.52%	4.20%
CMBS 3-5 Year, Fixed Rate Index (CMB2)	-0.08%	0.75%	2.27%	5.71%

Source: Aon Securities Inc., Bloomberg.

4 The 3-5 Year U.S. Treasury Note index is calculated by Bloomberg and simulates the performance of U.S. Treasury notes with maturities ranging from three to five years.

The 3-5 Year BB U.S. High Yield index is calculated by ICE Data Indices, LLC (IDI), and tracks the performance of U.S. dollar denominated corporate bonds with a remaining term to final maturity ranging from three to five years and are rated BB1 through BB3. Qualifying securities must have a rating of BB1 through BB3, a remaining term to final maturity ranging from three to five years, fixed coupon schedule and a minimum amount outstanding of \$100 million. Fixed-to-floating rate securities are included provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transactions from a fixed to a floating rate security.

The S&P 500 is Standard & Poor's broad-based equity index representing the performance of a broad sample of 500 leading companies in leading industries. The S&P 500 Index represents price performance only, and does not include dividend reinvestments or advisory and trading costs. The ABS 3-5 Year, Fixed Rate index is calculated by BAML and tracks the performance of U.S. dollar denominated investment grade fixed rate asset backed securities publicly issued in the U.S. domestic market with terms ranging from three to five years. Qualifying securities must have an investment grade rating, a fixed rate coupon, at least one year remaining term to final stated maturity, a fixed coupon schedule and an original deal size for the collateral group of at least \$250 million.

The ABS 3-5 Year, Fixed Rate Index is calculated by IDI and tracks the performance of U.S. dollar denominated investment grade fixed rate asset backed securities publicly issued in the U.S. domestic market with terms ranging from three to five years. Qualifying securities must have an investment grade rating, a fixed rate coupon, at least one year remaining term to final stated maturity, a fixed coupon schedule, and an original deal size for the collateral group of at least \$250 million.

The CMBS 3-5 Year, Fixed Rate index is calculated by IDI and tracks the performance of U.S. dollar denominated investment grade fixed rate commercial mortgage backed securities publicly issued in the U.S. domestic market with terms ranging from three to five years. Qualifying securities must have an investment grade rating, at least one year remaining term to final maturity, a fixed coupon schedule and an original deal size for the collateral group of at least \$250 million.

The performance of an index will vary based on the characteristics of, and risks inherent in, each of the various securities that comprise the index. As such, the relative performance of an index is likely to vary, often substantially, over time. Investors cannot invest directly in indices.

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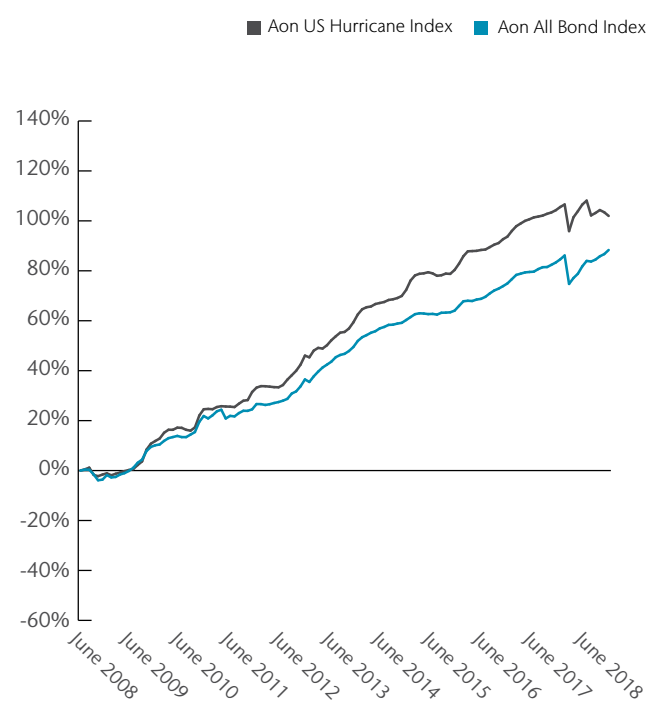
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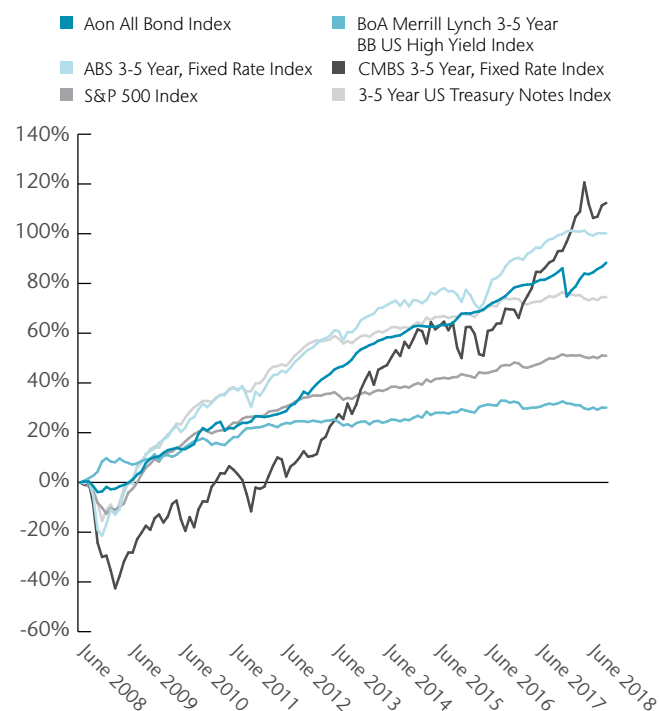
Both equity and fixed income markets experienced volatility during the 12 months ending June 30, 2018 to varying degrees. After initial decreases in nearly every comparable benchmark, the two most historically volatile benchmarks, the S&P 500 Index and the 3-5 Year BB US High Yield Index achieved the most significant recoveries. Rapid growth in China's GDP following a year of economic turnaround was able to counter against the continuing geo-political turmoil in the Middle East. Meanwhile, economic uncertainty in the US meant that the usually safe government debt was not a refuge for those seeking higher returns in the bond market.

**Exhibit 10: Historical performance of Aon ILS Indices**



Source: Aon Securities Inc., Bloomberg.

**Exhibit 11: Aon All Bond index versus financial benchmarks**



Source: Aon Securities Inc., Bloomberg.

## Outlook

While the primary market is not typically as active during the third quarter, our firm does expect sponsors to return to the market in the second half of 2018. Many investors have capital to deploy, which should continue to lead to further price increases. Overall, we believe the market will continue to be attractive for sponsors that choose to incorporate alternative capital.

Expectations for the secondary market are for pricing to continue to rise as spreads continue to compress. Demand for bonds that help to diversify the portfolio by providing exposure to alternative perils, such as casualty and non-US perils, will continue to grow.

# Mergers and Acquisitions (Re)insurer Activity

Over the six months ending June 30, 2018, global (re)insurance M&A deal value increased significantly, led by a number of notable transactions, including American International Group acquiring Validus Holdings, Ltd., Kemper Corporation acquiring Infinity Property and Casualty Corporation, and AXA SA acquiring XL Group Ltd. M&A deal count increased as well. According to S&P Capital IQ, the global (re)insurance sector announced first half 2018 M&A transactions with total deal volume of USD30.1 billion across 402 deals, compared to USD12.4 billion across 384 deals for the same period in 2017—a total deal value increase of 143 percent and a deal volume increase of 5 percent<sup>5</sup>.

**Exhibit 12: Select (re)insurance M&A activity**

Acquirer	Target	Rationale & Details	Announced Date	Value (millions)
American International Group	Validus Holdings Ltd.	For AIG, the deal provides the company with several (re)insurance businesses where it does not currently operate. Combined, the entity will have a powerful market presence, meaningful capital flexibility and strong cash flow. The transaction is essentially a “bolt-on” acquisition that will largely continue to run as a separate operation.	January 22, 2018	\$250.0
Kemper Corporation	Infinity Property and Casualty Corporation	The acquisition will increase Kemper’s presence in non-standard auto and commercial auto. Management believes Infinity’s target markets complement Kemper’s existing specialty footprint. Additionally, increased scale yields stronger claim capabilities and better distribution breadth, as well as a larger premium base to spread fixed costs and investments.	February 13, 2018	\$1,400.0
AXA SA	XL Group Ltd.	AXA’s acquisition of XL moves the company from a predominately Life & Savings company to a balanced Life (50%) and P&C (50%) company, as well as creates the #1 global P&C Commercial Lines insurer. The transaction allows for substantial synergies, diversification benefits and broad access to alternative capital pools. XL is expected to operate as a standalone segment.	March 5, 2018	\$15,300.0

Source: Aon Securities Inc., S&P Capital IQ, Dowling and company public filings

<sup>5</sup> Includes all Property & Casualty and Multi-Line underwriter and broker transactions.

Market conditions are still favorable for M&A, as long-term organic market trends, bolstered by US tax reform legislation signed in December 2017, drive further consolidation in the insurance and reinsurance industries. Despite continued improvement in valuations across many insurance segments, transactions at substantial multiples that demonstrated well-defined strategic rationale and tangible savings opportunities have been favorably received by investors who have become comfortable with an inorganic approach to accomplish strategic objectives.

Geographical, product, and distribution channel optimization and expansion, combined with the pressure to achieve scale and capture the resulting operational efficiencies, should continue to drive M&A activity. Many leading (re)insurers are increasingly facing continued pressure from growing alternative market capacity that has not been hampered from the elevated hurricane season losses experienced last year, believe that the industry's current elevated expense structure must be addressed.

US tax reform legislation is expected to bolster M&A activity by enhancing the earnings of US-based (re)insurers through a lower corporate tax rate, resulting in increased capital available for strategic deployment. Further, the reform improves the attractiveness of the US market to foreign investors, reducing the competitive advantage of the offshore-based (re)insurers that previously benefited from a lower tax rate.

As in North America, international insurance M&A activity continues to be dynamic due to a number of factors, including:

- Japanese insurers continuing to expand their presence in the US and diversifying earnings away from their domestic market facing demographic challenges. On June 2018, Sompo International completed its acquisition of US-based surety insurer, Lexon Surety Group, deepening Sompo's US expansion and accelerating growth of its primary surety portfolio.
- In the UK, despite the overhang of Brexit, elevated Lloyd's expense ratios and a continuation of softening rates, established Lloyd's syndicates continue to attract meaningful interest. Most recently, The Hanover Insurance Group announced a review of strategic alternatives for its Lloyd's vehicle, Chaucer, seeking to potentially monetize its platform at attractive market valuation levels.

As summarized in the Aon Securities Weekly Public Market Recap, on average, global (re)insurers' stock prices and valuation multiples have slightly decreased this past year with the publicly traded universe trading at a median of approximately 86 percent of its 52 week high. Year-to-date the Florida specialty, health, and London specialty sectors have been the best performers with nominal returns of 28.3 percent, 15.6 percent, and 4.2 percent, respectively. The P&C large cap and North American life and annuity sectors have been the worst performers with nominal losses of 9.9 percent and 8.5 percent, respectively.

In conclusion, Aon Securities expects M&A activity to continue to be driven by a growing level of excess capital, limited organic growth opportunities as well as M&A's ability to help insurers accomplish critical strategic, diversification, and expense and capital efficiency objectives.

# ILS-Related Markets

Shortly after the alternative capital market achieved the record level in the second quarter of 2017, the Atlantic wind season produced hurricanes Harvey, Irma, and Maria, which collectively resulted in an eight percent drop in assets under management to USD81.6 billion in the third quarter of 2017. Despite this and additional loss activity, the alternative capital market replenished its capital by the end 2017. Further, investors built on this momentum and increased their capital to a new record of USD98 billion by June 30, 2018. This comparative 10 percent increase in capitalization over the trailing 12 months, largely driven by mobilization at the end of 2017, demonstrates the resilience of the ILS market's ability to dynamically react to the post-event market environment.

As shown in exhibit 13, growth was in part fueled by the largest first quarter catastrophe bond issuance on record. The bond market exhibited strong year-over-year growth of 16 percent, establishing itself as the fastest growing alternative capital segment. Additionally, collateralized reinsurance and ILWs both experienced growth of around 10 percent. We anticipate that the alternative capital market is well-poised to continue climbing to new highs over the next 12-month period.

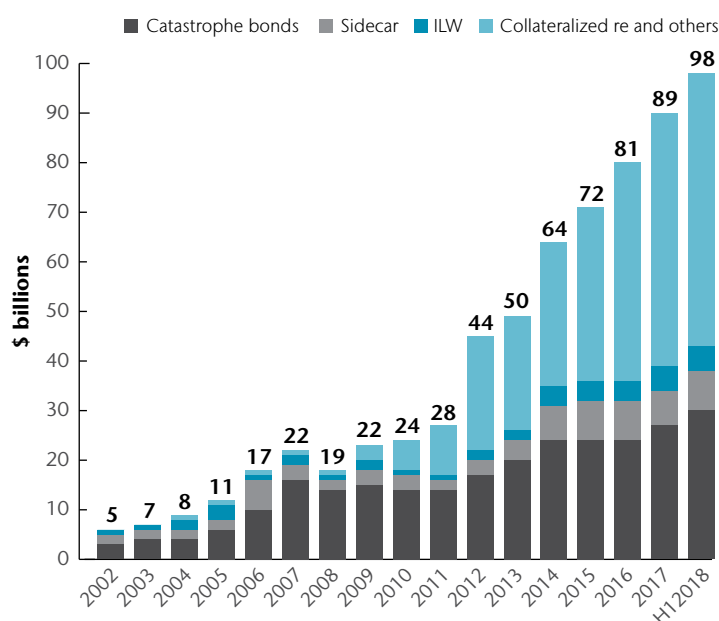
As shown in exhibit 14, alternative capital markets represented 16.2 percent of the global reinsurer capital during the second quarter of 2018. This is a 3.0 percent increase over the last 12 months.

## Quota share sidecars

USD2.9 billion in limit was secured through 17 quota share sidecar transactions that came to market since June 30, 2017. This significant volume demonstrates the opportunity that both sponsors and investors see following catastrophe events.

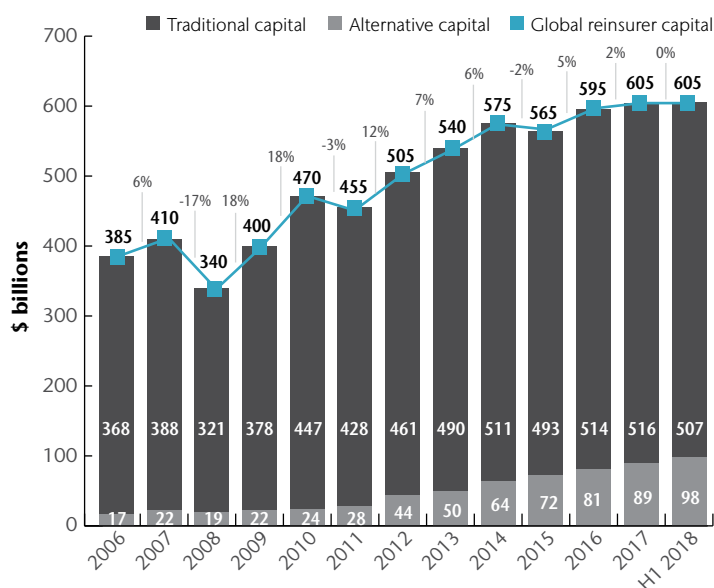
Several sidecars were launched by sponsors that were new to the market. New sponsors included MS Amlin, Fidelis, Neon Syndicate 2468 (Neon), Somo International, and Oxbridge Re. Chaucer also returned to the market after several years. The emergence of new sponsors highlights that sidecars remain an efficient source of collateralized capacity that can be quickly deployed following catastrophe events.

**Exhibit 13: Alternative market development**



Source: Aon Securities Inc.

**Exhibit 14: Global reinsurer capital**



Source: Individual company reports, Aon Benfield Analytics, Aon Securities Inc.

### Exhibit 15: New quota share sidecars launched during 12 months to June 30, 2018

Sidecar	Inception date	(Re)insurer	Size (USD millions)
Thopas Re Ltd.	December 2017	Chaucer plc	95.0
Blue Lotus Re Ltd.	December 2017	Sompo International	62.0
NCM Re (UK PCC) Ltd.	January 2018	Neon Syndicate 2468	72.0
Viribus Re Ltd.	January 2018	MS Amlin	61.5
Socium Re Ltd.	June 2018	Fidelis	50.0
Oxbridge Re NS Ltd.	June 2018	Oxbridge Re	2.0

Source: Company filings and press releases.

Following hurricanes Harvey, Irma, and Maria, MS Amlin launched its inaugural reinsurance sidecar, Viribus Re Ltd. This USD61.5 million vehicle strengthened MS Amlin's standing in the alternative capital markets and provided collateralized retrocession capacity to MS Amlin Syndicate 2001 at Lloyd's of London. Viribus Re provides access to the worldwide property and catastrophe excess of loss portfolio managed by MS Amlin.

Fidelis, an innovative reinsurer launched in 2015, has also entered the alternative capital market with its launch of a USD50 million reinsurance sidecar, Socium Re Limited. The sidecar provides collateralized retrocession capacity for Fidelis' reinsurance portfolio and allows partners to support the firm's strategic growth plans.

Furthermore, new ILS legislation in the UK was utilized for the first time in January 2018, as Neon was the first entity to bring an ILS transaction to market in this domicile. NCM Re Ltd. launched at USD72 million and will provide collateralized reinsurance protection to Neon Syndicate 2468.

In addition to these new sidecar transactions, a significant number of sidecars have renewed and further expanded during this period as shown in exhibit 16. This demonstrates the growing importance of alternative capital for sponsors.

### Exhibit 16: Renewal quota share sidecars launched during 12 months ending June 30, 2018

Sidecar	Inception date	(Re)insurer	Size (USD millions)
Eden Re II Ltd. Series 2018-1 Class A	December 2017	Munich Re	83.7
Leo Re Ltd. 2018-1 Class A	December 2017	Munich Re	260.0
Leo Re Ltd. 2018-1 Class B	December 2017	Munich Re	140.0
Eden Re II Ltd. Series 2018-1 Class B	January 2018	Munich Re	216.3
K-Cession	January 2018	Hanover Re	600.0
Harambee Re Ltd. 2018	January 2018	Argo	Not disclosed
Fibonacci Reinsurance Ltd. (2018-1)	February 2018	RenaissanceRe	70.0
Versutus Ltd. (2018)	February 2018	Brit	187.0
Daedalus I Re Ltd.	2016 (ongoing)	XL Catlin	600.0
Limestone Re Ltd.	June 2018	Liberty Mutual Insurance Company	278.0
Fibonacci Reinsurance Ltd. (2018-2)	June 2018	RenaissanceRe	125.0

Source: Company filings and press releases.

Munich Re started the sidecar renewal season at the end of 2017 with the USD83.7 million Eden II Re Ltd. 2018 Class A Notes. Later in January, Munich Re followed-up with the Class B Notes increasing the total size of Eden II Re Ltd. 2018 to USD300 million. Further, the Dutch pension fund manager PGGM also renewed and expanded its strategic sidecar partnership with Munich Re through Leo Re Ltd. The Class A and B Notes of Leo Re Ltd. resulted in a total issue size of USD400 million, demonstrating the ability for experienced pension funds to enter the market directly.

Hannover Re's K Cessions and Brit's Versutus Ltd. grew by USD50 million and USD37 million, respectively.

XL Catlin expanded Daedalus Re to USD600 million after launching two years ago at USD200 million. This vehicle offers flexibility as it is not tied to a specific renewal season and can be funded throughout the year.

Finally, after entering into the alternative capital market in 2016, Liberty Mutual Insurance Company returned to the market again in 2017. Limestone Re expanded by over USD100 million to USD278 million after its launch.

### Collateralized reinsurance market trends

The collateralized reinsurance segment grew by 8 percent in the last 12 months. Although the segment continues to grow, its growth decelerated following the 25 percent expansion during the prior period.

One example of a new solution in this segment is the recently launched Credit Suisse vehicle, Bernina Re. The unrated class 3a insurer is domiciled in Bermuda and is already responsible to manage a significant amount of assets under management.

Further, LGT's, Collateralised Re Ltd. has transformed itself into Lumen Re Ltd. and received an "A" rating by A.M. Best with a stable outlook. Obtaining a A.M. Best rating and upgrading the vehicle's Bermuda license to a class 3a reinsurer provides LGT with the opportunity to pursue more diverse investment strategies.

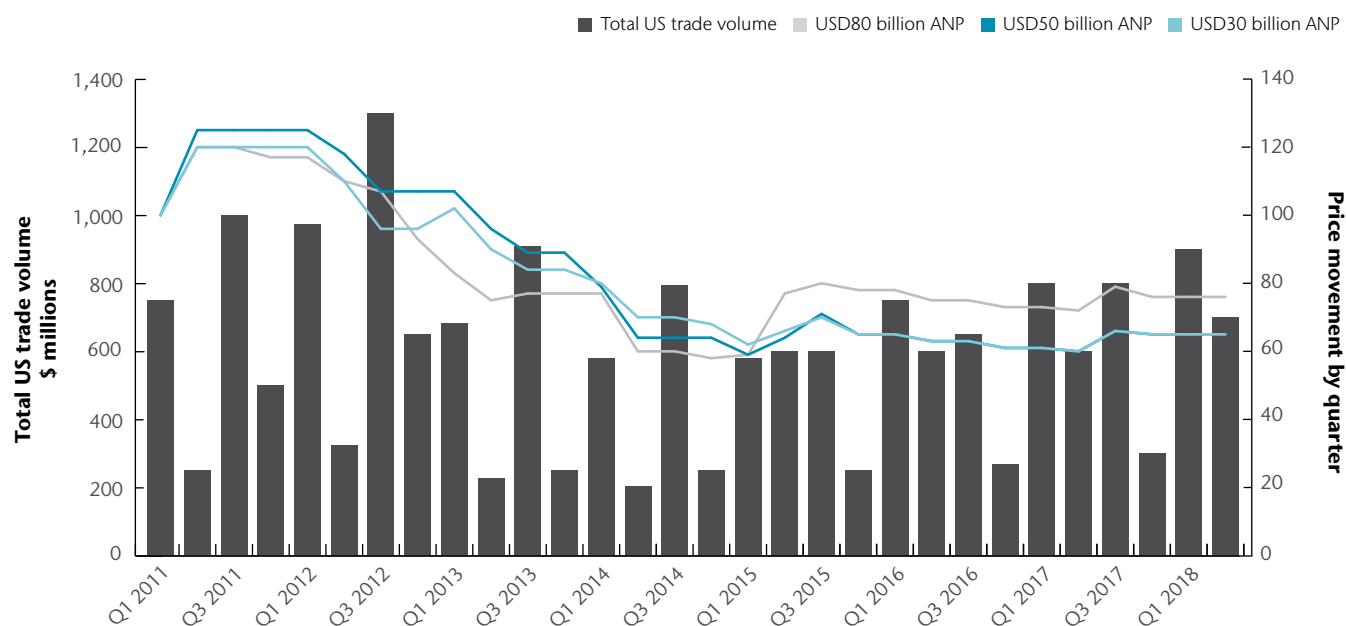
The largest ILS investment fund, Nephila Capital, also further expanded its breadth by making an investment in Volante Global Ltd., a newly launched multi-class and multi-territory managing general agent platform. Volante is headquartered in the UK and focused on underwriting specialist portfolios including property and casualty, professional and financial lines, motor, space, aviation, and marine and energy.

### Industry loss warranty (ILW)

Year over year ILW capacity saw shortages for the majority of ILW products. Reinsurers were willing to entertain lower trigger levels in order to raise their market profile and to differentiate themselves. Trading volume has increased year over year with the current estimate for in-force ILW limit of USD5 billion. Regional US ILW covers continue to remain an attractive potential expansion for markets given that nationwide ILW cover is readily available. Capital market investors continue to be a major driver of the transacted ILW limit. Conventional buyers with indemnity capacity also still actively participate in the ILW space.

The losses incurred by hurricanes Harvey, Irma, and Maria devastated the market and impacted renewals with an upward pricing correction of 15 to 25 percent. However, depending on structure and modeled expected loss, some renewals executed outside of this pricing spread. Clean renewals softened significantly from January 1 with flat pricing being in demand. Products with a low attachment and subsequent event coverage suffered a correction to the point that the purchase is no longer a viable proposition for some clients. The seasonal uptick in demand for ILWs covering the US windstorm season saw a flurry of activity as we approached the July 1 renewal date.

Exhibit 17: ILW trade volume and US ANP price movement



Source: The Global Re Specialty Team of Aon UK Limited.

## Private debt and surplus notes

Private debt and surplus note issuances continued to increase in 2017. In the Florida homeowners' market, 2017 issuances were primarily driven by continued pressure from the assignment of benefits costs and losses from Hurricane Irma. Outside of Florida, losses from Hurricane Harvey, California wildfires, and significant tornado and hail events drove the issuance of private debt and surplus notes to aid insurers in maintaining their capital levels.

Below are a few examples of the private debt and surplus note placements that were supported by various investor groups in 2017. While the trend of ILS investment managers looking to access returns through private debt placements continues, a number of investors have entered the market including: life insurers, traditional asset managers, mutual insurance companies, and hedge funds.

Exhibit 18: Select US private debt and surplus note issuances

Issuer	State	Rating	Issuance year	Term (years)	Issuance amount ('000's millions)	Current rate terms
FedNat	FL	A (Demotech)	2017	5	20,000	8.375%
			2017	10	25,000	7.00% +3mL
United Insurance Holdings Corp.	FL	A (Demotech)	2017	10	150,000	6.25%
GuideOne Mutual*	MN	A- (A.M. Best)	2017	30	50,000	7.875%
Kingstone	NY	A- (Kroll)	2017	5	30,000	5.625%

\* Surplus note issuance

Source: Statutory statements and other company reports.

# Market Analysis by Region

## North America

North American perils continued to dominate catastrophe bond issuances as 18 of the 32 catastrophe bonds issued covered US property risk. In terms of issuance size, this represents 51 percent as compared to 87 percent the year before. Although total limit of US property coverage continued to increase, this represents a decreasing market share, which is in line with global exposure to insured property risk. A notable shift in North American perils is the inclusion of Canada, Puerto Rico and the United States Virgin Islands to the covered areas of the bonds. In the 12-month period under review, 10 percent of the North America perils limit issued included Canada, Puerto Rico, and the United States Virgin Islands as a covered territory. Further, there is increased use of other peril, which is included as a covered peril on bonds representing 20 percent of the total US-exposed catastrophe bond market.

For this 12-month period, cedents were composed of both repeat and first-time members of the risk-transfer capital markets. Regional insurers, global (re)insurers corporations, and public/government entities sought coverage from named storm, earthquake, severe thunderstorm, winter storm, wildfire, volcanic eruption, meteorite impact, and other peril.

Thirteen repeat sponsors and three new sponsors comprised the market in the year under review, with new sponsors making up 16.2 percent of the total limit issued.

Large demand from the side of investors caused spreads to soften and 63 percent of the total limit for US property and casualty was offered at or below the initial price guidance.

Despite the large amount of insured losses incurred during the 12-month period, only one catastrophe bond was triggered.

### Second half 2017

As seen in exhibit 19 below, eight North America property transactions closed in the second half of 2017. The second half of 2017 was most notable for the extraordinarily high insured loss amounts. Though three large Atlantic hurricanes caused significant amounts of damage, investors remained interested in the opportunities involved by catastrophe bonds and allowed the markets to keep up volume. In fact, two thirds of deals experienced upsizing in the third and fourth quarters even in the face of large losses from catastrophe events.

**Exhibit 19: Second half of 2017 property catastrophe bonds covering North America peril**

Beneficiary	Issuer	Series	Class	Size	Covered perils	Trigger	Recovery	Collateral
AmTrust Financial Services	Fortius Re II Ltd.	Series 2017-1	Class 1	\$100.0	US HU, EQ; CAN EQ	Multiple	Occurrence	IBRD
United Services Automobile Association	Residential Re Limited	Series 2017-II	Class 1	\$55.0	US TC, EQ, WS, ST, WF, VE, MI, OP	Indemnity	Occurrence	MMF
			Class 2	\$110.0				
			Class 3	\$130.0				
California Earthquake Authority	Ursa Re Ltd.	Series 2017-2	Class C	\$200.0	CAL EQ	Indemnity	Annual Aggregate	MMF
			Class D	\$200.0				
Validus Holdings	Tailwind Re Ltd.	Series 2017-1	Class A	\$150.0	CA EQ, HU; US HU, EQ	Industry Index	Annual Aggregate	MMF
			Class B	\$150.0				
			Class C	\$100.0				
Total				\$1,195.0				

Source: Aon Securities Inc.

#### Legend

CAL — California  
CAN — Canada  
US — United States

EQ — Earthquake  
HU — Hurricane  
MI — Meteorite Impact  
NS — Named Storm  
OP — Other Peril  
SCS — Severe Convective Storm

ST — Severe Thunderstorm  
TC — Tropical Cyclone  
VE — Volcanic Eruption  
WF — Wildfire  
WS — Winter Storm

EBRD — European Bank for Reconstruction and Development  
IBRD — International Bank for Reconstruction and Development Notes  
MMF — US Treasury Money Market Funds



### First half 2018

Thirteen North America property transactions closed in the first half of 2018. This represents a total issuance volume of USD4.1 billion. Issuance volume was driven primarily by returning cedents to the market, with catastrophe bond stalwarts of Everest Re and Nationwide Mutual bringing more capacity to the market in their respective Kilimanjaro Re Ltd. 2018-1 and Caelus Re V 2018-1 deals.

The USD525 million Kilimanjaro Re Ltd transaction was issued on behalf of Everest Reinsurance Company. This transaction marks the fifth time Everest has come to the market covering the perils of hurricane and earthquake. The Kilimanjaro deals mark

increased interest in covering Puerto Rico and Canada losses. Kilimanjaro Re Ltd. also uses an industry index trigger for this annual aggregate deal.

Caelus Re V represents the seventh time that Nationwide Mutual Insurance Company has reached to the capital markets for reinsurance coverage in the form of catastrophe bonds. These deals cover a far broader array of perils than the typical catastrophe bond transaction, with eight named perils in total. These hurricane, earthquake, severe thunderstorm, winter storm, wildfire, volcanic eruption, meteorite impact, and other peril pay out on an indemnity annual aggregate basis.

### Exhibit 20: First half of 2018 property catastrophe bonds covering North America perils

Beneficiary	Issuer	Series	Class	Size	Covered perils	Trigger	Recovery	Collateral
State Farm Fire and Casualty Company	Mema Re Ltd.	Series 2018-1	Class A	\$300.0	New Madrid EQ	Indemnity	Occurrence	MMF
Allstate Insurance Company	Sanders Re Ltd.	Series 2018-1		\$500.0	US, NS, EQ, SW, FL, OT	Indemnity	Occurrence & Agg	MMF
Safepoint Insurance Company	Manatee Re II Ltd.	Series 2018-1	Class A Class B	\$160.0 \$40.0	US WS, SCS	Indemnity	Occurrence	MMF
American Coastal Insurance Company	Armor Re Ltd.	Series 2018-1	Class A	\$100.0	US HU, EQ	Indemnity	Occurrence - 1st Event	MMF
Everest Reinsurance Company	Kilimanjaro Re Ltd.	Series 2018-1 Series 2018-2	Class A-1 Class B-1 Class A-2 Class B-2	\$62.5 \$200.0 \$62.5 \$200.0	US, CAN, PR HU and EQ	Industry Index	Annual Aggregate	IBRD
American Integrity Insurance Company of Florida	Integrity Re Ltd.	Series 2018-I	Class A Class B	\$75.0 \$4.0	FL HU, SCS	Indemnity	Occurrence - 2nd and subsequent	IBRD
Louisiana Citizens Property Insurance Corporation	Pelican IV Re Ltd.	Series 2018-1	Class A	\$100.0	LA HU, ST	Indemnity	Occurrence	MMF
United Services Automobile Association	Residential Re Limited	Series 2018-1	Class 11 Class 13	\$100.0 \$200.0	US TC, EQ, WS, ST, WF, VE, MI, OP	Indemnity	Annual Aggregate	MMF
Citizens Property Insurance Corporation	Everglades Re II Ltd	Series 2018-1	Class A	\$250.0	FL HU	Indemnity	Annual Aggregate	MMF
Nationwide Mutual Insurance Company	Caelus Re V Limited	Series 2018-1	Class A Class B Class C Class D	\$125.0 \$75.0 \$175.0 \$75.0	US HU, EQ, ST, WS, WF, VE, MI, OP	Indemnity	Annual Aggregate	MMF
Texas Windstorm Insurance Association	Alamo Re Ltd.	Series 2018-1	Class A	\$400.0	TX HU, SCS	Indemnity	Annual Aggregate	MMF
The Travelers Indemnity Company	Long Point Re III Ltd.	Series 2018-1	Class A	\$500.0	Northeast HU, EQ, ST, WS	Indemnity	Occurrence	MMF
Frontline Insurance	Frontline Re Ltd.	Series 2018-1	Class A Class B	\$250.0 \$100.0	US NS	Indemnity	Annual Aggregate	MMF
Total				\$4,054.0				

Source: Aon Securities Inc.

#### Legend

CAN — Canada  
DC — District of Columbia  
EU — Europe  
FL — Florida  
LA — Louisiana  
PR — Puerto Rico  
TX — Texas  
US — United States

EQ — Earthquake  
HU — Hurricane  
MI — Meteorite Impact  
NS — Named Storm  
OP — Other Peril  
SCS — Severe Convective Storm

ST — Severe Thunderstorm  
TC — Tropical Cyclone  
VE — Volcanic Eruption  
WF — Wildfire  
WS — Winter Storm

IBRD — International Bank for Reconstruction and Development Notes  
MMF — US Treasury Money Market Funds

### **Model updates**

In June 2017, AIR released an updated earthquake model for the United States. This includes an updated event generation, intensity calculation, and damage estimation. Along with that, sub-perils like fire following, liquefaction, and sprinkler leakage, which were previously supported, have undergone comprehensive updates. Furthermore, two new sub-perils, tsunami and landslide, were added to give a more comprehensive view of risk.

### **Europe**

Despite some activity from repeat sponsors, we continue to see lower demand from prospective sponsors for catastrophe bond coverage. This is due to a relatively inexpensive European traditional market, coupled with the widespread negative interest rate environment for Euro-denominated currency, which significantly restricts the range of viable collateral solutions available to European sponsors.

Catastrophe bond issuance was particularly light during the 12-month period ending June 30, 2018, with a total of one Europe-only deal brought to market—Hexagon Re DAC Series 2017-1. The bond, which had an issuance size of EUR90 million, provided first-time sponsor Covéa Group with coverage for European Windstorm across France, Andorra, and Monaco.

Veteran sponsor, SCOR Global P&C SE, came back to market with another Atlas series of notes in May. The French sponsor has leveraged the ILS market for several years and in a variety of forms. As is common with SCOR, the transaction covered North American and European risks; however, the unique feature of the offering was its use of the UK ILS domicile regime. This was the first catastrophe bond issuance from the new framework, which was designed to promote ILS issuance in the UK.

### **United Kingdom ILS regime**

In November 2017, a British parliamentary committee passed both the Risk Transformation Regulations 2017 and the Risk Transformation (Tax) Regulations 2017 to allow for an ILS-friendly legal framework in the UK. Prior to its inception, the UK ILS regime had been a major topic of discussion amongst lawmakers, (re)insurance, and ILS professionals for approximately three years.

The regime aims to emphasise London as the domicile of choice for (re)insurance in all forms, including the continually growing ILS sector. One clearly-stated motivation of the regime has been to guard against lost revenue, as various pockets of the (re)insurance and ILS industry had traditionally sought other domiciles in which to bring deals to market.

The Prudential Regulation Authority (PRA) and Financial Conduct Authority (FCA) provide the regulatory oversight for establishing an insurance special purpose vehicle (ISPV) within which to transact business. Along with the passing of the regulations in 2017, the PRA outlined its approach to authorising ISPVs, including business plan and funding disclosure requirements before risk transfer.

Almost immediately after the legislation passed, an ILS transaction was put in place with Neon Syndicate 2468 and its capitalization of its vehicle NCM Re. The vehicle operates as a quota share of its business, analogous to a typical sidecar structure. Further, as noted previously, SCOR Global P&C SE, issued Atlas Capital UK 2018 under the regime. Each transaction was welcomed by the market for its use of the new platform.

### **Negative interest rates**

Interest rates in the European Union remain negative, as they have been since 2013, with deposit facility rates still sitting at -0.40 percent since 2016. That being said, as economic fundamentals in the Eurozone improve, the European Central Bank (ECB) will begin shifting its monetary policy and may increase rates next year. The central bank will begin to phase out its EUR2.4 trillion bond-buying program by the end of the year, but ECB President Mario Draghi has indicated that rates are unlikely to be raised before summer 2019. It is expected that the ECB may hike rates in October or December of next year, which would be the first ECB rate increase since 2011.

The prospect of improving rates in the Eurozone will come as good news to ILS sponsors seeking to transfer European risk to the capital markets, as euro assets, which are currently costly to hold as collateral, would become again a viable option for collateral management, either in the form of European Money Market Funds or Euro-denominated medium term notes.

## Asia Pacific

During 12-month period ending June 30, 2018, three catastrophe bonds were issued by Japanese sponsors which in aggregate provided USD1.22 billion of limit covering Japan perils. During the same period, two catastrophe bonds with USD545 million capacity covering Japanese earthquake peril were expired. The total volume of catastrophe bonds from the Asia Pacific region represents 12 percent of the market outstanding volume of natural catastrophe bonds as of the end of June 30, 2018. All three transactions were well received by the investors as the market continues to seek for the diversifying perils.

Earlier in March 2018, the National Mutual Insurance Federation of Agricultural Cooperatives (Zenkyoren) secured USD700 million in capacity through Nakama Re Ltd. The Series 2018-1 is the sixth issuance under Nakama Re Ltd program, which provides USD700 million in capacity for Zenkyoren's residential earthquake portfolio. The Class 1 notes were offered with initial guidance of USD200 million, which was subsequently upsized to USD500 million, while Class 2 notes were upsized from initial guidance of USD50 to USD200 million at closing. The two tranches of notes were structured almost identical to the Series 2016-1, providing the coverage based on rolling three-year aggregate losses for the same original layers. The Class 1 notes were priced at 2 percent, which is 9 percent lower than the pricing level of Class 1 notes of Series 2016-1 while the Class 2 notes were priced at 3 percent, which is 8 percent lower than the Class 2 notes of Series 2016-1. With the issuance of Series 2018-1, the program size has reached USD2.075 billion, which is the largest among the catastrophe bond program sponsored by primary insurance companies as of June 30, 2018.

In late March 2018, Tokio Marine & Nichido Fire Insurance Co., Ltd. (Tokio Marine) returned to the market with Kizuna II Re Ltd. Series 2018-1 for its commercial earthquake exposure and earthquake fire following exposure for both commercial and residential to replace a part of maturing USD245 million capacity of Series 2014-1. It was Tokio Marine's first return to the market after it exercised the early redemption of Series 2015-1, which was JPY35 billion of catastrophe bonds redeemed after the Bank of Japan introduced the negative interest rate in January 2016. Through the issuance of Series 2018-1, Tokio Marine successfully expanded the coverage to include additional subject businesses, such as personal accident, auto, and assumed group reinsurance portfolio based on the rolling three-year aggregate losses. The term of catastrophe bonds is five years, but the transaction will be redeemed if there will be no eligible event by the end of the third year. This feature enables Tokio Marine to secure continuous three-year rolling aggregate cover if Tokio Marine chooses to repeat the redemption and new issuances every three years.

Another transaction was brought jointly by Mitsui Sumitomo Insurance Co., Ltd (Mitsui Sumitomo) and Aioi Nissay Dowa Insurance Co., Ltd (AND) through Akibare Re Ltd. AND issued a catastrophe bond for the first time through the Akibare Re Ltd., which was established by its group company, Mitsui Sumitomo, in 2016. The Class A notes provides USD220 million capacity for Mitsui Sumitomo covering typhoon, flood, and earthquake fire following for its commercial and residential policies. USD100 million in capacity was provided through Class B for AND providing the coverage for typhoon and flood perils. Flood peril in this transaction is not limited to the flood losses induced by typhoon.

## Exhibit 21: 2018 property catastrophe bonds covering Asia Pacific perils

Beneficiary	Issuer	Series	Class	Size (millions)	Covered perils	Trigger	Rating	Initial expected loss*	Initial interest spread
National Mutual Insurance Federation of Agricultural Cooperatives	Nakama Re Ltd	Series 2018-1	Class 1	\$500.0	JP EQ	Indemnity	NA	0.48%	2.00%
			Class 2	\$200.0				1.44%	3.00%
Tokio Marine & Nichido Fire Insurance Co., Ltd.	Kizune RE II Ltd	Series 2018-1	Class A	\$150.0	JP EQ (incl. EQFF)	Indemnity	NA	0.12%	1.88%
			Class B	\$50.0				0.99%	2.50%
Mitsui Sumitomo Insurance Co., Ltd.	Akibare Re Ltd	Series 2018-I	Class A	\$50.0	JP TY, Flood, EQFF	Indemnity	NA	0.73%	1.90%
Aioi Nissay Dowa Insurance Co., Ltd.			Class B	\$100.0	JP TY, Flood			0.99%	1.90%
Total				\$1,050.0					

\* Initial modeled annual expected loss.

\*\* Nakama Re Series 2018-1 utilize a term aggregate structure. Expected losses shown are annualized.  
Source: Aon Securities Inc.

**Legend**  
JP — Japan

EQ — Earthquake  
EQFF — Earthquake Fire Following  
TY — Typhoon

## April 1 Renewals

### Model updates

RMS released new models for India, South Korea, and Philippines in RiskLink v18. The models combine new data and understanding gained from recent events in the region with the latest modeling approaches. The version 18.0 release also updated all components of the existing Australia Earthquake, Australia Typhoon and Australia Severe Convective Storm Models and the India Earthquake Model. The new India flood model provides a complete view of flood risk, accounting for fluvial and pluvial (urban and flash flood) flooding. South Korea Earthquake model covers ground shaking, liquefaction, and landslide risk, while the Philippines Typhoon Model provides the typhoon-related risks of wind, typhoon-driven flood, and storm surge, in addition to seasonal and monsoon flood events.

All new models incorporate the latest RMS science and innovations for both the hazard and vulnerability components. They also include the RMS Industrial Facilities Model for industrial risks, Builders Risk Model. RMS also released Industry Exposure Databases (IED's) for the above territories as well.

AIR has updated Japan wind and flood model in Autumn 2017, which includes the first Japan non-typhoon related inland flood. RMS also released the new Japan typhoon model and Japan earthquake model in their new platform. Their updated typhoon model explicitly models typhoon induced flooding and storm surge. The new earthquake model now includes a fully probabilistic tsunami model along with updated ground shaking and fire following models.

Aon's catastrophe model development team, Impact Forecasting, released an update to the flood model for Thailand, which was originally released during summer of 2012, a few months after 2011's catastrophic flooding. This model reflects several market demands that appeared since then including new developments in local flood defense protection and the improved availability and quality of hydrological and spatial data.

CoreLogic released an update for South Korea Earthquake Model, the model resolution, hazard, and vulnerability had been updated. For the Asia Earthquake Model, which includes Singapore, Indonesia, Malaysia, Philippines, South Korea, and Thailand, the hazard module has been completely updated to conform to comprehensive CoreLogic probabilistic hazard-modeling standards. A revised vulnerability model also has been implemented as well as now includes the demand surge for all above mentioned countries.

## Natural catastrophe losses

There were at least eight separate billion-dollar events in the second half of 2017, all of which were weather related. Flooding drove the bulk of the losses between July through October 2017. Flooding across China, predominantly in the Yangtze and Yellow River basins, damaged or destroyed at least 190,000 homes and claimed more than 200 lives. Nearly 2.4 million acres of cropland was affected due to the floods. The direct economic loss was estimated to be USD8.8 billion. Monsoonal flooding in South Asia caused widespread damage in India, Nepal, and Bangladesh, claiming over 1,250 lives, damaging hundreds of thousands of homes, and causing at least USD4 billion in damage across the three countries. The most significant non-flood event was a summer drought that affected more than seven million acres of cropland in China between May to July. The economic loss was estimated to be USD6.1 billion.

There were five events related to tropical systems and cyclones that prompted billion-dollar events. In August 2017, Typhoon Hato made landfall in China, and at USD3.6 billion, became the costliest cyclone of the 2017 Western Pacific Typhoon Season. A late-season cyclone Ockhi hit Sri Lanka and India, claiming at least 245 lives and causing an estimated USD2.9 billion in damage. Insurance covered less than two percent of the total. Other significant tropical cyclones were Typhoon Lan, which hit Japan and prompted a minimal estimated loss of USD2 billion, and Typhoon Damrey, which caused USD1 billion in damage in Vietnam and the Philippines. With an insurance payout greater than USD800 million in Japan, Typhoon Lan was the most expensive event for the insurance industry during this period. A summary of selected tropical cyclone losses in the second half of 2017 in Asia Pacific is given in the table below.

**Exhibit 22: Select tropical cyclone losses in second half of 2017**

Date	Event details	Countries impacted	Fatalities	Economic Loss (2018 USD)	Insured Loss (2018 USD)
August 2017	TY Hato	China	22	3.6 billion	255 million
December 2017	TC Ockhi	Sri Lanka, India	245	2.9 billion	51 million
October 2017	TY Lan	Japan, Philippines	17	2.0 billion	811 million
July 2017	TS Nanmadil and remnants	Japan	37	1.2 billion	102 million
November 2017	TY Damrey	Vietnam, Philippines	114	1.0 billion	10 million

Source: Aon Securities Inc.

There were at least four separate billion-dollar events in 2018 between January and June, including three which occurred in China. Winter weather in China during January and April prompted two billion-dollar loss events with the total economic loss estimated at USD2.6 billion. Flooding in the Yangtze River Basin claimed around 110 lives from May through July with a preliminary estimated economic loss of USD1.3 billion. The only non-weather related billion-dollar event was the June 18 earthquake in Japan. The General Insurance Association of Japan noted that initial payouts as of July 17 had already approached USD400 million.

The most significant events in Oceania in terms of economic loss were both weather-related. Thunderstorms in Australia during December 2017 prompted insurance payouts in excess of USD300 million. In February 2018, Cyclone Gita caused losses of USD225 million in Tonga, New Caledonia, Fiji, Samoa, and New Zealand, which approximately only 10 percent was covered by insurance.

## China

In China, more local governments have continued to launch catastrophe scheme pilot programs. In August 2017, the Chongqing government published its roadmap of implementing catastrophe scheme. According to the roadmap, it would launch the pilot program during the first year, aiming to cover a third of the prefectures and counties of Chongqing. Then in the second year, it would build a catastrophe insurance system, while in the third year aiming to have all prefectures and counties covered by catastrophe insurance.

In November 2017, the Hainan government announced its start of their catastrophe insurance pilot program in two selected cities – Wenchang and Qionghai. The perils covered include typhoon, tsunami, tornado, flood, earthquake, land slide, etc. Losses covered include body injury, death, and contents of residential property. Premium is born by local government with subsidies provided by the provincial government.

In 2017, the Hunan government also launched pilot programs. Death coverage is provided to all residents of the province. Rural area residential property coverage and agriculture cat insurance are provided in six selected prefectures which are prone to flood.

In May 2018, Shanghai launched its first pilot program of catastrophe insurance. The Huangpu District government purchased catastrophe insurance to cover losses to residential property and contents, as well as death due to typhoon, storm, and flood.

## Singapore

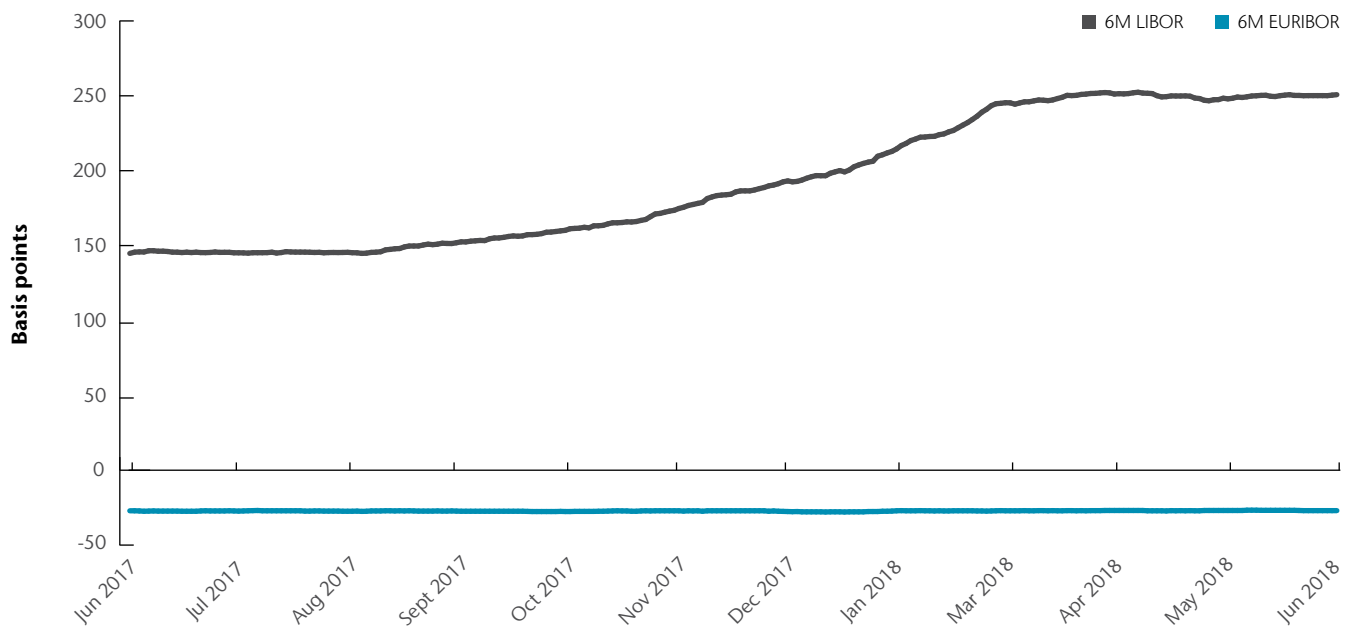
The Monetary Authority of Singapore has officially launched a grant scheme, which offers to fund 100 percent of an issuer's upfront set-up costs—a major barrier to entry, especially for new sponsors—involved in issuing bonds in Singapore. The grant will apply in respect of ILS bonds covering a wide range of risks, not just those relating to natural catastrophes.

Although details of the grant scheme have yet to be fully articulated, it has been reported funding of up to S\$2 million (USD1.5 million) may be available for each qualifying transaction. Qualifying transactions comprise bonds valued at more than S\$50 million in which the notes will be listed on the Singapore stock exchange.

# Collateral Solutions

Overall catastrophe bond spreads have continued to decrease, although at a significantly slower rate—a 20 percent decrease in the weighted average spread from 2014 to June 30, 2018 and four percent decrease from 2015 to June 30, 2018. This dynamic has been seen at the same time as a stagnant US interest rate environment and a European negative interest rate environment, meaning that both sponsors and investors continue to pursue and favor collateral investments that offer an increased yield to the overall transaction, while minimizing counterparty and default risk.

**Exhibit 23: Catastrophe bond spread**



Source: Aon Securities Inc., Bloomberg

Debt securities from highly-rated international institutions, as permitted investments, continue to be widely used in in new catastrophe bond transactions, mainly in the form of putable floating rate notes issued by the International Bank for Reconstruction and Development (IBRD) and the European Bank for Reconstruction and Development (EBRD).

From July 1, 2017, through June 30, 2018, USD4.4 billion of IBRD & EBRD notes were used as permitted investments for new catastrophe bond transactions, representing 45 percent of the period’s total notional amount. Approximately USD2.0 billion of these bonds were issued by the World Bank, an IBRD affiliated organization, which, if excluded, reduces the proportion of medium term notes to 25 percent. This is significantly lower than the 57 percent observed last year, indicating that money market funds were a preferred means

of collateralization over the past 12 months, with 55 percent of total issuance notional. This trend may be attributable to the simplicity and increased liquidity of money market funds, but mainly to significant improvement in Money Market Fund yields, with 6-month LIBOR increasing from 1.5 to 2.5 percent between July 2017 and June 2018.

That being said, with 55 percent of the outstanding notional amount of catastrophe bond collateral invested in US Money Market Funds, new catastrophe bond issuances with collateral invested in IBRD and EBRD notes continued to offer catastrophe bond investors further diversification to their portfolios.

In the current rate environment, we expect both investors and sponsors to continue to be incentivized to pursue innovative collateral solutions that increase the overall yield of a transaction, while retaining a high level of credit worthiness.

**Exhibit 24: IBRD and EBRD notes program description**

IBRD notes	EBRD notes
The International Bank for Reconstruction and Development (IBRD) is a World Bank institution that provides loans and other assistance primarily to middle income countries. To fund development projects in member countries, the IBRD finances its loans from its own equity and from money borrowed in the capital markets through the issuance of IBRD notes. IBRD notes are unsubordinated, unsecured notes pursuant to the IBRD’s existing Global Debt Issuance Facility. The IBRD is rated Aaa by Moody’s and AAA by Standard & Poor’s.	The European Bank for Reconstruction and Development (EBRD) was founded in 1991 to create a new post-Cold War era in central and Eastern Europe. It is owned by 65 countries, as well as the European Union and the European Investment Bank. The EBRD helps finance its development goals through the issuance of unsecured notes pursuant to its Global Medium Term Note Programme. The EBRD is rated Aaa by Moody’s, AAA by Standard & Poor’s and AAA by Fitch.

*Source: International Bank for Reconstruction and Development, European Bank for Reconstruction and Development*



# A Market Discussion with ILS Participants

## A panel interview hosted by Aon Securities

Aon Securities recently discussed the ILS market with three active participants. The conversation, transcribed in this section, provides insight into their views and aspirations for the sector. Our panel included:

- **Luca Albertini**, Founding Partner and CEO, Leadenhall Capital Partners
- **Dirk Lohman**, Chairman & CEO, Secquaero Advisors Limited
- **Chin Liu**, Managing Director, Director of Insurance-Linked Securities, Amundi Pioneer

- 1. There was a general fear among some market commentators that trapped collateral would cause ILS capital to become scarcer at the January reinsurance renewals. In hindsight, those fears were blown out of proportion. Could articulate your firm's response to the 2017 loss events and how you were able to go about writing business at January 1, 2018.*

#### **Luca Albertini**

2017 was not only one of the years with the highest value of insured industry losses, but has also been affected by frequency of medium to large events. The key elements of Leadenhall's response to the events were collecting information and investor communication. On the information side Leadenhall tried to understand the impact to its portfolio and to the markets by a combination of modelling (in the immediate aftermath) and constant dialogue with the protection buyers, their brokers and other underwriters. For us was important to have access to accurate information as fast as possible and not to rely on loss notices from protection buyers, which often do not come early enough for reserving decisions and to satisfy the need for loss estimates of the investor community. On the investor communication side Leadenhall has kept investors abreast with frequent updates of our estimates on portfolio losses and market impact. As the costliest event occurred in third quarter, Leadenhall has been able to line up investors for a fund-raising plan over the fourth quarter with a combination of existing investors replacing or adding to lost or trapped collateral and with new investors entering the space at January 1, 2018.

#### **Dirk Lohman**

I have to say that much like many other participants, our initial assumption was that a significant proportion of our collateral posted for private collateralized deals would be trapped through the application of the buffer loading amounts in the Obligations Clauses of the reinsurance contracts. As a consequence, we established side pockets for some funds or closed others to new subscriptions. The actual amounts trapped at year-end turned out to be smaller than anticipated. This was due to the fact that 2017 was characterized by a frequency of events as opposed to a single large event. In part, our preference for higher attachment levels on occurrence based covers led to a situation where we were able to renew our expiring commitments with existing collateral. We did raise some additional new money that compensated for the impairments we had taken on loss impacted investments. In the bond area, we did open our UCITS bond fund for additional subscriptions (it was closed for new money prior to the Autumn events) in anticipation of additional issuance.

#### **Chin Liu**

While collateral trapping is part of the industry, it was one of the few times that newer investors into ILS needed to understand it and consider its effects. We tend not to underwrite much "layer one" business. We have lighter Florida exposure compared with the overall market. Based on our investment philosophy we had some limited impact created by collateral trapping. In the meantime, we allocate ILS across a range of our multi-sector products, which provides us with efficient and effective access to a very large pool of capital.

**2. *From your perspective, where were the best opportunities to deploy capital, post-event? Did any particular product offerings (i.e. Back-up covers, collateralized re, ILWs) or structures look more attractive or have greater emphasis in the market than others?***

**Luca Albertini**

From Leadenhall perspective the best opportunity to deploy capital is to confirm to protection buyers that our capacity will be there at renewal for at least the amounts deployed in the past (with of course the exception of those who have shown surprise losses), and to strengthen the relationship with the buyers who agree to a reasonable increase in premium after a major loss. This builds a durable relationship which is very valuable in times of excess capacity. There have been opportunistic transactions which we have of course transacted on but these are more one off and less sustainable.

**Dirk Lohman**

The most attractive opportunities from our perspective came from offering early commitments for January 1 retrocessional protections in mid-October. At that point in time, there was still a high degree of uncertainty over the quantum of ultimate losses and how much capacity would be available. On the ILW front, we saw very few short-dated inquiries. What appeared to be more common was covers that provided 15 months of protection, which was not something we were that keen on offering at the time.

**Chin Liu**

Given that the losses from 2017 events were more of an earnings event to most carriers, we did not observe significant back-up cover opportunities right after the events. ILWs were more attractive during the early stage of renewal. However, the ILWs opportunities faded very quickly when the buyers realized there was abundant capital floating around.

### **3. *How did your 2017 actual catastrophe losses compare to your modeled expectation of similar events?***

#### **Luca Albertini**

2017 had a combination of losses from well modelled perils as well as of losses which do not traditionally model well. Flood, business interruption and commercial losses are some of those we would classified as not well modelled. With that said our expectations are based on a combination of the use of commercial models as well as on the proprietary assumptions made by our underwriting and analytics teams (which includes one flood modeling expert). This meant that the actual portfolio results in 2017 did not come as a surprise given the type of events which have occurred.

#### **Dirk Lohman**

With Harvey and Irma we provided our investors with projections of the potential impact to our products both before and after landfall. In both instances, the actual impact on our products fell within the ranges provided. Harvey was largely a flood event, and here our portfolio had limited exposure to commercial property portfolios providing DIC coverage and we were not exposed to the NFIP reinsurance program. So, from that perspective the number of surprises was limited. Maria as an event on a stand-alone basis did not pose much exposure to us, but together with the California wildfires and the preceding events did represent a challenge for structures providing aggregate protection. The northern California wildfires represented a challenge given that the model projections for this region did not anticipate losses of the magnitude suffered. It will be interesting to see how the updated versions of the model software reflect the latest information.

#### **Chin Liu**

Overall, our 2017 actual catastrophe losses compared very favorably to our modeled expectation of similar events.

**4. *It appears that the ILS market was able not only to replace lost capital, but to also substantially grow the market in the first half of 2018. In your view, how has the inflow of capital matched the risk/return profiles being supplied to the markets?***

**Luca Albertini**

In 2018 the collateralized market grew due to a combination of a substantial amount of capital being supplied by new investors who were targeting a 2018 allocation to the sector even before the events in the summer and by existing investors who are dynamically managing their allocation to ILS based to relative risk and returns and attractiveness. In addition, we are seeing more capital being deployed in life insurance linked funds. In Leadenhall experience we have seen investor appetite across the risk spectrum. Some existing investors have rebalanced their allocation by either adding or reducing risk to their portfolios, but we have not seen a definite trend towards a specific risk and return profile

**Dirk Lohman**

My impression is that much of the new money raised was targeting substantially higher returns post event. This is evidenced by a surplus of capacity chasing the lower tranches of protection and aggregate covers offering a double-digit rate on line. The end result was that prices for these loss impacted covers did not move up materially. A knock-on effect of this over-supply at the lower end of the programs was that the upper end of the reinsurance structures also did not see as much of an increase (although there were increases even on loss free layers, but of a more muted magnitude). On the bond side, while we have seen a strong issuance pipeline, much of it was at remote attachment points with very low coupons. In general, my answer would be that investors were expecting more of an increase and many are disappointed by what has been achieved. Investors bought into the concept of the need to reload capital post event, but were also sold on the idea that prices would move up. That ultimate price increases were much lower will mean that the next time we seek to reload may prove to be more challenging.

**Chin Liu**

There had been capital waiting on the sidelines to enter the ILS market. The improved pricing environment during January 1 renewals provided a good entry point for the additional capital. Overall, most investment managers are looking to match the risk/return profiles of the risks to their investment strategies. There will be natural equilibrium during that process. Underwriting and capital raise discipline are the key to long-term success.

**5. *What was the response from your end-investors to potential losses? What sort of “real-time” information was required by your investors, what were they focused on, was uncertainty around insured loss development understood/acceptable, and were there any lessons learned to your firm?***

**Luca Albertini**

Leadenhall has proactively communicated ranges of outcomes and estimates to investors starting from the end of August. Whilst we have attempted to comprehensively address the most likely questions, one of our key messages is that the estimate of losses from large insurance events is inherently uncertain and one of our key focus point has been to be true to the uncertainties in our analysis. Different investors have a different sensitivity to timing, with some requiring a daily mark on private placements. What is important for all to understand is that any daily or monthly mark on private placement is always based on the best estimate immediately before the valuation date, but that material information may always emerge down the line. Our valuations have not been subject to out of range volatility in recent months, but we have noted a very mature understanding of all the sensitivities around valuations by our investor base. It does help the fact that about 85 percent of our investor base is pension funds and that the solid research provided by pension consultants who are experts in ILS have very much helped market education and consequent market reaction.

**Dirk Lohman**

In general, I would say that post-event our investors were mostly surprised by the relatively low impact that these events had on their portfolios. In part this was because they didn't appreciate how much of the loss (particularly with respect to flood in Houston) was uninsured or in a federal program outside of the traditional insurance market. Another element is that their expectations with respect to a drawdown were more geared towards a large single event as opposed to a frequency of smaller to medium sized events. So, while the aggregate value of insured losses may have exceeded \$120 billion, the individual events left much of the loss within the insurance industry's retention.

As we have certain mandates within Schrodgers where catastrophe bonds are part of a broader strategy, we had to provide the pricing committee of Schrodgers with almost daily estimates during late August and September of our view of the fair value of the catastrophe bonds held within these strategies. This was challenging but not insurmountable. Interesting was the Friday before Irma made landfall in Florida. Here we had to provide our view at 11:00 AM Zurich time, some five to six hours before the first indicative price sheets from broker dealers were available. I am pleased to say that our assessments were very much in line with that which came out later from the brokers. On the strategies that contained both bonds and collateralized reinsurance there was keen interest amongst our clients on the impact of these events, but we kept them informed of our estimates pre- and post-landfall through regular Flash Reports updating them on our assessment and providing additional background on the events and potential insurance losses.

The question about uncertainty around loss development is an interesting one. We have regularly communicated to our investors about the uncertainty of loss estimates and the degree of model risk that exists when making projections on known events, but dynamic underlying insurance portfolios. Still, the degree of development observed amongst some managers was surprising and has resulted in some skepticism amongst investors and their consultants. The degree to which a manager can accurately predict the impact of events on the performance of their products will, in my view, become a key determinant in manager selection going forward. In this context, I am happy to say that the performance of our fund products with respect to development on 2017 events during the course of this year to date has been a net positive one—including side pockets. While we had fluctuations on individual transactions both positive and negative, the net overall impact has been an improvement over our year-end 2017 estimates.

**Chin Liu**

Overall, we had a very favorable response from our investors as it relates to the events of 2017. We believe having an open and ongoing dialog with our clients is a distinguishing feature at Amundi Pioneer. Each month we provide a written update that includes important information about the fund and trends within the broader industry to keep them educated and informed. When an event occurs, within 72 hours, we further provide a detailed write up which includes the latest information about the event. As the situation evolves, and if warranted, we will also provide further information. We host periodic portfolio update webinars that provides detailed and timely information about our strategy. On our website, we also offer a full suite of collateral materials to assist investors in understanding ILS and our capabilities. Finally, we welcome the opportunity to speak and meet with our clients, consultants and prospective investors. The experiences of 2017 reinforced our belief in the value of client communications.

## 6. *Now that the ILS market has proven itself with its ability to respond to major catastrophic events, what is next for the market?*

### **Luca Albertini**

2017 has dealt with some of the big question marks about the resilience and sustainability of collateralized investors, and so has proven that the alternative capital does complement well the traditional capital in providing solutions to protection buyers. What we have however seen is that different investors have different and often bespoke appetite within the insurance product, which shows that the majority of the capital in the sector is not ready for a pure beta product (e.g. large facilities or loss ratio products) reflecting the general performance of reinsurance or insurance across classes and risk profiles. There is and will be space for index products but in insurance it does not yet seem to be as attractive as in other markets for a range of reason. There is abundance of capital for some risk and return profile, but there is scope for growth in other profiles and classes, and our work of fund managers is to build products to make these profiles also accessible to the investor community.

### **Dirk Lohman**

First of all, I would argue that what the ILS market has proven is that it is able to reload post event. However, this was predicated on expectations of an improved pricing environment. There is no guarantee that it will be the same next time. What the ILS market has to demonstrate first, and foremost, is that it can maintain underwriting and pricing discipline. That means managers need to communicate realistic and achievable return targets and return capital if it cannot be deployed at the expected returns or closing funds to new inflows if the opportunity set is not growing. We have closed our bond fund numerous times to avoid it becoming too large or having to buy every deal that comes to market.

In addition, the market needs to find ways of growing beyond catastrophe risk. This will require an increasing level of sophistication amongst managers, since some of these risks will not be modeled through a standard vendor tool. It will also require more efforts in investor education to increase their comfort with new exposures.

A further development may be that ILS strategies will require longer commitment periods from investors to accommodate longer duration insurance assets. We have seen this in our life-only strategies where investors are committed to periods of up to 10 years or more. If ILS is to move into lines of business with greater duration in the development to ultimate, then the liquidity terms of the ILS products will need to change. Given that most institutional investors have long investment horizons, this should not pose a problem provided they are compensated for taking the illiquidity risk.

Last, not least, I think that the Solvency II framework provides opportunities to develop an insurance-linked hybrid form of capital to provide insurance companies with out of the money capital to protect them against a dramatic movement in claims or reserve development across their entire portfolio (whole account) or for specific lines of business. This will also require acceptance by regulators and rating agencies in order for this type of instrument to become an accepted form of alternative capital within the insurance entity's capital structure.

### **Chin Liu**

We expect the ILS market will continue to grow and evolve from numerous perspectives. There will be organic, industry growth. Existing perils, like US flood, we think will become more of a private risk. Emerging perils, like cyber and terrorism, may play a larger role in the marketplace. Growth will also come from new geographies as insurance penetration increases. Overall, we are constructive on the ILS marketplace.



# Appendix I

## *Property Catastrophe Bonds—Transaction Summary*

*As of June 30, 2018*

*Source: Aon Securities Inc.*

## Summary of catastrophe bonds—December 1996 through June 2018

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
Dec-96	St Paul Re UK	George Town Re, Ltd.			Worldwide All Perils incl. Marine & Aviation	Indemnity	TRS	\$44,500			
Dec-96	St Paul Re UK*	George Town Re, Ltd.			Worldwide All Perils incl. Marine & Aviation	Indemnity	TRS	\$24,000	Aaa	AAA	
Jun-97	United Services Automobile Association	Residential Reinsurance Limited		Class A-1	US HU	Indemnity	TRS	\$163,800	Aaa	AAA	
Jun-97	United Services Automobile Association	Residential Reinsurance Limited		Class A-2	US HU	Indemnity	TRS	\$313,180	Ba2	BB	BB
Oct-97	Swiss Reinsurance Company Ltd.	SR Earthquake Fund, Ltd.		Class A-1	US EQ	Industry index	TRS	\$42,000	Baa3		BBB-
Oct-97	Swiss Reinsurance Company Ltd.*	SR Earthquake Fund, Ltd.		Class A-2	US EQ	Industry index	TRS	\$20,000	Baa3		BBB-
Oct-97	Swiss Reinsurance Company Ltd.	SR Earthquake Fund, Ltd.		Class B	US EQ	Industry index	TRS	\$60,300	Ba1		BB
Oct-97	Swiss Reinsurance Company Ltd.	SR Earthquake Fund, Ltd.		Class C	US EQ	Industry index	TRS	\$14,700	Ba3		B
Nov-97	Tokio Marine & Nichido Fire Insurance Co., Ltd.	Parametric Re, Ltd.			JP EQ	Parametric	TRS	\$80,000	Ba2		
Nov-97	Tokio Marine & Nichido Fire Insurance Co., Ltd.	Parametric Re, Ltd.			JP EQ	Parametric	TRS	\$20,000	Baa3		
Mar-98	Centre Solutions (Bermuda) Limited (Zurich Group)	Trinity Re, Ltd.		Class A-1	US HU	Indemnity	TRS	\$10,467	Aaa		AAA
Mar-98	Centre Solutions (Bermuda) Limited (Zurich Group)	Trinity Re, Ltd.		Class A-2	US HU	Indemnity	TRS	\$61,533	Ba3		BB
Jun-98	United Services Automobile Association	Residential Reinsurance Limited			US HU	Indemnity	TRS	\$450,000	Ba2	BB	BB
Jun-98	The Yasuda Fire and Marine Insurance Company Limited	Pacific Re, Ltd.			JP TY	Indemnity	TRS	\$80,000	Ba3		BB-
Jul-98	United States Fidelity and Guaranty Company	Mosaic Re, Ltd.		Class A	US HU, EQ, ST	Indemnity	TRS	\$24,000			
Jul-98	United States Fidelity and Guaranty Company	Mosaic Re, Ltd.		Class B	US HU, EQ, ST	Indemnity	TRS	\$21,000			
Jul-98	United States Fidelity and Guaranty Company	Mosaic Re, Ltd.			US HU, EQ, ST	Indemnity	TRS	\$9,000			
Dec-98	Centre Solutions (Bermuda) Limited (Zurich Group)	Trinity Re 1999, Ltd.		Class A-1	US HU	Indemnity	TRS	\$2,385	Aaa		AAA
Dec-98	Centre Solutions (Bermuda) Limited (Zurich Group)	Trinity Re 1999, Ltd.		Class A-2	US HU	Indemnity	TRS	\$51,615	Ba3		BB
Feb-99	United States Fidelity and Guaranty Company	Mosaic Re II, Ltd.		Class A	US HU, EQ, ST	Indemnity	TRS	\$25,000			
Feb-99	United States Fidelity and Guaranty Company	Mosaic Re II, Ltd.		Class B	US HU, EQ, ST	Indemnity	TRS	\$20,000			
Mar-99	Kemper	Domestic, Inc.			US EQ	Indemnity	TRS	\$80,000	Ba2	BB+	
Mar-99	Kemper*	Domestic, Inc.			US EQ	Indemnity	TRS	\$20,000			
Apr-99	Sorema S..A	Halyard Re B.V.	Series 1999		EU, JP EQ, TY	Indemnity	TRS	\$17,000			
May-99	Oriental Land Co., Ltd.	Concentric, Ltd.			JP EQ	Parametric	TRS	\$100,000	Ba1	BB+	

\*Equity

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
Jun-99	United Services Automobile Association	Residential Reinsurance Limited			US HU	Indemnity	TRS	\$200,000	Ba2	BB	
Jun-99	Gerling-Konzern Globale Rückversicherungs-Aktienfesellschaft	Juno Re, Ltd.			US HU	Indemnity	TRS	\$80,000		BB	BB+
Nov-99	American Re	Gold Eagle Capital Limited		Class A	US HU, EQ	Modeled loss	TRS	\$50,000	Baa3		BBB-
Nov-99	American Re	Gold Eagle Capital Limited		Class B	US HU, EQ	Modeled loss	TRS	\$126,600	Ba2		BB
Nov-99	American Re*	Gold Eagle Capital Limited			US HU, EQ	Modeled loss	TRS	\$5,500	Ba1		BB+
Nov-99	American Re*	Gold Eagle Capital Limited			US HU, EQ	Modeled loss	TRS	\$3,600		BB+	
Nov-99	Gerling-Konzern Globale Rückversicherungs-Aktienfesellschaft	Namazu Re, Ltd.			JPEQ	Modeled loss	TRS	\$100,000		BB	
Mar-00	Lehman Re Ltd.	Seismic Limited			US EQ	Industry index	TRS	\$145,500	Ba2	BB+	
Mar-00	Lehman Re Ltd.*	Seismic Limited				Industry index	TRS	\$4,500			
Mar-00	SCOR	Atlas Reinsurance p.l.c.		Class A	EU Wind, CA/JP EQ	Indemnity	TRS	\$70,000		BBB+	BBB+
Mar-00	SCOR	Atlas Reinsurance p.l.c.		Class B	EU Wind, CA/JP EQ	Indemnity	TRS	\$30,000		BBB-	BBB-
Mar-00	SCOR	Atlas Reinsurance p.l.c.		Class C	EU Wind, CA/JP EQ	Indemnity	TRS	\$100,000		B-	B-
Apr-00	Sorema SA	Halyard Re B.V.	Series 2000		EU/JP Wind, JP EQ	Indemnity	TRS	\$17,000			
May-00	State Farm Companies	Alpha Wind 2000-A Ltd.			US HU	Indemnity	TRS	\$52,500		BB+	
May-00	State Farm Companies*	Alpha Wind 2000-A Ltd.			US HU	Indemnity	TRS	\$37,500		BB	
Jun-00	United Services Automobile Association	Residential Reinsurance 2000 Limited			US HU	Indemnity	TRS	\$200,000	Ba2	BB+	
Jul-00	Vesta Fire Insurance Corporation	NeHi, Inc.			US HU	Modeled loss	TRS	\$41,500	Ba3		BB
Jul-00	Vesta Fire Insurance Corporation*	NeHi, Inc.			US HU	Modeled loss	TRS	\$8,500			
Nov-00	Assurances Generales de France I.A.R.T.	Mediterranean Re p.l.c.		Class A	EU Wind, EQ	Modeled loss	TRS	\$41,000	Baa3	BBB+	BBB
Nov-00	Assurances Generales de France I.A.R.T.	Mediterranean Re p.l.c.		Class B	EU Wind, EQ	Modeled loss	TRS	\$88,000	Ba3	BB+	BB+
Dec-00	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	PRIME Capital CalQuake & EuroWind Ltd.			US EQ, EU Wind	Parametric index	TRS	\$129,000	Ba3	BB+	BB
Dec-00	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft*	PRIME Capital CalQuake & EuroWind Ltd.		Class B	US EQ, EU Wind	Parametric index	TRS	\$6,000			
Dec-00	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	PRIME Capital Hurricane Ltd.			US HU	Parametric index	TRS	\$159,000	Ba3	BB+	BB
Dec-00	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft*	PRIME Capital Hurricane Ltd.		Class B	US HU	Parametric index	TRS	\$6,000			
Feb-01	Swiss Reinsurance Company Ltd.	Western Capital Limited			US EQ	Industry index	TRS	\$97,000	Ba2	BB+	
Feb-01	Swiss Reinsurance Company Ltd.*	Western Capital Limited			US EQ	Industry index	TRS	\$3,000			

\*Equity

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
Mar-01	American Re	Gold Eagle Capital 2001 Limited			US HU, EQ	Modeled loss	TRS	\$116,400	Ba2	BB+	
Apr-01	Sorema SA	Halyard Re B.V.			EU Wind, JP EQ, TY	Indemnity	TRS	\$17,000			
May-01	Swiss Reinsurance Company Ltd.*	SR Wind Ltd.		Class B-1	US HU, EU Wind	Parametric index	TRS	\$1,800		BB	BB
May-01	Swiss Reinsurance Company Ltd.*	SR Wind Ltd.		Class B-2	US HU, EU Wind	Parametric index	TRS	\$1,800		BB	BB
May-01	Swiss Reinsurance Company Ltd.	SR Wind Ltd.		Class A-1	US HU, EU Wind	Parametric index	TRS	\$58,200		BB+	BB+
May-01	Swiss Reinsurance Company Ltd.	SR Wind Ltd.		Class A-2	US HU, EU Wind	Parametric index	TRS	\$58,200		BB+	BB+
Jun-01	United Services Automobile Association	Residential Reinsurance 2001 Limited			US HU	Indemnity	TRS	\$150,000	Ba2	BB+	
Jun-01	Zurich Insurance Company*	Trinom Ltd.			US HU, EQ, EU Wind	Modeled loss	TRS	\$4,856	B2	B+	
Jun-01	Zurich Insurance Company	Trinom Ltd.		Class A-1	US HU, EQ, EU Wind	Modeled loss	TRS	\$60,000	Ba2	BB	BB-
Jun-01	Zurich Insurance Company	Trinom Ltd.		Class A-2	US HU, EQ, EU Wind	Modeled loss	TRS	\$97,000	Ba1	BB+	BB
Dec-01	SCOR	Atlas Reinsurance II p.l.c.		Class A	EU Wind, CA/JP EQ	Parametric/parametric index	TRS	\$50,000	A3	A	
Dec-01	SCOR	Atlas Reinsurance II p.l.c.		Class B	EU Wind, CA/JP EQ	Parametric/parametric index	TRS	\$100,000	Ba2	BB+	
Dec-01	Lehman Re Ltd.	Redwood Capital I, Ltd.			US EQ	Industry index	TRS	\$160,050	Ba2	BB+	
Dec-01	Lehman Re Ltd.*	Redwood Capital I, Ltd.			US EQ	Industry index	TRS	\$4,950			
Mar-02	Lehman Re Ltd.	Redwood Capital II, Ltd			US EQ	Industry index	TRS	\$194,000	Baa3	BBB-	
Mar-02	Lehman Re Ltd.*	Redwood Capital II, Ltd			US EQ	Industry index	TRS	\$6,000	Ba1	BBB-	
Apr-02	Lloyd's Syndicate 33 (Hiscox)	St. Agatha Re Ltd.			US EQ	Modeled loss	Bank Deposit	\$33,000		BB+	
May-02	Nissay Dowa General Insurance Co., Ltd.	Fujiyama Ltd.			JP EQ	Parametric	TRS	\$67,900		BB+	
May-02	Nissay Dowa General Insurance Co., Ltd.*	Fujiyama Ltd.			JP EQ	Parametric	TRS	\$2,100		BB	
May-02	United Services Automobile Association	Residential Reinsurance 2002 Limited			US HU	Indemnity	TRS	\$125,000	Ba3	BB+	
Jun-02	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2002-1	Class A	US HU	Parametric index	TRS	\$85,000	Ba3	BB+	
Jun-02	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2002-1	Class B	EU Wind	Parametric index	TRS	\$50,000	Ba3	BB+	
Jun-02	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2002-1	Class C	US EQ	Parametric index	TRS	\$30,000	Ba3	BB+	
Jun-02	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2002-1	Class D	US EQ	Parametric index	TRS	\$40,000	Baa3	BBB-	
Jun-02	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2002-1	Class E	JP EQ	Parametric index	TRS	\$25,000	Ba3	BB+	

\*Equity

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
Jun-02	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2002-1	Class F	US/EU Wind, US/JP EQ	Parametric index	TRS	\$25,000	Ba3	BB+	
Sep-02	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2002-2	Class B	EU Wind	Parametric index	TRS	\$5,000	Ba3	BB+	
Sep-02	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2002-2	Class C	US EQ	Parametric index	TRS	\$20,500	Ba3	BB+	
Sep-02	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2002-2	Class D	US EQ	Parametric index	TRS	\$1,750	Baa3	BBB-	
Dec-02	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2002-3	Class A	US HU	Parametric index	TRS	\$8,500	Ba3	BB+	
Dec-02	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2002-3	Class B	EU Wind	Parametric index	TRS	\$21,000	Ba3	BB+	
Dec-02	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2002-3	Class C	US EQ	Parametric index	TRS	\$15,700	Ba3	BB+	
Dec-02	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2002-3	Class D	US EQ	Parametric index	TRS	\$25,500	Baa3	BBB-	
Dec-02	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2002-3	Class E	JP EQ	Parametric index	TRS	\$30,550	Ba3	BB+	
Dec-02	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2002-3	Class F	US/EU Wind, US/JP EQ	Parametric index	TRS	\$3,000	Ba3	BB+	
Dec-02	Vivendi Universal, S.A.	Studio Re Ltd.			US EQ	Parametric index	TRS	\$150,000	Ba2	BB+	
Dec-02	Vivendi Universal, S.A.*	Studio Re Ltd.			US EQ	Parametric index	TRS	\$25,000	B1	BB	
Mar-03	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2003-1	Class A	US HU	Parametric index	TRS	\$6,500	Ba3	BB+	
Mar-03	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2003-1	Class B	EU Wind	Parametric index	TRS	\$8,000	Ba3	BB+	
Mar-03	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2003-1	Class C	US EQ	Parametric index	TRS	\$6,500	Ba3	BB+	
Mar-03	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2003-1	Class D	US EQ	Parametric index	TRS	\$5,500	Baa3	BBB-	
Mar-03	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2003-1	Class E	JP EQ	Parametric index	TRS	\$8,000	Ba3	BB+	
Mar-03	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2003-1	Class F	US/EU Wind, US/JP EQ	Parametric index	TRS	\$8,140	Ba3	BB+	
May-03	United Services Automobile Association	Residential Reinsurance 2003 Limited			US HU, EQ	Indemnity	TRS	\$160,000	Ba2	BB+	
Jun-03	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2003-2	Class A	US HU	Parametric index	TRS	\$9,750	Ba3	BB+	
Jun-03	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2003-2	Class B	EU Wind	Parametric index	TRS	\$12,250	Ba3	BB+	
Jun-03	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2003-2	Class C	US EQ	Parametric index	TRS	\$7,250	Ba3	BB+	
Jun-03	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.	Series 2003-2	Class D	US EQ	Parametric index	TRS	\$2,600	Baa3	BBB-	
Jun-03	Zenkyoren	Phoenix Quake Ltd.			JP EQ	Parametric index	TRS	\$192,500	Baa3	BBB+	
Jun-03	Zenkyoren	Phoenix Quake Wind II Ltd.			JP TY, EQ	Parametric index	TRS	\$85,000	Ba1	BBB-	
Jun-03	Zenkyoren	Phoenix Quake Wind Ltd.			JP TY, EQ	Parametric index	TRS	\$192,500	Baa3	BBB+	

\*Equity

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
Jul-03	Swiss Reinsurance Company Ltd.	Arbor I Ltd.	Series 1		US/EU Wind, CA/J/P EQ	Parametric index	TRS	\$95,000		B	
Jul-03	Swiss Reinsurance Company Ltd.	Arbor II Ltd.	Series 1		US/EU Wind, CA/J/P EQ	Parametric index	TRS	\$26,500	A1	A+	
Jul-03	Swiss Reinsurance Company Ltd.	Palm Capital Ltd.	Series 1		US HU	Parametric index	TRS	\$22,350	Ba3	BB+	
Jul-03	Swiss Reinsurance Company Ltd.	Oak Capital Ltd.	Series 1		EU Wind	Parametric index	TRS	\$23,600	Ba3	BB+	
Jul-03	Swiss Reinsurance Company Ltd.	Sequoia Capital Ltd.	Series 1		US EQ	Parametric index	TRS	\$22,500	Ba3	BB+	
Jul-03	Swiss Reinsurance Company Ltd.	Sakura Capital Ltd.	Series 1		J/P EQ	Parametric index	TRS	\$14,700	Ba3	BB+	
Aug-03	Central Reinsurance Corporation (for TREIP)	Formosa Re Ltd.			Taiwan EQ	Indemnity	TRS	\$100,000		NR	
Sep-03	Swiss Reinsurance Company Ltd.	Arbor I Ltd.	Series 2		US/EU Wind, CA/J/P EQ	Parametric index	TRS	\$60,000		B	
Dec-03	Swiss Reinsurance Company Ltd.	Palm Capital Ltd.	Series 2		US HU	Parametric index	TRS	\$19,000	Ba3	BB+	
Dec-03	Swiss Reinsurance Company Ltd.	Arbor I Ltd.	Series 3		US/EU Wind, CA/J/P EQ	Parametric index	TRS	\$8,850		B	
Dec-03	Swiss Reinsurance Company Ltd.	PIONEER 2002 Ltd.			US EQ	Parametric index	TRS	\$51,000	Baa3	BBB-	
Dec-03	Electricite de France	Pylon Ltd.		Class A	EU Wind	Parametric index	TRS	€ 70,000	A2	BBB+	
Dec-03	Electricite de France	Pylon Ltd.		Class B	EU Wind	Parametric index	TRS	€ 120,000	Ba1	BB+	
Dec-03	Swiss Reinsurance Company Ltd.	Redwood Capital III, Ltd.			US EQ	Industry index	TRS	\$150,000	Ba1	BB+	
Dec-03	Swiss Reinsurance Company Ltd.	Redwood Capital IV, Ltd.			US EQ	Industry index	TRS	\$200,000	Baa3	BBB-	
Mar-04	Swiss Reinsurance Company Ltd.	Oak Capital Ltd.	Series 2		EU Wind	Parametric index	TRS	\$24,000	Ba3	BB+	
Mar-04	Swiss Reinsurance Company Ltd.	Sequoia Capital Ltd.	Series 2		US EQ	Parametric index	TRS	\$11,500	Ba3	BB+	
Mar-04	Swiss Reinsurance Company Ltd.	Arbor Ltd.	Series 4		US/EU Wind, CA/J/P EQ	Parametric index	TRS	\$21,000		B	
May-04	United Services Automobile Association	Residential Reinsurance 2004 Limited		Class A	US HU, EQ	Indemnity	TRS	\$127,500		BB	
May-04	United Services Automobile Association	Residential Reinsurance 2004 Limited		Class B	US HU, EQ	Indemnity	TRS	\$100,000		B	
Jun-04	Converium Ltd.	Helix 04 Limited			US/EU Wind, US/J/P EQ	Modeled loss	Bank Deposit	\$100,000		BB+	
Jun-04	Swiss Reinsurance Company Ltd.	Arbor Ltd.	Series 5		US/EU Wind, CA/J/P EQ	Parametric index	TRS	\$18,000		B	
Jun-04	Swiss Reinsurance Company Ltd.	Gi Capital Ltd.			J/P EQ	Parametric index	TRS	\$125,000		BB+	
Sep-04	Swiss Reinsurance Company Ltd.	Oak Capital Ltd.	Series 3		EU Wind	Parametric index	TRS	\$10,500	Ba3	BB+	
Sep-04	Swiss Reinsurance Company Ltd.	Sequoia Capital Ltd.	Series 3		US EQ	Parametric index	TRS	\$11,000	Ba3	BB+	
Sep-04	Swiss Reinsurance Company Ltd.	Arbor Ltd.	Series 6		US/EU Wind, CA/J/P EQ	Parametric index	TRS	\$31,800		B	

\*Equity

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
Nov-04	Hartford Fire Insurance Company	Foundation Re Ltd.	Series 2004-I	Class A	US HU	Industry index	TRS	\$180,000		BB+	
Nov-04	Hartford Fire Insurance Company	Foundation Re Ltd.	Series 2004-I	Class B	US HU, EQ	Industry index	TRS	\$67,500		BBB+	
Dec-04	Swiss Reinsurance Company Ltd.	Arbor I Ltd.	Series 7		US/EU Wind, CA/Jp EQ	Parametric index	TRS	\$15,000		B	
Dec-04	Swiss Reinsurance Company Ltd.	Redwood Capital V, Ltd.			US EQ	Industry index	TRS	\$150,000	Ba2	BB+	
Dec-04	Swiss Reinsurance Company Ltd.	Redwood Capital VI, Ltd.			US EQ	Industry index	TRS	\$150,000	Ba2	BB+	
Mar-05	Swiss Reinsurance Company Ltd.	Arbor I Ltd.	Series 8		US/EU Wind, CA/Jp EQ	Parametric index	TRS	\$20,000		B	
May-05	United Services Automobile Association	Residential Reinsurance 2005 Limited		Class A	US HU, EQ	Indemnity	TRS	\$91,000		BB	
May-05	United Services Automobile Association	Residential Reinsurance 2005 Limited		Class B	US HU, EQ	Indemnity	TRS	\$85,000		B	
Jun-05	Factory Mutual Insurance Company	Cascadia Limited			US EQ	Parametric	TRS	\$300,000		BB+	BB
Jun-05	Swiss Reinsurance Company Ltd.	Arbor I Ltd.	Series 9		US/EU Wind, CA/Jp EQ	Parametric index	TRS	\$25,000		B	
Jul-05	Zurich American Insurance Company	KAMP Re 2005 Ltd.			US HU, EQ	Indemnity	TRS	\$190,000		BB+	
Nov-05	PXRE Reinsurance Ltd.	Atlantic & Western Re Limited		Class A	US/EU Wind	Modeled loss	TRS	\$100,000		BB+	BB
Nov-05	PXRE Reinsurance Ltd.	Atlantic & Western Re Limited		Class B	US/EU Wind, US HU	Modeled loss	TRS	\$200,000		B+	B
Nov-05	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Aiolos Ltd.			EU Wind	Parametric index	TRS	€ 110,000		BB+	
Dec-05	Swiss Reinsurance Company Ltd.	Arbor I Ltd.	Series 10		US/EU Wind, CA/Jp EQ	Parametric index	TRS	\$18,000		B	
Dec-05	PXRE Reinsurance Ltd.	Atlantic & Western Re II Limited		Class A	US/EU Wind, US EQ	Modeled loss	TRS	\$125,000		BB+	
Dec-05	PXRE Reinsurance Ltd.	Atlantic & Western Re II Limited		Class B	US/EU Wind, US EQ	Modeled loss	TRS	\$125,000		BB+	
Dec-05	Montpelier Reinsurance Ltd.	Champlain Limited		Class A	US/Jp EQ	Modeled loss	TRS	\$75,000		B	B-
Dec-05	Montpelier Reinsurance Ltd.	Champlain Limited		Class B	US HU, EQ	Modeled loss	TRS	\$15,000		B+	B-
Jan-06	Swiss Reinsurance Company Ltd.	Australis Ltd.	Series 1		AU CY, EQ	Parametric index	TRS	\$100,000		BB	
Feb-06	Swiss Reinsurance Company Ltd.	Redwood Capital VII, Ltd.			US EQ	Industry index	TRS	\$160,000		BB+	
Feb-06	Swiss Reinsurance Company Ltd.	Redwood Capital VIII, Ltd.			US EQ	Industry index	TRS	\$65,000		BB+	
Feb-06	Hartford Fire Insurance Company	Foundation Re Ltd.	Series 2006-I	Class D	US HU, EQ	Industry index	TRS	\$105,000		BB	
May-06	The Fund for Natural Disasters	CAT-Mex Ltd.		Class A	Mexico EQ	Parametric	TRS	\$150,000		BB+	
May-06	The Fund for Natural Disasters	CAT-Mex Ltd.		Class B	Mexico EQ	Parametric	TRS	\$10,000		BB+	
May-06	ACE American Insurance Company	Calabash Re Ltd.	Series 2006-I	Class A-1	US HU	Industry index	TRS	\$100,000		BB	

\*Equity

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
May-06	United Services Automobile Association	Residential Reinsurance 2006 Limited		Class A	US HU, EQ	Indemnity	TRS	\$47,500		B	
May-06	United Services Automobile Association	Residential Reinsurance 2006 Limited		Class C	US HU, EQ	Indemnity	TRS	\$75,000		BB+	
Jun-06	Swiss Reinsurance Company Ltd.	Successor Hurricane Industry Ltd.	Series 2	Class D	US HU	Industry index	TRS	\$10,250		B	
Jun-06	Swiss Reinsurance Company Ltd.	Successor Hurricane Industry Ltd.	Series 2	Class E	US HU	Industry index	TRS	\$35,000			
Jun-06	Swiss Reinsurance Company Ltd.	Successor Japan Quake Ltd.	Series 2	Class C	JP EQ	Modeled loss	TRS	\$3,000		B	
Jun-06	Swiss Reinsurance Company Ltd.	Successor Euro Wind Ltd.	Series 2	Class A	EU Wind	Parametric index	TRS	\$3,000	Ba3	BB	
Jun-06	Swiss Reinsurance Company Ltd.	Successor Euro Wind Ltd.	Series 2	Class C	EU Wind	Parametric index	TRS	\$3,000	B3	B	
Jun-06	Swiss Reinsurance Company Ltd.	Successor Hurricane Industry Ltd.	Series 1	Class B	US HU	Industry index	TRS	\$14,000	B1	BB-	
Jun-06	Swiss Reinsurance Company Ltd.	Successor Hurricane Industry Ltd.	Series 1	Class C	US HU	Industry index	TRS	\$7,250	B2	B	
Jun-06	Swiss Reinsurance Company Ltd.	Successor Hurricane Industry Ltd.	Series 1	Class D	US HU	Industry index	TRS	\$34,250		B	
Jun-06	Swiss Reinsurance Company Ltd.	Successor Hurricane Industry Ltd.	Series 1	Class E	US HU	Industry index	TRS	\$5,000			
Jun-06	Swiss Reinsurance Company Ltd.	Successor Hurricane Industry Ltd.	Series 1	Class F	US HU	Industry index	TRS	\$54,000	B2	B	
Jun-06	Swiss Reinsurance Company Ltd.	Successor Hurricane Modeled Ltd.	Series 1	Class B	US HU	Modeled loss	TRS	\$42,250	B1	BB-	
Jun-06	Swiss Reinsurance Company Ltd.	Successor Cal Quake Parametric Ltd.	Series 1	Class A	US EQ	Parametric index	TRS	\$47,500	Ba3	BB	
Jun-06	Swiss Reinsurance Company Ltd.	Successor Japan Quake Ltd.	Series 1	Class A	JP EQ	Modeled loss	TRS	\$103,470		BB	
Jun-06	Swiss Reinsurance Company Ltd.	Successor Japan Quake Ltd.	Series 1	Class B	JP EQ	Modeled loss	TRS	\$26,250		BB-	
Jun-06	Swiss Reinsurance Company Ltd.	Successor Japan Quake Ltd.	Series 2	Class C	JP EQ	Modeled loss	TRS	\$70,750		B	
Jun-06	Swiss Reinsurance Company Ltd.	Successor Euro Wind Ltd.	Series 1	Class A	EU Wind	Parametric index	TRS	\$97,130	Ba3	BB	
Jun-06	Swiss Reinsurance Company Ltd.	Successor Euro Wind Ltd.	Series 1	Class B	EU Wind	Parametric index	TRS	\$18,500	B1	BB-	
Jun-06	Swiss Reinsurance Company Ltd.	Successor Euro Wind Ltd.	Series 1	Class C	EU Wind	Parametric index	TRS	\$110,750	B3	B	
Jun-06	Swiss Reinsurance Company Ltd.	Successor II Ltd.	Series 1	Class A	US/EU Wind, US/JP EQ	Modeled loss, parametric index	TRS	\$73,200	B3	B	
Jun-06	Swiss Reinsurance Company Ltd.	Successor II Ltd.	Series 1	Class E	US/EU Wind, US/JP EQ	Modeled loss, parametric index	TRS	\$154,250			

\*Equity



Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
Jun-06	Swiss Reinsurance Company Ltd.	Successor III Ltd.	Series 1	Class A	US/EU Wind, JP EQ	Modeled loss, parametric index	TRS	\$7,200			
Jun-06	Swiss Reinsurance Company Ltd.	Successor IV Ltd.	Series 1	Class A	US/EU Wind, US/JP EQ	Modeled loss, parametric index	TRS	\$30,000		B	
Jun-06	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Carillon Ltd.	Series 1	Class A-2	US HU	Industry index	TRS	\$23,500		B+	
Jun-06	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Carillon Ltd.	Series 1	Class B	US HU	Industry index	TRS	\$10,000		B	
Jun-06	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Carillon Ltd.	Series 1	Class A-1	US HU	Industry index	TRS	\$51,000		B+	
Jun-06	Liberty Mutual Insurance Company	Mystic Re Ltd.	Series 2006-1	Class A	US HU	Industry index	TRS	\$200,000		BB+	
Jun-06	Balboa Insurance Group	VASCO Re 2006 Ltd.			US HU	Indemnity	Bank Deposit	\$50,000		BB+	
Jun-06	Dominion Resources	DREWCAT Capital, Ltd.		Class A	US HU	Parametric index	TRS	\$50,000		NR	
Jul-06	Hannover Rück SE	Eurus Ltd.			EU Wind	Parametric index	TRS	\$150,000		BB	
Aug-06	Endurance Specialty Insurance Company	Shackleton Re Limited		Class A	US EQ	Industry index	TRS	\$125,000	Ba3	BB	
Aug-06	Endurance Specialty Insurance Company	Shackleton Re Limited		Class B	US HU	Industry index	TRS	\$60,000	Ba3	BB	
Aug-06	Endurance Specialty Insurance Company	Shackleton Re Limited		Class C	US HU, EQ	Industry index	TRS	\$50,000	Ba2	BB+	
Aug-06	Tokio Marine & Nichido Fire Insurance Co., Ltd.	Fhu-Jin Ltd.	Series 1	Class B	JP TY	Parametric index	TRS	\$200,000		BB+	
Aug-06	Swiss Reinsurance Company Ltd.	Successor Hurricane Industry Ltd.	Series 3	Class E	US HU	Industry index	TRS	\$50,000			
Aug-06	Factory Mutual Insurance Company	Cascadia II Limited			US EQ	Parametric	Bank Deposit	\$300,000		BB+	BB+
Nov-06	Hartford Fire Insurance Company	Foundation Re II Ltd.	Series 2006-1	Class G	US, HU, EQ, ST	Industry index	TRS	\$67,500		B	
Nov-06	Hartford Fire Insurance Company	Foundation Re II Ltd.	Series 2006-1	Class A	US HU	Industry index	TRS	\$180,000		BB+	
Nov-06	Liberty Mutual Insurance Company	Mystic Re Ltd.	Series 2006-2	Class A	US HU	Industry index	TRS	\$200,000		BB+	
Nov-06	Liberty Mutual Insurance Company	Mystic Re Ltd.	Series 2006-2	Class B	US HU	Industry index	TRS	\$125,000		BB	
Dec-06	Swiss Reinsurance Company Ltd.	Successor I Ltd.	Series 1	Class B	NA/EU W, CA/JP EQ	Industry index, modeled loss, parametric index	TRS	\$4,000			
Dec-06	Swiss Reinsurance Company Ltd.	Successor Hurricane Industry Ltd.	Series 4	Class E	US HU	Industry index	TRS	\$4,000			
Dec-06	Swiss Reinsurance Company Ltd.	Successor I Ltd.	Series 2	Class B	NA/EU W, CA/JP EQ	Industry index, modeled loss, parametric index	TRS	\$24,500			
Dec-06	Swiss Reinsurance Company Ltd.	Successor Hurricane Industry Ltd.	Series 5	Class E	US HU	Industry index	TRS	\$26,000			
Dec-06	Swiss Reinsurance Company Ltd.	Successor Euro Wind Ltd.	Series 3	Class A	EU Wind	Parametric index	TRS	\$118,000	Ba3	BB	

\*Equity

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Dec-06	Swiss Reinsurance Company Ltd.	Successor Euro Wind Ltd.	Series 3	Class C	EU Wind	Parametric index	TRS	\$15,000	B3	B	
Dec-06	Zurich American Insurance Company	Lakeside Re Ltd.			US EQ	Indemnity	Bank Deposit	\$190,000		BB+	
Dec-06	SCOR	Atlas Reinsurance III p.l.c.			JP EQ, EU Wind	Modeled loss	TRS	€120,000		BB+	
Dec-06	Swiss Reinsurance Company Ltd.	Redwood Capital IX Ltd.	Series 1	Class A	US EQ	Parametric index	TRS	\$125,000	Ba2	BB+	
Dec-06	Swiss Reinsurance Company Ltd.	Redwood Capital IX Ltd.	Series 1	Class B	US EQ	Parametric index	TRS	\$125,000	Ba2	BB+	
Dec-06	Swiss Reinsurance Company Ltd.	Redwood Capital IX Ltd.	Series 1	Class C	US EQ	Parametric index	TRS	\$18,000	Baa3	BBB-	
Dec-06	Swiss Reinsurance Company Ltd.	Redwood Capital IX Ltd.	Series 1	Class D	US EQ	Parametric index	TRS	\$20,000	Ba3	BB	
Dec-06	Swiss Reinsurance Company Ltd.	Redwood Capital IX Ltd.	Series 1	Class E	US EQ	Parametric index	TRS	\$12,000	B3	B	
Jan-07	ACE American Insurance Company	Calabash Re II Ltd.	Series 2006-I	Class A-1	US HU	Modeled loss	TRS	\$100,000		BB	
Jan-07	ACE American Insurance Company	Calabash Re II Ltd.	Series 2006-I	Class D-1	US EQ	Modeled loss	TRS	\$50,000		B+	
Jan-07	ACE American Insurance Company	Calabash Re II Ltd.	Series 2006-I	Class E-1	US HU, EQ	Modeled loss	TRS	\$100,000		BB	
Mar-07	Swiss Reinsurance Company Ltd.	Australis Ltd.	Series 2		AU CY, EQ	Parametric index	TRS	\$50,000		BB	
Apr-07	Allianz Global Corporate & Specialty AG	Blue Wings Ltd.	Series 1	Class A	US EQ, UK Flood	Modeled loss, parametric index	TRS	\$150,000		BB+	
Apr-07	Aspen Insurance Limited	Ajax Re Limited	Series 1	Class A	US EQ	Industry index	TRS	\$100,000		BB	
Apr-07	Chubb Group	East Lane Re Ltd.	Series 2007-I	Class A	US HU	Indemnity	TRS	\$135,000		BB+	
Apr-07	Chubb Group	East Lane Re Ltd.	Series 2007-I	Class B	US HU	Indemnity	TRS	\$115,000		BB+	
May-07	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Carillon Ltd.	Series 2	Class E	US HU	Industry index	TRS	\$150,000		B	
May-07	The Travelers Indemnity Company	Longpoint Re Ltd.	Series 2007-1	Class A	US HU	Industry index	TRS	\$500,000		BB+	
May-07	Swiss Reinsurance Company Ltd.	Successor II Ltd.	Series 2	Class A	NA/EU W, CAL/J P EQ	Modeled loss, Parametric index	TRS	\$100,000		B	
May-07	Mitsui Sumitomo Insurance Co., Ltd.	AKIBARE Ltd.	Series 1	Class A	JP TY	Parametric index	TRS	\$90,000		BB+	
May-07	Mitsui Sumitomo Insurance Co., Ltd.	AKIBARE Ltd.	Series 1	Class B	JP TY	Parametric index	TRS	\$30,000		BB+	
May-07	Swiss Reinsurance Company Ltd.	MedQuake Ltd.	Series 1	Class A	EU EQ	Parametric index	TRS	\$50,000		BB-	
May-07	Swiss Reinsurance Company Ltd.	MedQuake Ltd.	Series 1	Class B	EU EQ	Parametric index	TRS	\$50,000		B	
May-07	Liberty Mutual Insurance Company	Mystic Re II Ltd.	Series 2007-1		US HU	Industry index	TRS	\$150,000		B+	
May-07	United Services Automobile Association	Residential Reinsurance 2007 Limited	Series 2007-I	Class 1	US HU, EQ	Indemnity	TRS	\$145,000		BB	
May-07	United Services Automobile Association	Residential Reinsurance 2007 Limited	Series 2007-I	Class 2	US HU, EQ	Indemnity	TRS	\$125,000		B	

\*Equity

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
May-07	United Services Automobile Association	Residential Reinsurance 2007 Limited	Series 2007-1	Class 3	US HU, EQ	Indemnity	TRS	\$75,000		B	
May-07	United Services Automobile Association	Residential Reinsurance 2007 Limited	Series 2007-1	Class 4	US HU, EQ	Indemnity	TRS	\$155,000		BB+	
May-07	United Services Automobile Association	Residential Reinsurance 2007 Limited	Series 2007-1	Class 5	US HU, EQ	Indemnity	TRS	\$100,000		BB+	
Jun-07	Glacier Reinsurance AG	Nelson Re Ltd.	Series 2007-1	Class A	US/EU W, US EQ	Industry index, modeled loss	TRS	\$75,000		B	
Jun-07	Allstate Insurance Company	Willow Re Ltd.	Series 2007-1	Class B	US HU	Industry index	TRS	\$250,000		BB+	
Jun-07	Swiss Reinsurance Company Ltd.	Spinnaker Capital Ltd.	Series 1 2007		US HU	Industry index	TRS	\$200,000	B1		
Jun-07	Brit Insurance Limited	Fremantle Limited	Series 2007-1	Class A	US/EU/JP Wind, US/JP EQ	Industry index	TRS	\$60,000	Aa1		AAA
Jun-07	Brit Insurance Limited	Fremantle Limited	Series 2007-1	Class B	US/EU/JP Wind, US/JP EQ	Industry index	TRS	\$60,000	A3		BBB+
Jun-07	Brit Insurance Limited	Fremantle Limited	Series 2007-1	Class C	US/EU/JP Wind, US/JP EQ	Industry index	TRS	\$80,000	Ba2		BB-
Jun-07	Swiss Reinsurance Company Ltd.	Spinnaker Capital Ltd.	Series 2 2007		US HU	Industry index	TRS	\$130,200	Ba2		
Jun-07	Swiss Reinsurance Company Ltd.	FUSION 2007 Ltd.		Class A	JP TY, Mexico EQ	Parametric index	TRS	\$30,000		B	
Jun-07	Swiss Reinsurance Company Ltd.	FUSION 2007 Ltd.		Class B	JP TY, Mexico EQ	Parametric index	TRS	\$80,000		B	
Jun-07	Swiss Reinsurance Company Ltd.	FUSION 2007 Ltd.		Class C	Mexico EQ	Parametric index	TRS	\$30,000		BB+	
Jul-07	State Farm Mutual Automobile Insurance Company	Merna Reinsurance Ltd.		Tranche A	NA HU, EQ, ST, WS, WF	Indemnity	TRS	\$350,000	Aa2		AAA
Jul-07	State Farm Mutual Automobile Insurance Company	Merna Reinsurance Ltd.		Tranche B	NA HU, EQ, ST, WS, WF	Indemnity	TRS	\$666,600	A2		AA+
Jul-07	State Farm Mutual Automobile Insurance Company	Merna Reinsurance Ltd.		Tranche C	NA HU, EQ, ST, WS, WF	Indemnity	TRS	\$164,000	Baa2		A-
Jul-07	Arrow Capital Reinsurance Company, Limited	Javelin Re Ltd.		Class A	Worldwide All Perils	Indemnity	TRS	\$94,500		A-	
Jul-07	Arrow Capital Reinsurance Company, Limited	Javelin Re Ltd.		Class B	Worldwide All Perils	Indemnity	TRS	\$30,750		BBB-	
Jul-07	Swiss Reinsurance Company Ltd.	Spinnaker Capital Ltd.	Series 3 2007		US HU	Industry index	TRS	\$50,000		NR	
Oct-07	East Japan Railway Company	MIDORI Ltd.			JP EQ	Parametric	TRS	\$260,000		BB+	
Nov-07	Allianz Argos 14 GmbH	Blue Fin Ltd.	Series 1	Class A	EU Wind	Parametric index	TRS	€155,000		BB+	
Nov-07	Allianz Argos 14 GmbH	Blue Fin Ltd.	Series 1	Class B	EU Wind	Parametric index	TRS	\$65,000		BB+	
Nov-07	SCOR Global P&C SE	Atlas Reinsurance IV Limited			EU Wind, JP EQ	Modeled loss	TRS	€160,000		B	
Dec-07	Catlin Group	Newton Re Limited	Series 2007-1	Class A	US EQ	Industry index	Bank Deposit	\$87,500		BB+	
Dec-07	Catlin Group	Newton Re Limited	Series 2007-1	Class B	US HU	Industry index	Bank Deposit	\$137,500		BB+	
Dec-07	Swiss Reinsurance Company Ltd.	GlobeCat Ltd.	Series LAQ	Class A-1	Latin America EQ	Modeled loss	TRS	\$25,000	Ba3		

\*Equity

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
Dec-07	Swiss Reinsurance Company Ltd.	GlobeCat Ltd.	Series USW	Class A-1	US HU	Industry index	TRS	\$40,000	B3		
Dec-07	Swiss Reinsurance Company Ltd.	GlobeCat Ltd.	Series CAQ	Class A-1	US EQ	Industry index	TRS	\$20,000	B1		
Dec-07	Groupama S.A.	Green Valley Ltd.	Series 1	Class A	EU Wind	Parametric index	TRS	€200,000	BB+		
Dec-07	Swiss Reinsurance Company Ltd.	Successor Hurricane Industry Ltd.	Series 6	Class C	US HU	Industry index	TRS	\$30,000	B2	B	
Dec-07	Swiss Reinsurance Company Ltd.	Successor Hurricane Industry Ltd.	Series 6	Class D	US HU	Industry index	TRS	\$30,000		B	
Dec-07	Swiss Reinsurance Company Ltd.	Successor II Ltd.	Series 3	Class C	US/EU Wind, US/JP EQ	Parametric index	TRS	\$50,000			
Dec-07	Swiss Reinsurance Company Ltd.	Successor II Ltd.	Series 3	Class E	US/EU Wind, US/JP EQ	Parametric index	TRS	\$50,000			
Dec-07	Swiss Reinsurance Company Ltd.	Redwood Capital X Ltd.	Series 1	Class A	US EQ	Parametric index	TRS	\$25,000	Baa3		
Dec-07	Swiss Reinsurance Company Ltd.	Redwood Capital X Ltd.	Series 1	Class B	US EQ	Parametric index	TRS	\$227,700	Ba2		
Dec-07	Swiss Reinsurance Company Ltd.	Redwood Capital X Ltd.	Series 1	Class C	US EQ	Parametric index	TRS	\$50,200	Ba3		
Dec-07	Swiss Reinsurance Company Ltd.	Redwood Capital X Ltd.	Series 2	Class D	US EQ	Industry index	TRS	\$130,500	Ba3		
Dec-07	Swiss Reinsurance Company Ltd.	Redwood Capital X Ltd.	Series 2	Class E	US EQ	Industry index	TRS	\$45,200	B2		
Dec-07	Swiss Reinsurance Company Ltd.	Redwood Capital X Ltd.	Series 2	Class F	US EQ	Industry index	TRS	\$20,000	NR		
Feb-08	Catlin Group	Newton Re Limited	Series 2008-1	Class A	US/EU/JP Wind, US/JP EQ	Indemnity	TRS	\$150,000		BB	
Mar-08	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Queen Street Ltd.	Series 1	Class A	EU Wind	Parametric index	TRS	€70,000		BB+	
Mar-08	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Queen Street Ltd.	Series 1	Class B	EU Wind	Parametric index	TRS	€100,000		B	
Mar-08	Chubb Group	East Lane Re II Ltd.	Series 2008-I	Class A	Northeast US All Natural Perils	Indemnity	TRS	\$75,000		BB	
Mar-08	Chubb Group	East Lane Re II Ltd.	Series 2008-I	Class B	Northeast US All Natural Perils	Indemnity	TRS	\$70,000		BB	
Mar-08	Chubb Group	East Lane Re II Ltd.	Series 2008-I	Class C	NA All Natural Perils	Indemnity	TRS	\$55,000		B-	
May-08	Zenkyoren	Muteki Ltd.	Series 2008-1	Class A	JP EQ	Parametric index	TRS	\$300,000	Ba2		
May-08	HomeWise Preferred Insurance Company and HomeWise Insurance Company	Mangrove Re Ltd.	Series 2008-1	Class A	US HU	Indemnity	TRS	\$150,000	Ba2		
May-08	HomeWise Preferred Insurance Company and HomeWise Insurance Company	Mangrove Re Ltd.	Series 2008-1	Class B	US HU	Indemnity	TRS	\$60,000	B1		
May-08	United Services Automobile Association	Residential Reinsurance 2008 Limited	Series 2008-I	Class 1	US HU, EQ	Indemnity	TRS	\$125,000		BB	
May-08	United Services Automobile Association	Residential Reinsurance 2008 Limited	Series 2008-I	Class 2	US HU, EQ	Indemnity	TRS	\$125,000		B	
May-08	United Services Automobile Association	Residential Reinsurance 2008 Limited	Series 2008-I	Class 4	US (HU, EQ, ST, WS, WF)	Indemnity	TRS	\$100,000		BB+	

\*Equity

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
May-08	Flagstone Reinsurance Limited and Flagstone Reassurance Suisse SA	Valais Re Ltd.	Series 2008-1	Class A	US/EU/JP Wind, US/JP EQ	Indemnity	TRS	\$64,000	Ba2		
May-08	Flagstone Reinsurance Limited and Flagstone Reassurance Suisse SA	Valais Re Ltd.	Series 2008-1	Class C	US/EU/JP Wind, US/JP EQ	Indemnity	TRS	\$40,000	B3		
Jun-08	Glacier Reinsurance AG	Nelson Re Ltd.	Series 2008-1	Class G	US HU, EQ	Indemnity	TRS	\$67,500	B3		
Jun-08	Glacier Reinsurance AG	Nelson Re Ltd.	Series 2008-1	Class H	EU Wind	Indemnity	TRS	\$45,000	B3		
Jun-08	Glacier Reinsurance AG	Nelson Re Ltd.	Series 2008-1	Class I	EU Wind	Indemnity	TRS	\$67,500	B1		
Jun-08	Allstate Insurance Company	Willow Re Ltd.	Series 2008-1	Class D	US HU	Industry index	TRS	\$250,000		BB+	
Jun-08	Nationwide Mutual Insurance Company	Caelus Re Limited	Series 2008-1	Class A	US HU, EQ	Indemnity	TRS	\$250,000		BB+	
Jun-08	Swiss Reinsurance Company Ltd.	Vega Capital Ltd.	Series 2008-1	Class A	US/EU/JP Wind, US/JP EQ	Parametric index	TRS	\$21,000	A3	A-	
Jun-08	Swiss Reinsurance Company Ltd.	Vega Capital Ltd.	Series 2008-1	Class B	US/EU/JP Wind, US/JP EQ	Parametric index	TRS	\$22,500	Baa2	BBB	
Jun-08	Swiss Reinsurance Company Ltd.	Vega Capital Ltd.	Series 2008-1	Class C	US/EU/JP Wind, US/JP EQ	Parametric index	TRS	\$63,900	Ba3		
Jun-08	Swiss Reinsurance Company Ltd.	Vega Capital Ltd.	Series 2008-1	Class D	US/EU/JP Wind, US/JP EQ	Parametric index	TRS	\$42,600			
Jul-08	Allianz Risk Transfer (Bermuda) Limited	Blue Coast Ltd.	Series 2008-1	Class A	US HU	Industry index	TRS	\$70,000		BB-	
Jul-08	Allianz Risk Transfer (Bermuda) Limited	Blue Coast Ltd.	Series 2008-1	Class B	US HU	Industry index	TRS	\$30,000		B+	
Jul-08	Allianz Risk Transfer (Bermuda) Limited	Blue Coast Ltd.	Series 2008-1	Class C	US HU	Industry index	TRS	\$20,000		B-	
Aug-08	Platinum Underwriters Bermuda Ltd.	Topiary Capital Limited	Series 2008-1	Class A	US/EU W, US/JP EQ	Industry index	TRS	\$200,000		BB+	
Feb-09	SCOR Global P&C SE	Atlas V Capital Limited	Series 1		US HU, EQ	Industry index	TRS	\$50,000		B+	
Feb-09	SCOR Global P&C SE	Atlas V Capital Limited	Series 2		US HU, EQ	Industry index	TRS	\$100,000		B+	
Feb-09	SCOR Global P&C SE	Atlas V Capital Limited	Series 3		US HU, EQ	Industry index	TRS	\$50,000		B	
Mar-09	Chubb Group	East Lane Re III Ltd.	Series 2009-1	Class A	US HU	Indemnity	TRS	\$150,000		BB	
Mar-09	Liberty Mutual Insurance Company	Mystic Re II Ltd.	Series 2009-1		US HU, EQ	Industry index	TRS	\$225,000		BB	
Apr-09	Allianz Argos 14 GmbH	Blue Fin Ltd.	Series 2	Class A	US HU, EQ	Modeled loss	MTN	\$180,000		BB-	
Apr-09	Swiss Reinsurance Company Ltd.	Successor II Ltd.	Series 4	Class F	US HU, EQ	Parametric index	MMF	\$60,000			
May-09	Assurant, Inc.	Ibis Re Ltd.	Series 2009-1	Class A	US HU	Industry index	TRS	\$75,000		BB	
May-09	Assurant, Inc.	Ibis Re Ltd.	Series 2009-1	Class B	US HU	Industry index	TRS	\$75,000		BB-	
May-09	United Services Automobile Association	Residential Reinsurance 2009 Limited	Series 2009-1	Class 1	US HU, EQ	Indemnity	MMF	\$70,000		BB-	
May-09	United Services Automobile Association	Residential Reinsurance 2009 Limited	Series 2009-1	Class 2	US HU, EQ	Indemnity	MMF	\$60,000		B-	

\*Equity

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
May-09	United Services Automobile Association	Residential Reinsurance 2009 Limited	Series 2009-I	Class 4	US (HU, EQ, ST, WS, WF)	Indemnity	MMF	\$120,000		BB-	
Jun-09	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Ianus Capital Ltd.			EU Wind, EQ	Parametric index, modeled loss	MTN	€50,000	B2		
Jun-09	ACE American Insurance Company	Calabash Re III Ltd.	Series 2009-I	Class A	US HU, EQ	Modeled loss	MTN	\$86,000		BB-	
Jun-09	ACE American Insurance Company	Calabash Re III Ltd.	Series 2009-I	Class B	US EQ	Modeled loss	MTN	\$14,000		BB+	
Jul-09	North Carolina JUA/IUA	Parkton Re Ltd.	Series 2009-1		NC Wind	Indemnity	MMF	\$200,000		B+	
Jul-09	Hannover Rück SE	Eurus II Ltd.	Series 2009-1	Class A	EU Wind	Parametric index	TPR	€150,000		BB	
Oct-09	The Fund for Natural Disasters	MultiCat Mexico 2009 Limited	Series 2009-I	Class A	Mex EQ	Parametric	MMF	\$140,000		B	
Oct-09	The Fund for Natural Disasters	MultiCat Mexico 2009 Limited	Series 2009-I	Class B	Mex, HU Pacific	Parametric	MMF	\$50,000		B	
Oct-09	The Fund for Natural Disasters	MultiCat Mexico 2009 Limited	Series 2009-I	Class C	Mex, HU Pacific	Parametric	MMF	\$50,000		B	
Oct-09	The Fund for Natural Disasters	MultiCat Mexico 2009 Limited	Series 2009-I	Class D	Mex, HU Atlantic	Parametric	MMF	\$50,000		BB-	
Nov-09	Flagstone Reassurance Suisse SA	Montana Re Ltd.	Series 2009-1	Class A	US HU, EQ	Industry index	TPR	\$75,000		B-	
Nov-09	Flagstone Reassurance Suisse SA	Montana Re Ltd.	Series 2009-1	Class B	US HU	Industry index	TPR	\$100,000		BB-	
Dec-09	Swiss Reinsurance Company Ltd.	Successor X Ltd.	Series 2009-1	Class I-S1	US HU, EQ, EU Wind	Industry index, parametric index	MMF	\$50,000			
Dec-09	Swiss Reinsurance Company Ltd.	Successor X Ltd.	Series 2009-1	Class I-U1	US HU, EQ	Industry index, parametric index	MMF	\$50,000		B-	
Dec-09	Swiss Reinsurance Company Ltd.	Successor X Ltd.	Series 2009-1	Class I-X1	US HU, EQ	Industry index, parametric index	MMF	\$50,000			
Dec-09	SCOR Global P&C SE	Atlas VI Capital Limited	Series 2009-1	Class A	EU Wind, JPEQ	Parametric index	Repo	€75,000		BB-	
Dec-09	The Travelers Indemnity Company	Longpoint Re II Ltd.	Series 2009-1	Class A	US HU	Industry index	MMF	\$250,000		BB+	
Dec-09	The Travelers Indemnity Company	Longpoint Re II Ltd.	Series 2009-1	Class B	US HU	Industry index	MMF	\$250,000		BB+	
Dec-09	Zurich American Insurance Company, Zurich Insurance Company Ltd	Lakeside Re II Ltd.			CAL EQ	Indemnity	MMF	\$225,000		BB-	
Dec-09	Swiss Reinsurance Company Ltd.	Redwood Capital XI Ltd.	Series 2009-1	Class A	CAL EQ	Industry index	MMF	\$150,000	B1		
Jan-10	Hartford Fire Insurance Company	Foundation Re III Ltd.	Series 2010-1	Class A	US HU	Industry index	MMF	\$180,000		BB+	
Mar-10	Swiss Reinsurance Company Ltd.	Successor X Ltd.	Series 2010-1	Class II-CN3	US HU, EU Wind	Industry index, modeled loss	MMF	\$45,000		B-	
Mar-10	Swiss Reinsurance Company Ltd.	Successor X Ltd.	Series 2010-1	Class II-CL3	US HU, EU Wind	Industry index, modeled loss	MMF	\$35,000			
Mar-10	Swiss Reinsurance Company Ltd.	Successor X Ltd.	Series 2010-1	Class II-BY3	US HU, EQ EU Wind, JP EQ	Industry index, modeled loss	MMF	\$40,000			
Apr-10	State Farm Fire and Casualty Company	Merna Reinsurance II Ltd.			US EQ	Indemnity	MMF	\$350,000		BB+	

\*Equity

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
Apr-10	Assurant, Inc.	Ibis Re Ltd.	Series 2010-1	Class A	US HU	Industry index	MMF	\$90,000		BB	
Apr-10	Assurant, Inc.	Ibis Re Ltd.	Series 2010-1	Class B	US HU	Industry index	MMF	\$60,000		B+	
May-10	North Carolina JUA/IUA	Johnston Re Ltd.	Series 2010-1	Class A	US HU	Indemnity	MMF	\$200,000		BB-	
May-10	North Carolina JUA/IUA	Johnston Re Ltd.	Series 2010-1	Class B	US HU	Indemnity	MMF	\$105,000		BB-	
May-10	National Union Fire Insurance Company of Pittsburgh	Lodestone Re Ltd.	Series 2010-1	Class A	US HU, EQ	Industry index	MMF	\$175,000		BB+	
May-10	National Union Fire Insurance Company of Pittsburgh	Lodestone Re Ltd.	Series 2010-1	Class B	US HU, EQ	Industry index	MMF	\$250,000		BB	
May-10	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	EOS Wind Limited		Class A	US HU	Industry index	MMF	\$50,000	Ba3		
May-10	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	EOS Wind Limited		Class B	US HU, EU Wind	Industry index, parametric index	MMF	\$30,000	Ba3		
May-10	Nationwide Mutual Insurance Company	Caelus Re II Limited	Series 2010-1	Class A	US HU, EQ	Indemnity	MMF	\$185,000		BB+	
May-10	Allianz Argos 14 GmbH	Blue Fin Ltd.	Series 3	Class A	US HU, EQ	Modeled loss	MMF	\$90,000		B-	
May-10	Allianz Argos 14 GmbH	Blue Fin Ltd.	Series 3	Class B	US HU, EQ	Modeled loss	MMF	\$60,000		BB	
May-10	United Services Automobile Association	Residential Reinsurance 2010 Limited	Series 2010-I	Class 1	US HU, EQ, ST, WS, WF	Indemnity	MMF	\$162,500		BB	
May-10	United Services Automobile Association	Residential Reinsurance 2010 Limited	Series 2010-I	Class 2	US HU, EQ, ST, WS, WF	Indemnity	MMF	\$72,500		B+	
May-10	United Services Automobile Association	Residential Reinsurance 2010 Limited	Series 2010-I	Class 3	US HU, EQ, ST, WS, WF	Indemnity	MMF	\$52,500		B-	
May-10	United Services Automobile Association	Residential Reinsurance 2010 Limited	Series 2010-I	Class 4	US HU, EQ, ST, WS, WF	Indemnity	MMF	\$117,500			
Jun-10	State Farm Mutual Automobile Insurance Company	Merna Reinsurance III Ltd			NA HU, EQ, ST, WS, WF	Indemnity	MMF	\$250,000			
Jul-10	Massachusetts Property Insurance Underwriting Association	Shore Re Ltd.	Series 2010-1	Class A	US HU	Indemnity	MMF	\$96,000		BB	
Sep-10	Groupama S.A.	Green Valley Ltd.	Series 2	Class A	EU Wind	Parametric index	MTN	€100,000		BB+	
Oct-10	AXA Global P&C	Calypso Capital Limited	Series 2010-1	Class A	EU Wind	Industry index	TPR	€275,000		BB	
Nov-10	American Family Mutual Insurance Company	Mariah Re Ltd.	Series 2010-1		US ST	Industry index	MMF	\$100,000		B	
Dec-10	United Services Automobile Association	Residential Reinsurance 2010 Limited	Series 2010-II	Class 1	US HU, EQ, ST, WS, WF	Indemnity	MMF	\$210,000		BB	
Dec-10	United Services Automobile Association	Residential Reinsurance 2010 Limited	Series 2010-II	Class 2	US HU, EQ, ST, WS, WF	Indemnity	MMF	\$50,000			
Dec-10	United Services Automobile Association	Residential Reinsurance 2010 Limited	Series 2010-II	Class 3	US HU, EQ, ST, WS, WF	Indemnity	MMF	\$40,000			
Dec-10	SCOR Global P&C SE	Atlas VI Capital Limited	Series 2010-1	Class A	EU Wind, JP EQ	Parametric index	TPR	€75,000		B-	

\*Equity

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
Dec-10	Swiss Reinsurance Company Ltd.	Vega Capital Ltd.	Series 2010-1	Class C	US/EU/JP Wind, US/JP EQ	Multiple	MTN	\$63,900	Ba3		
Dec-10	Swiss Reinsurance Company Ltd.	Vega Capital Ltd.	Series 2010-1	Class D	US/EU/JP Wind, US/JP EQ	Multiple	MTN	\$42,600			
Dec-10	American Family Mutual Insurance Company	Mariah Re Ltd.	Series 2010-2		US ST	Industry index	MMF	\$100,000			
Dec-10	National Union Fire Insurance Company of Pittsburgh	Lodestone Re Ltd.	Series 2010-2	Class A-1	US HU, EQ	Industry index	MMF	\$125,000		BB+	
Dec-10	National Union Fire Insurance Company of Pittsburgh	Lodestone Re Ltd.	Series 2010-2	Class A-2	US HU, EQ	Industry index	MMF	\$325,000		BB	
Dec-10	Flagstone Reassurance Suisse SA	Montana Re Ltd.	Series 2010-1	Class C	US HU, EQ	Multiple	TPR	\$70,000		B	
Dec-10	Flagstone Reassurance Suisse SA	Montana Re Ltd.	Series 2010-1	Class D	US HU, EQ	Multiple	TPR	\$80,000			
Dec-10	Flagstone Reassurance Suisse SA	Montana Re Ltd.	Series 2010-1	Class E	US HU, EQ, EU Wind, JP TY, EQ	Multiple	TPR	\$60,000		B-	
Dec-10	Swiss Reinsurance Company Ltd.	Successor X Ltd.	Series 2011-1	Class III-R3	US HU, EQ, AUS EQ	Modeled loss, parametric index	MTN	\$65,000		B-	
Dec-10	Swiss Reinsurance Company Ltd.	Successor X Ltd.	Series 2011-1	Class III-S3	US HU, EQ, AUS EQ	Modeled loss, parametric index	MTN	\$50,000		B-	
Dec-10	Swiss Reinsurance Company Ltd.	Successor X Ltd.	Series 2011-1	Class III-T3	US HU, EQ, AUS EQ	Modeled loss, parametric index	MTN	\$55,000			
Dec-10	Groupama S.A.	Green Fields Capital Limited	Series 2011-1	Class A	EU Wind	Industry index	MTN	€75,000		BB+	
Feb-11	Hartford Fire Insurance Company	Foundation Re III Ltd.	Series 2011-1	Class A	US HU	Industry index	MMF	\$135,000		BB+	
Feb-11	Swiss Reinsurance Company Ltd.	Successor X Ltd.	Series 2011-2	Class IV-E3	US HU, EQ	Industry index	MTN	\$160,000		B	
Feb-11	Swiss Reinsurance Company Ltd.	Successor X Ltd.	Series 2011-2	Class IV-AL3	US HU, EQ	Industry index	MTN	\$145,000			
Mar-11	Chubb Group	East Lane Re IV Ltd.	Series 2011-1	Class A	US HU, EQ, ST, WS	Indemnity	MMF	\$225,000		BB+	
Mar-11	Chubb Group	East Lane Re IV Ltd.	Series 2011-1	Class B	US HU, EQ, ST, WS	Indemnity	MMF	\$250,000		BB	
Mar-11	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Queen Street II Capital Limited			US HU, EU Wind	Industry index	MMF	\$100,000		BB-	
Apr-11	Allianz Argos 14 GmbH	Blue Fin Ltd.	Series 4	Class B	US HU, EQ	Modeled loss	MMF	\$40,000			
May-11	North Carolina JUA/IUA	Johnston Re Ltd.	Series 2011-1	Class A	US HU	Indemnity	MMF	\$70,000		BB-	
May-11	North Carolina JUA/IUA	Johnston Re Ltd.	Series 2011-1	Class B	US HU	Indemnity	MMF	\$131,835		BB-	
May-11	United Services Automobile Association	Residential Reinsurance 2011 Limited	Series 2011-1	Class 1	US HU, EQ, ST, WS, WF	Indemnity	MMF	\$57,000		B+	
May-11	United Services Automobile Association	Residential Reinsurance 2011 Limited	Series 2011-1	Class 2	US HU, EQ, ST, WS, WF	Indemnity	MMF	\$33,000		B-	
May-11	United Services Automobile Association	Residential Reinsurance 2011 Limited	Series 2011-1	Class 5	US HU, EQ, ST, WS, WF	Indemnity	MMF	\$160,000		B+	
Jun-11	Argo Re, Ltd.	Loma Reinsurance Ltd.	Series 2011-1	Class A	US HU, EQ, EU Wind, JP EQ	Industry index	TPR	\$100,000		BB-	

\*Equity



Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
Jul-11	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Queen Street III Capital Limited			EU Wind	Industry index	MMF	\$150,000		B+	
Aug-11	California Earthquake Authority	Embarcadero Reinsurance Ltd.	Series 2011-I	Class A	CAL EQ	Indemnity	MMF	\$150,000		BB-	
Aug-11	Electricité Réseau Distribution France	Pylon II Capital Limited		Class A	FR Wind	Parametric index	TPR	€65,000		B+	
Aug-11	Electricité Réseau Distribution France	Pylon II Capital Limited		Class B	FR Wind	Parametric index	TPR	€85,000		B-	
Aug-11	Tokio Marine & Nichido Fire Insurance Co., Ltd.	Kizuna Re Ltd.	Series 2011-1		JP TY	Indemnity	MTN	\$160,000			
Oct-11	AXA Global P&C	Calypso Capital Limited	Series 2011-1	Class A	EU Wind	Industry index	MTN	€180,000		BB-	
Oct-11	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Queen Street IV Capital Limited			US HU, EU Wind	Industry index	MMF	\$100,000		BB-	
Nov-11	Swiss Reinsurance Company Ltd.	Successor X Ltd.	Series 2011-3	Class V-F4	US HU	Industry index	MMF	\$80,000			
Nov-11	Swiss Reinsurance Company Ltd.	Successor X Ltd.	Series 2011-3	Class V-X4	US HU, EU W	Industry index	MMF	\$50,000		B-	
Nov-11	United Services Automobile Association	Residential Reinsurance 2011 Limited	Series 2011-II	Class 1	US HU, EQ, ST, WS, WF	Indemnity	MMF	\$100,000			
Nov-11	United Services Automobile Association	Residential Reinsurance 2011 Limited	Series 2011-II	Class 2	US HU, EQ, ST, WS, WF	Indemnity	MMF	\$50,000			
Dec-11	National Union Fire Insurance Company of Pittsburgh	Compass Re Ltd.	Series 2011-1	Class 1	US HU, EQ	Industry index	MMF	\$75,000		BB-	
Dec-11	National Union Fire Insurance Company of Pittsburgh	Compass Re Ltd.	Series 2011-1	Class 2	US HU, EQ	Industry index	MMF	\$250,000		BB-	
Dec-11	National Union Fire Insurance Company of Pittsburgh	Compass Re Ltd.	Series 2011-1	Class 3	US HU, EQ	Industry index	MMF	\$250,000		B+	
Dec-11	State Compensation Insurance Fund	Golden State Re Ltd.	Series 2011-1		US EQ	Modeled loss	MMF	\$200,000		BB+	
Dec-11	SCOR Global P&C SE	Atlas VI Capital Limited	Series 2011-1	Class A	US HU, EQ	Industry index	MTN	\$125,000		B	
Dec-11	SCOR Global P&C SE	Atlas VI Capital Limited	Series 2011-1	Class B	US HU, EQ	Industry index	MTN	\$145,000		B+	
Dec-11	SCOR Global P&C SE	Atlas VI Capital Limited	Series 2011-2	Class A	EU Wind	Industry index	MTN	€50,000		B	
Dec-11	Amlin AG	Tramline Re Ltd.	Series 2011-1	Class A	US HU, EQ, EU Wind	Industry index	MMF	\$150,000		B-	
Dec-11	Argo Re, Ltd.	Loma Reinsurance Ltd.	Series 2011-2	Class A	US HU, EQ	Industry index	MMF	\$100,000			
Jan-12	Assurant, Inc.	Ibis Re II Ltd.	Series 2012-1	Class A	US HU	Industry index	MMF	\$100,000		BB-	
Jan-12	Assurant, Inc.	Ibis Re II Ltd.	Series 2012-1	Class B	US HU	Industry index	MMF	\$30,000		B-	
Feb-12	California Earthquake Authority	Embarcadero Reinsurance Ltd.	Series 2012-I	Class A	CAL EQ	Indemnity	MMF	\$150,000		BB-	
Feb-12	Zenkyoren	Kibou Ltd.	Series 2012-1	Class A	JP EQ	Parametric index	MMF	\$300,000		BB+	
Feb-12	Swiss Reinsurance Company Ltd.	Successor X Ltd.	Series 2012-1	Class V-AA3	US HU, EU Wind	Industry index	MMF	\$23,000			
Feb-12	Swiss Reinsurance Company Ltd.	Successor X Ltd.	Series 2012-1	Class V-D3	US HU	Industry index	MMF	\$40,000	B2		

\*Equity

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
Feb-12	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Queen Street V Re Limited			US HU, EU Wind	Industry index	MMF	\$75,000			
Mar-12	Liberty Mutual Insurance Company	Mystic Re III Ltd.	Series 2012-1	Class A	US HU, EQ (ex CAL)	Indemnity	MMF	\$100,000		BB	
Mar-12	Liberty Mutual Insurance Company	Mystic Re III Ltd.	Series 2012-1	Class B	US HU, EQ	Indemnity	MMF	\$175,000		B	
Mar-12	Chubb Group	East Lane Re V Ltd.	Series 2012	Class A	Southeast HU, ST	Indemnity	MMF	\$75,000		BB	
Mar-12	Chubb Group	East Lane Re V Ltd.	Series 2012	Class B	Southeast HU, ST	Indemnity	MMF	\$75,000		BB-	
Mar-12	COUNTRY Mutual & North Carolina Farm Bureau Mutual	Combine Re Ltd.		Class A	US HU, EQ, ST, WS	Indemnity	MMF	\$100,000	Baa1		
Mar-12	COUNTRY Mutual & North Carolina Farm Bureau Mutual	Combine Re Ltd.		Class B	US HU, EQ, ST, WS	Indemnity	MMF	\$50,000	Ba3		
Mar-12	COUNTRY Mutual & North Carolina Farm Bureau Mutual	Combine Re Ltd.		Class C	US HU, EQ, ST, WS	Indemnity	MMF	\$50,000			
Apr-12	Allianz Argos 14 GmbH	Blue Danube Ltd.	Series 2012-1	Class A	US, CB, MX HU, US, CAN EQ	Industry index	MTN	\$120,000		BB+	
Apr-12	Allianz Argos 14 GmbH	Blue Danube Ltd.	Series 2012-1	Class B	US, CB, MX HU, NA EQ	Industry index	MTN	\$120,000		BB-	
Apr-12	Louisiana Citizens Property Insurance Corporation	Pelican Re Ltd.	Series 2012-1	Class A	LA HU	Indemnity	MMF	\$125,000			
Apr-12	Mitsui Sumitomo Insurance Co., Ltd	Akibare II Ltd.	Series 2012-1	Class A	JP TY	Modeled loss	MMF	\$130,000		BB	
Apr-12	Citizens Property Insurance Corporation	Everglades Re Ltd.	Series 2012-1	Class A	FL HU	Indemnity	MMF	\$750,000		B+	
May-12	Swiss Reinsurance Company Ltd.	Mythen Ltd.	Series 2012-1	Class A	US HU	Industry index	MTN	\$50,000	Ba3		
May-12	Swiss Reinsurance Company Ltd.	Mythen Ltd.	Series 2012-1	Class E	US HU	Industry index	MTN	\$100,000	Ba3		
May-12	Swiss Reinsurance Company Ltd.	Mythen Ltd.	Series 2012-1	Class H	US HU, EU Wind	Industry index	MTN	\$250,000	B2		
May-12	United Services Automobile Association	Residential Reinsurance 2012 Limited	Series 2012-1	Class 3	US HU, EQ, ST, WS, CAL WF	Indemnity	MMF	\$50,000		BB-	
May-12	United Services Automobile Association	Residential Reinsurance 2012 Limited	Series 2012-1	Class 5	US HU, EQ, ST, WS, CAL WF	Indemnity	MMF	\$110,000		BB	
May-12	United Services Automobile Association	Residential Reinsurance 2012 Limited	Series 2012-1	Class 7	US HU, EQ, ST, WS, CAL WF	Indemnity	MMF	\$40,000			
Jun-12	The Travelers Indemnity Company	Long Point Re III Ltd.	Series 2012-1	Class A	Northeast HU	Indemnity	MMF	\$250,000		BB+	
Jul-12	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Queen Street VI Re Limited			US HU, EU Wind	Industry index	MMF	\$100,000		B	
Jul-12	California Earthquake Authority	Embarcadero Reinsurance Ltd.	Series 2012-II	Class A	CAL EQ	Indemnity	MMF	\$300,000		BB+	
Sep-12	Hannover Rück SE	Eurus III Ltd.	Series 2012-1	Class A	EU Wind	Industry index	MTN	€100,000		BB-	
Oct-12	Fund for Natural Disasters	MultiCat Mexico Limited	Series 2012-1	Class A	Mex EQ	Parametric	MMF	\$140,000		B	
Oct-12	Fund for Natural Disasters	MultiCat Mexico Limited	Series 2012-1	Class B	Mex HU Atlantic	Parametric	MMF	\$75,000		B+	
Oct-12	Fund for Natural Disasters	MultiCat Mexico Limited	Series 2012-1	Class C	Mex HU Pacific	Parametric	MMF	\$100,000		B-	

\*Equity

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
Oct-12	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Queen Street VII Re Limited			US HU, EU Wind	Industry index	MMF	\$75,000		B	
Nov-12	SCOR Global P&C SE	Atlas Reinsurance VII Limited		Class A	US HU, EQ	Industry index	MTN	\$60,000		BB-	
Nov-12	SCOR Global P&C SE	Atlas Reinsurance VII Limited		Class B	EU Wind	Industry index	MTN	€130,000		BB	
Nov-12	Swiss Reinsurance Company Ltd.	Mythen Re Ltd.	Series 2012-2	Class A	US HU, UK Mortality	Industry index	MTN	\$120,000		B+	
Nov-12	Swiss Reinsurance Company Ltd.	Mythen Re Ltd.	Series 2012-2	Class C	US HU	Industry index	MTN	\$80,000		B-	
Nov-12	United Services Automobile Association	Residential Reinsurance 2012 Limited	Series 2012-II	Class 1	US HU, EQ, ST, WS, CAL WF	Indemnity	MMF	\$155,000		BB+	
Nov-12	United Services Automobile Association	Residential Reinsurance 2012 Limited	Series 2012-II	Class 2	US HU, EQ, ST, WS, CAL WF	Indemnity	MMF	\$70,000		BB	
Nov-12	United Services Automobile Association	Residential Reinsurance 2012 Limited	Series 2012-II	Class 3	US HU, EQ, ST, WS, CAL WF	Indemnity	MMF	\$95,000			
Nov-12	United Services Automobile Association	Residential Reinsurance 2012 Limited	Series 2012-II	Class 4	US HU, EQ, ST, WS, CAL WF	Indemnity	MMF	\$80,000			
Dec-12	National Union Fire Insurance Company of Pittsburgh	Compass Re Ltd.	Series 2012-1	Class 1	US HU, EQ	Industry index	MMF	\$400,000			
Dec-12	Zurich American Insurance Company, Zurich Insurance Company, Ltd.	Lakeside Re III Ltd.			US, CAN EQ	Indemnity	MMF	\$270,000		B+	
Mar-13	Nationwide Mutual Insurance Company	Caelus Re 2013 Limited	Series 2013-1	Class A	US HU, EQ	Indemnity	MMF	\$270,000		BB-	
Mar-13	Citizens Property Insurance Company	Everglades Re Ltd.	Series 2013-1	Class A	FL HU	Indemnity	MMF	\$250,000		B	
Apr-13	State Farm Fire and Casualty Company	Merna Re IV Ltd.			New Madrid EQ	Indemnity	MMF	\$300,000			
Apr-13	Nationwide Mutual Insurance Company	Caelus Re 2013 Limited	Series 2013-2	Class A	US HU, EQ	Indemnity	MMF	\$320,000			
Apr-13	North Carolina JUA/IUA	Tar Heel Re Ltd.	Series 2013-1	Class A	NC Hurricane	Parametric index	MMF	\$500,000		B+	
Apr-13	Turkish Catastrophe Insurance Pool	Bosphorus 1 Re Ltd.	Series 2013-1	Class A	Turkey EQ	Industry index	MMF	\$400,000		BB+	
May-13	Allstate Insurance Company	Sanders Re Ltd.	Series 2013-1	Class A	US HU, EQ	Industry index	MMF	\$200,000		BB+	
May-13	Allstate Insurance Company	Sanders Re Ltd.	Series 2013-1	Class B	US HU, EQ	Indemnity	MMF	\$150,000		BB	
May-13	Louisiana Citizens Property Insurance Company	Pelican Re Ltd.	Series 2013-1	Class A	LA HU	Indemnity	MMF	\$140,000			
May-13	American Coastal Insurance Company	Armor Re Ltd.	Series 2013-1	Class A	Florida HU	Indemnity	MMF	\$183,000		BB+	
May-13	Travelers Indemnity Company	Long Point Re III Ltd.	Series 2013-1	Class A	Northeast HU	Indemnity	MMF	\$300,000		BB	
May-13	Allianz Argos 14 GmbH	Blue Danube II Ltd.	Series 2013-1	Class A	US/CB/MX HU & NA EQ	Industry index	MTN	\$175,000		BB+	
May-13	United Services Automobile Association	Residential Reinsurance 2013 Limited	Series 2013-I	Class 11	US HU, EQ, ST, WS, CAL WF	Indemnity	MMF	\$205,000			
May-13	United Services Automobile Association	Residential Reinsurance 2013 Limited	Series 2013-I	Class 3	US HU, EQ, ST, WS, CAL WF	Indemnity	MMF	\$95,000		B-	

\*Equity

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
Jun-13	Assurant, Inc.	Ibis Re II Ltd.	Series 2013-1	Class A	US HU	Industry index	MMF	\$110,000		BB+	
Jun-13	Assurant, Inc.	Ibis Re II Ltd.	Series 2013-1	Class B	US HU	Industry index	MMF	\$35,000		BB-	
Jun-13	Assurant, Inc.	Ibis Re II Ltd.	Series 2013-1	Class C	US HU	Industry index	MMF	\$40,000		B	
Jun-13	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Queen Street VIII Re Limited			US HU, AUS CY	Industry index, modeled loss	MMF	\$75,000			
Jun-13	Amlin AG	Tramline Re II Ltd.	Series 2013-1	Class A	NA EQ	Industry index	MMF	\$75,000			
Jul-13	Groupama S.A.	Green Fields II Capital Limited	Series 2013-1	Class A	FR Wind	Industry index	MTN	€280,000		BB	
Jul-13	Swiss Reinsurance Company Ltd.	Mythen Re Ltd.	Series 2013-1	Class B-1	US HU	Industry index	MMF	\$100,000			
Jul-13	Renaissance Reinsurance Ltd.	Mona Lisa Re Ltd.	Series 2013-2	Class A	US HU, EQ	Industry index	MMF	\$150,000		BB-	
Jul-13	American International Group	Tradewynd Re Ltd.	Series 2013-1	Class 1	US, CB HU, NA EQ	Indemnity	MMF	\$125,000		B+	
Jul-13	Metropolitan Transportation Authority	MetroCat Re Ltd.	Series 2013-1	Class A	Northeast Storm Surge	Parametric index	MMF	\$200,000		BB-	
Aug-13	AXIS Specialty Limited	Northshore Re Limited	Series 2013-1	Class A	US HU, EQ	Industry index	MMF	\$200,000		BB-	
Sep-13	National Mutual Insurance Federation of Agricultural Cooperatives	Nakama Re Ltd.	Series 2013-1	Class 1	JP EQ	Indemnity	MMF	\$300,000		BB+	
Oct-13	AXA Global P&C	Calypso Capital II Limited		Class A	EU Wind	Industry index	MTN	€185,000		BB-	
Oct-13	AXA Global P&C	Calypso Capital II Limited		Class B	EU Wind	Industry index	MTN	€165,000		B+	
Oct-13	Catlin Insurance Company Ltd.	Galileo Re Ltd.	Series 2013-1	Class A	US HU, EQ, EU Wind	Industry index	MMF	\$300,000			
Dec-13	United Services Automobile Association	Residential Reinsurance 2013 Limited	Series 2013-II	Class 1	US HU, EQ, ST, WS, WF	Indemnity	MMF	\$80,000			
Dec-13	United Services Automobile Association	Residential Reinsurance 2013 Limited	Series 2013-II	Class 4	US HU, EQ, ST, WS, WF	Indemnity	MMF	\$70,000		BB-	
Dec-13	American International Group	Tradewynd Re Ltd.	Series 2013-2	Class 1-A	US/CB HU, NA EQ	Indemnity	MMF	\$100,000			
Dec-13	American International Group	Tradewynd Re Ltd.	Series 2013-2	Class 3-A	US/CB HU, NA EQ	Indemnity	MMF	\$160,000			
Dec-13	American International Group	Tradewynd Re Ltd.	Series 2013-2	Class 3-B	US/CB HU, NA EQ	Indemnity	MMF	\$140,000			
Dec-13	Achmea Reinsurance Company N.V.	Windmill I Re Ltd.	Series 2013-1	Class A	EU Wind	Indemnity	MMF	€40,000			
Dec-13	American Modern Insurance Group, Inc.	Queen City Re Ltd.	Series 2013-1	Class A	US HU	Indemnity	MMF	\$75,000			
Dec-13	Argo Re, Ltd.	Loma Reinsurance (Bermuda) Ltd.	Series 2013-1	Class A	US/CB HU, US ST, NA/CB EQ	Indemnity, industry index	MMF	\$32,000			
Dec-13	Argo Re, Ltd.	Loma Reinsurance (Bermuda) Ltd.	Series 2013-1	Class B	US/CB HU, US ST, NA/CB EQ	Indemnity, industry index	MMF	\$75,000			
Dec-13	Argo Re, Ltd.	Loma Reinsurance (Bermuda) Ltd.	Series 2013-1	Class C	US/CB HU, US ST, NA/CB EQ	Indemnity, industry index	MMF	\$65,000			

\*Equity

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
Dec-13	QBE Insurance Group Limited	VenTerra Re Ltd.	Series 2013-1	Class A	US EQ, AUS CY, EQ	Indemnity	MMF	\$250,000		BB	
Feb-14	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Queen Street IX Re Limited			US HU, AUS CY	Multiple	MMF	\$100,000			
Mar-14	Chubb Group	East Lane Re VI Ltd.	Series 2014-1	Class A	Northeast US HU, EQ, ST, WS	Indemnity	MMF	\$270,000		BB+	
Mar-14	American Strategic Insurance Group	Gator Re Ltd.	Series 2014-1	Class A	US HU, ST	Indemnity	MMF	\$200,000			
Mar-14	Tokio Marine & Nichido Fire Insurance Co., Ltd.	Kizuna Re II Ltd.	Series 2014-1	Class A	JP EQ	Indemnity	MMF	\$200,000			
Mar-14	Tokio Marine & Nichido Fire Insurance Co., Ltd.	Kizuna Re II Ltd.	Series 2014-1	Class B	JP EQ	Indemnity	MMF	\$45,000			
Mar-14	Great American Insurance Company	Riverfront Re Ltd.			NA HU, EQ, ST & WS	Indemnity	MMF	\$95,000		BB-	
Mar-14	State Farm Fire and Casualty Company	Merna Re V Ltd.			New Madrid EQ	Indemnity	MMF	\$300,000			
Apr-14	Heritage Property & Casualty Insurance Company	Citrus Re Ltd.	Series 2014-1	Class A	FL HU	Indemnity	MMF	\$150,000			
Apr-14	Heritage Property & Casualty Insurance Company	Citrus Re Ltd.	Series 2014-2	Class 1	FL HU	Indemnity	MMF	\$50,000			
Apr-14	Assicurazioni Generali S.p.A.	Lion I Re Limited			EU Wind	Indemnity	MTN	€190,000			B+
Apr-14	Everest Reinsurance Company	Kilimanjaro Re Limited	Series 2014-1	Class A	SE HU	Industry index	MMF	\$250,000		BB-	
Apr-14	Everest Reinsurance Company	Kilimanjaro Re Limited	Series 2014-1	Class B	NA HU, EQ	Industry index	MMF	\$200,000		BB-	
May-14	American Coastal Insurance Company	Armor Re Ltd.	Series 2014-1	Class A	FL HU	Indemnity	MMF	\$200,000			
May-14	Citizens Property Insurance Corporation	Everglades Re Ltd.	Series 2014-1	Class A	FL HU	Indemnity	MMF	\$1,500,000		B	
May-14	Allstate Insurance Company	Sanders Re Ltd.	Series 2014-1	Class B	US HU, EQ	Industry index	MMF	\$330,000		BB+	
May-14	Allstate Insurance Company	Sanders Re Ltd.	Series 2014-1	Class C	US HU, EQ	Industry index	MMF	\$115,000		BB	
May-14	Allstate Insurance Company	Sanders Re Ltd.	Series 2014-1	Class D	US HU, EQ	Industry index	MMF	\$305,000		BB	
May-14	Castle Key Insurance Company and Castle Key Indemnity Company	Sanders Re Ltd.	Series 2014-2	Class A	FL HU, EQ, ST	Indemnity	MMF	\$200,000			
May-14	National Mutual Insurance Federation of Agricultural Cooperatives	Nakama Re Ltd.	Series 2014-1	Class 1	JP EQ	Indemnity	MMF	\$150,000			
May-14	National Mutual Insurance Federation of Agricultural Cooperatives	Nakama Re Ltd.	Series 2014-1	Class 2	JP EQ	Indemnity	MMF	\$150,000			
May-14	United Services Automobile Association	Residential Reinsurance 2014 Limited	Series 2014-1	Class 10	US HU, EQ, ST, WS, WF	Indemnity	MMF	\$80,000			
May-14	United Services Automobile Association	Residential Reinsurance 2014 Limited	Series 2014-1	Class 13	US HU, EQ, ST, WS, WF	Indemnity	MMF	\$50,000			
May-14	Sompo Japan and Nipponkoa Insurance Company	Aozora Re Ltd.	Series 2014-1	Class B	JP TY	Indemnity	MMF	¥10,125,000		BB	
Jun-14	Texas Windstorm Insurance Association	Alamo Re Ltd.	Series 2014-1	Class A	TX HU	Indemnity	MMF	\$400,000			B

\*Equity

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
Sept-14	State Compensation Insurance Fund	Golden State Re II Ltd.	Series 2014-1	Class A	US EQ	Modeled loss	MMF	\$250,000		BB+	
Nov-14	Everest Reinsurance Company	Kilimanjaro Re Limited	Series 2014-2	Class C	NA EQ	Industry index	MMF	\$500,000		BB-	
Dec-14	California Earthquake Authority	Ursa Re Ltd.	Series 2014-1	Class A	CAL EQ	Indemnity	MMF	\$200,000			
Dec-14	California Earthquake Authority	Ursa Re Ltd.	Series 2014-1	Class B	CAL EQ	Indemnity	MMF	\$200,000			
Dec-14	United Services Automobile Association	Residential Reinsurance 2014 Limited	Series 2014-II	Class 4	US HU, EQ, ST, WS, WF, VE, MI	Indemnity	MMF	\$100,000			
Dec-14	Amlin AG	Tramline Re II Ltd.	Series 2014-1	Class A	US HU, EQ & EU Wind	Industry index	MMF	\$200,000			
Dec-14	American International Group, Inc.	Tradewynd Re Ltd.	Series 2014-1	Class 1-B	NA/MEX/CB/ Gulf HU & NA/ MEX/CB EQ	Indemnity	MMF	\$100,000			B
Dec-14	American International Group, Inc.	Tradewynd Re Ltd.	Series 2014-1	Class 3-A	NA/MEX/CB/ Gulf HU & NA/ MEX/CB EQ	Indemnity	MMF	\$100,000			BB-
Dec-14	American International Group, Inc.	Tradewynd Re Ltd.	Series 2014-1	Class 3-B	NA/MEX/CB/ Gulf HU & NA/ MEX/CB EQ	Indemnity	MMF	\$300,000			B
Dec-14	National Mutual Insurance Federation of Agricultural Cooperatives	Nakama Re Ltd.	Series 2014-2	Class 1	JP EQ	Indemnity	MMF	\$175,000			
Dec-14	National Mutual Insurance Federation of Agricultural Cooperatives	Nakama Re Ltd.	Series 2014-2	Class 2	JP EQ	Indemnity	MMF	\$200,000			
Feb-15	Catlin Insurance Company Ltd.	Galileo Re Ltd.	Series 2015-1	Class A	US HU, NA EQ, EU Wind	Industry index	MMF	\$300,000			
Feb-15	SCOR Global P&C SE	Atlas IX Capital Limited	Series 2015-1	Class A	US HU, NA EQ	Industry index	MMF	\$150,000			
Mar-15	Chubb Group of Insurance Companies	East Lane Re VI Ltd.	Series 2015-I	Class A	Northeast HU, EQ, ST, WS, WF, VE, MI	Indemnity	MMF	\$250,000		BB	
Mar-15	Tokio Marine & Nichido Fire Insurance Co., Ltd.	Kizuna Re II Ltd.	Series 2015-1	Class A	JP EQ	Indemnity	MMF	¥35,000,000		BBB-	
Mar-15	Safepoint Insurance Company	Manatee Re Ltd.	Series 2015-1	Class A	FL HU	Indemnity	MMF	\$100,000			
Mar-15	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Queen Street X Re Limited			US HU, AUS CY	Industry index and modeled loss	MMF	\$100,000			
Mar-15	State Farm Fire and Casualty Company	Merna Re Ltd.	Series 2015-1	Class A	New Madrid EQ	Indemnity	MMF	\$300,000			
Apr-15	Heritage Property & Casualty Insurance Company	Citrus Re Ltd.	Series 2015-1	Class A	FL HU	Indemnity	MMF	\$150,000			
Apr-15	Heritage Property & Casualty Insurance Company	Citrus Re Ltd.	Series 2015-1	Class B	FL HU	Indemnity	MMF	\$97,500			
Apr-15	Heritage Property & Casualty Insurance Company	Citrus Re Ltd.	Series 2015-1	Class C	FL HU	Indemnity	MMF	\$30,000			
Apr-15	Louisiana Citizens Property Insurance Corporation	Pelican III Re Ltd.	Series 2015-1	Class A	LA HU	Indemnity	MMF	\$100,000			
Apr-15	Massachusetts Property Insurance Underwriting Association	Cranberry Re Ltd.	Series 2015-1	Class A	MA HU, ST, WS	Indemnity	MMF	\$300,000			B
May-15	Citizens Property Insurance Corporation	Everglades Re Ltd.	Series 2015-1	Class A	FL HU	Indemnity	MMF	\$300,000		BB	

\*Equity

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
Apr-15	Texas Windstorm Insurance Association	Alamo Re Ltd.	Series 2015-1	Class A	TX HU	Indemnity	MMF	\$300,000			B+
Apr-15	Texas Windstorm Insurance Association	Alamo Re Ltd.	Series 2015-1	Class B	TX HU	Indemnity	MMF	\$400,000			BB-
May-15	The Travelers Indemnity Company	Long Point Re III Ltd.	Series 2015-1	Class A	Northeast HU, EQ, ST, WS	Indemnity	MMF	\$300,000			BB-
May-15	United Services Automobile Association	Residential Reinsurance 2015 Limited	Series 2015-I	Class 10	US HU, EQ, ST, WS, WF, VE, MI	Indemnity	MMF	\$50,000			
May-15	United Services Automobile Association	Residential Reinsurance 2015 Limited	Series 2015-I	Class 11	US HU, EQ, ST, WS, WF, VE, MI	Indemnity	MMF	\$100,000			
Jun-15	American International Group, Inc.	Compass Re II Ltd.	Series 2015-1	Class 1	US HU	Parametric index	MMF	\$300,000			B+
Jun-15	UnipolSai Assicurazioni S.p.A	Azzurro Re I Limited		Class A	EU EQ	Indemnity	EBRD Notes	€ 200,000			BB+
Jul-15	Hannover Rück SE	Acorn Re Ltd.	Series 2015-1	Class A	West coast NA EQ	Parametric	IBRD Notes	\$300,000			BB
Aug-15	Turkish Catastrophe Insurance Pool	Bosphorus Ltd.	Series 2015-1		Turkey EQ	Parametric index	IBRD Notes	\$100,000			
Sep-15	California Earthquake Authority	Ursa Re Ltd.	Series 2015-1	Class B	CAL EQ	Indemnity	MMF	\$250,000			
Oct-15	National Railroad Passenger Corporation	PennUnion Re Ltd.	Series 2015-1	Class A	US HU (surge and wind) and EQ	Parametric	MMF	\$275,000		BB-	
Dec-15	Everest Reinsurance Company	Kilimanjaro Re Limited	Series 2015-1	Class D	US, CAN, PR HU and EQ	Industry index	MMF	\$300,000			
Dec-15	Everest Reinsurance Company	Kilimanjaro Re Limited	Series 2015-1	Class E	US, CAN, PR HU and EQ	Industry index	MMF	\$325,000			
Dec-15	United Services Automobile Association	Residential Reinsurance 2015 Limited	Series 2015-II	Class 3	US HU, EQ, ST, WS, WF, VE, MI	Indemnity	MMF	\$125,000		B-	
Dec-15	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Queen Street XI Re dac			US HU and AUS CY	Industry index, modeled loss	MMF	\$100,000			
Dec-15	National Mutual Insurance Federation of Agricultural Cooperatives	Nakama Re Ltd.	Series 2015-1	Class 1	JP EQ	Indemnity	MMF	\$100,000			
Dec-15	National Mutual Insurance Federation of Agricultural Cooperatives	Nakama Re Ltd.	Series 2015-1	Class 2	JP EQ	Indemnity	MMF	\$200,000			
Jan-16	SCOR Global P&C SE	Atlas IX Capital DAC	Series 2016-1	Class A	US, PR HU and US, PR, CAN EQ	Industry index	EBRD Notes	\$300,000			
Jan-16	XL Insurance (Bermuda) Ltd	Galileo Re Ltd.	Series 2016-1	Class A	US HU, EU wind and US, CAN EQ	Industry index	MMF	\$100,000			
Jan-16	XL Insurance (Bermuda) Ltd	Galileo Re Ltd.	Series 2016-1	Class B	US HU, EU wind and US, CAN EQ	Industry index	MMF	\$100,000			
Jan-16	XL Insurance (Bermuda) Ltd	Galileo Re Ltd.	Series 2016-1	Class C	US HU, EU wind and US, CAN EQ	Industry index	MMF	\$100,000			
Feb-16	Heritage Property & Casualty Insurance Company and Zephyr Insurance Company, Inc.	Citrus Re Ltd.	Series 2016-1	Class D-50	FL, HI HU	Indemnity	MMF	\$150,000			
Feb-16	Heritage Property & Casualty Insurance Company and Zephyr Insurance Company, Inc.	Citrus Re Ltd.	Series 2016-1	Class E-50	FL, HI HU	Indemnity	MMF	\$100,000			
Feb-16	Nationwide Mutual Insurance Company	Caelus Re IV Limited	Series 2016-1	Class A	US HU, EQ, ST, WS, WF, VE, MI	Indemnity	MMF	\$300,000			

\*Equity

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
Mar-16	United Services Automobile Association	Espada Reinsurance Limited	Series 2016-I	Class 20	US HU, EQ, ST, WS, WF, VE, MI, OP	Indemnity	MMF	\$50,000			
Mar-16	Safepoint Insurance Company	Manatee Re Ltd.	Series 2016-1	Class A	FL, LA HU	Indemnity	MMF	\$75,000			
Mar-16	Safepoint Insurance Company	Manatee Re Ltd.	Series 2016-1	Class C	FL, LA HU	Indemnity	MMF	\$20,000			
Mar-16	Mitsui Sumitomo Insurance Co., Ltd	Akibare Re Ltd.	Series 2016-1	Class A	JP TY	Indemnity	IBRD Notes	\$200,000			
Mar-16	Sompo Japan Nipponkoa Insurance Inc.	Aozora Re Ltd.	Series 2016-1	Class A	JP TY	Indemnity	IBRD Notes	\$220,000		BB-	
Mar-16	State Farm Fire and Casualty Company	Merna Re Ltd.	Series 2016-1	Class A	New Madrid EQ	Indemnity	MMF	\$300,000			
May-16	United Services Automobile Association	Residential Reinsurance 2016 Limited	Series 2016-I	Class 10	US HU, EQ, ST, WS, WF, VE, MI, OP	Indemnity	MMF	\$65,000			
May-16	United Services Automobile Association	Residential Reinsurance 2016 Limited	Series 2016-I	Class 11	US HU, EQ, ST, WS, WF, VE, MI, OP	Indemnity	MMF	\$75,000			
May-16	United Services Automobile Association	Residential Reinsurance 2016 Limited	Series 2016-I	Class 13	US HU, EQ, ST, WS, WF, VE, MI, OP	Indemnity	MMF	\$110,000		BB-	
May-16	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Queen Street XII Re dac			US HU and EU wind	Industry index	IBRD Notes	\$190,000			
May-16	Security First Insurance Company	First Coast Re Ltd	Series 2016-1	Class A	FL HU, ST	Indemnity	MMF	\$75,000			
May-16	United Property & Casualty Insurance Co., Family Security Insurance Co., Interboro Insurance Co.	Laetere Re Ltd.	Series 2016-1	Class A	US HU and EQ	Indemnity	MMF	\$30,000			
May-16	United Property & Casualty Insurance Co., Family Security Insurance Co., Interboro Insurance Co.	Laetere Re Ltd.	Series 2016-1	Class B	US HU and EQ	Indemnity	MMF	\$40,000			
May-16	United Property & Casualty Insurance Co., Family Security Insurance Co., Interboro Insurance Co.	Laetere Re Ltd.	Series 2016-1	Class C	US HU and EQ	Indemnity	MMF	\$30,000			
Jun-16	Allianz Risk Transfer (Bermuda) Limited	Blue Halo Re Ltd.	Series 2016-1	Class A	US HU and EQ	Industry index	MMF	\$130,000			
Jun-16	Allianz Risk Transfer (Bermuda) Limited	Blue Halo Re Ltd.	Series 2016-1	Class B	US HU and EQ	Industry index	MMF	\$55,000			
Jul-16	Allianz Risk Transfer (Bermuda) Limited	Blue Halo Re Ltd.	Series 2016-2	Class C	US HU, EQ	Industry Index	MMF	\$225,000			
Sep-16	National Mutual Insurance Federation of Agricultural Cooperatives	Nakama Re Ltd.	Series 2016-1	Class 1	JP EQ	Indemnity	MTN	\$550,000			
Sep-16	National Mutual Insurance Federation of Agricultural Cooperatives	Nakama Re Ltd.	Series 2016-1	Class 2	JP EQ	Indemnity	MTN	\$150,000			
Nov-16	United Services Automobile Association	Residential Reinsurance 2016 Limited	Series 2016-II	Class 2	US HU, EQ, WS, ST, WF, VE, MI, OP	Indemnity	MMF	\$80,000			
Nov-16	United Services Automobile Association	Residential Reinsurance 2016 Limited	Series 2016-II	Class 3	US HU, EQ, WS, ST, WF, VE, MI, OP	Indemnity	MMF	\$150,000	B-		
Nov-16	United Services Automobile Association	Residential Reinsurance 2016 Limited	Series 2016-II	Class 4	US HU, EQ, WS, ST, WF, VE, MI, OP	Indemnity	MMF	\$170,000	B		

\*Equity



Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
Nov-16	California Earthquake Authority	Ursa Re Ltd.	Series 2016-1	Class A	CAL EQ	Indemnity	MMF	\$500,000			
Dec-16	American Strategic Insurance Group	Bonanza Reinsurance 2016 Ltd.	Series 2016-1	Class A	US HU, ST	Indemnity	MTN	\$150,000			
Dec-16	American Strategic Insurance Group	Bonanza Reinsurance 2016 Ltd.	Series 2016-1	Class B	US HU	Indemnity	MTN	\$50,000			
Dec-16	XL Insurance (Bermuda) Ltd	Galilei Re Ltd.	Series 2016-1	Class A-1	US HU, EQ, CAN EQ, EU WS and AU TC, EQ	Industry index	MTN	\$75,000			
Dec-16	XL Insurance (Bermuda) Ltd	Galilei Re Ltd.	Series 2016-1	Class B-1	US HU, EQ, CAN EQ, EU WS and AU TC, EQ	Industry index	MTN	\$125,000			
Dec-16	XL Insurance (Bermuda) Ltd	Galilei Re Ltd.	Series 2016-1	Class C-1	US HU, EQ, CAN EQ, EU WS and AU TC, EQ	Industry index	MTN	\$175,000			
Dec-16	XL Insurance (Bermuda) Ltd	Galilei Re Ltd.	Series 2016-1	Class D-1	US HU, EQ, CAN EQ, EU WS and AU TC, EQ	Industry index	MTN	\$175,000			
Dec-16	XL Insurance (Bermuda) Ltd	Galilei Re Ltd.	Series 2016-1	Class E-1	US HU, EQ, CAN EQ, EU WS and AU TC, EQ	Industry index	MTN	\$200,000			
Jan-17	XL Insurance (Bermuda) Ltd	Galilei Re Ltd.	Series 2017-1	Class A-2	US HU, EQ, CAN EQ, EU WS and AU TC, EQ	Industry index	MTN	\$50,000			
Jan-17	XL Insurance (Bermuda) Ltd	Galilei Re Ltd.	Series 2017-1	Class B-2	US HU, EQ, CAN EQ, EU WS and AU TC, EQ	Industry index	MTN	\$50,000			
Jan-17	XL Insurance (Bermuda) Ltd	Galilei Re Ltd.	Series 2017-1	Class C-2	US HU, EQ, CAN EQ, EU WS and AU TC, EQ	Industry index	MTN	\$150,000			
Jan-17	XL Insurance (Bermuda) Ltd	Galilei Re Ltd.	Series 2017-1	Class D-2	US HU, EQ, CAN EQ, EU WS and AU TC, EQ	Industry index	MTN	\$150,000			
Jan-17	XL Insurance (Bermuda) Ltd	Galilei Re Ltd.	Series 2017-1	Class E-2	US HU, EQ, CAN EQ, EU WS and AU TC, EQ	Industry index	MTN	\$125,000			
Mar-17	ICAT Syndicate 4242	Buffalo Re Ltd.	Series 2017-1	Class A	US HU, EQ	Indemnity	MTN	\$105,000			
Mar-17	ICAT Syndicate 4242	Buffalo Re Ltd.	Series 2017-1	Class B	US HU, EQ	Indemnity	MTN	\$59,500			
Mar-17	Heritage Property & Casualty Insurance Company and Zephyr Insurance Company, Inc.	Citrus Re Ltd.	Series 2017-1	Class A	FL/GA/NC/SC HU	Indemnity	MTN	\$125,000			
Mar-17	Sompo Japan and Nipponkoa Insurance Inc.	Aozora Re Ltd.	Series 2017-1	Class A	JP TY	Indemnity	MTN	\$480,000			
Mar-17	Allstate Insurance Company	Sanders Re Ltd.	Series 2017-1	Class A	US HU, EQ, WS, ST, VE, MI	Indemnity	MTN	\$375,000			
Mar-17	State Farm Fire and Casualty Company	Merna Re Ltd.	Series 2017-1	Class A	New Madrid EQ	Indemnity	MMF	\$300,000			
Apr-17	Everest Reinsurance Company	Kilimanjaro II Re Limited	Series 2017-1	Class A-1	US/CAN/PR HU and EQ	Industry index	MTN	\$225,000			
Apr-17	Everest Reinsurance Company	Kilimanjaro II Re Limited	Series 2017-1	Class B-1	US/CAN/PR HU and EQ	Industry index	MTN	\$400,000			
Apr-17	Everest Reinsurance Company	Kilimanjaro II Re Limited	Series 2017-1	Class C-1	US/CAN/PR HU and EQ	Industry index	MTN	\$325,000			
Apr-17	Everest Reinsurance Company	Kilimanjaro II Re Limited	Series 2017-2	Class A-2	US/CAN/PR HU and EQ	Industry index	MTN	\$50,000			

\*Equity

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
Apr-17	Everest Reinsurance Company	Kilimanjaro II Re Limited	Series 2017-2	Class B-2	US/CAN/PR HU and EQ	Industry index	MTN	\$75,000			
Apr-17	Everest Reinsurance Company	Kilimanjaro II Re Limited	Series 2017-2	Class C-2	US/CAN/PR HU and EQ	Industry index	MTN	\$175,000			
Apr-17	Louisiana Citizens Property Insurance Corporation	Pelican IV Re Ltd.	Series 2017-1	Class A	LA HU	Indemnity	MTN	\$100,000			
Apr-17	Security First Insurance Company	First Coast Re Ltd.	Series 2017-1	Class A	FL HU, ST	Indemnity	MMF	\$175,000			
May-17	American Integrity Insurance Company of Florida	Integrity Re Ltd.	Series 2017-1	Class A	FL HU	Indemnity	MTN	\$72,000			
May-17	American Integrity Insurance Company of Florida	Integrity Re Ltd.	Series 2017-1	Class B	FL HU	Indemnity	MTN	\$3,000			
May-17	American Integrity Insurance Company of Florida	Integrity Re Ltd.	Series 2017-1	Class C	FL HU	Indemnity	MTN	\$100,000			
May-17	American Integrity Insurance Company of Florida	Integrity Re Ltd.	Series 2017-1	Class D	FL HU, ST	Indemnity	MTN	\$35,000			
May-17	United Services Automobile Association	Residential Reinsurance 2017 Limited	Series 2017-1	Class 10	US HU, EQ, WS, ST, WF, VE, MI, OP	Indemnity	MMF	\$50,000			
May-17	United Services Automobile Association	Residential Reinsurance 2017 Limited	Series 2017-1	Class 11	US HU, EQ, WS, ST, WF, VE, MI, OP	Indemnity	MMF	\$225,000			
May-17	United Services Automobile Association	Residential Reinsurance 2017 Limited	Series 2017-1	Class 13	US HU, EQ, WS, ST, WF, VE, MI, OP	Indemnity	MMF	\$150,000	BB-		
May-17	Nationwide Mutual Insurance Company	Caelus Re V Limited	Series 2017-1	Class A	US HU, EQ, ST, WS, WF, VE, MI, OP	Indemnity	MMF	\$75,000			
May-17	Nationwide Mutual Insurance Company	Caelus Re V Limited	Series 2017-1	Class B	US HU, EQ, ST, WS, WF, VE, MI, OP	Indemnity	MMF	\$150,000			
May-17	Nationwide Mutual Insurance Company	Caelus Re V Limited	Series 2017-1	Class C	US HU, EQ, ST, WS, WF, VE, MI, OP	Indemnity	MMF	\$75,000			
May-17	Nationwide Mutual Insurance Company	Caelus Re V Limited	Series 2017-1	Class D	US HU, EQ, ST, WS, WF, VE, MI, OP	Indemnity	MMF	\$75,000			
May-17	Palomar Specialty Insurance Company	Torrey Pines Re Ltd.	Series 2017-1	Class A	US EQ	Indemnity	MTN	\$45,000			
May-17	Palomar Specialty Insurance Company	Torrey Pines Re Ltd.	Series 2017-1	Class B	US EQ	Indemnity	MTN	\$66,000			
May-17	Palomar Specialty Insurance Company	Torrey Pines Re Ltd.	Series 2017-1	Class C	US HU, ST, EQ	Indemnity	MTN	\$55,000			
May-17	Citizens Property Insurance Corporation	Everglades Re II Ltd.	Series 2017-1	Class A	FL HU	Indemnity	MMF	\$300,000			
May-17	Heritage Property & Casualty Insurance Company	Citrus Re Ltd.	Series 2017-2	Class B	FL, GA, NC, SC HU	Indemnity	MTN	\$35,000			
May-17	California Earthquake Authority	Ursa Re Ltd.	Series 2017-1	Class B	CALEQ	Indemnity	MMF	\$425,000			
May-17	California Earthquake Authority	Ursa Re Ltd.	Series 2017-1	Class E	CALEQ	Indemnity	MMF	\$500,000			
May-17	Metropolitan Transportation Authority	MetroCat Re Ltd.	Series 2017-1	Class A	NY HU, SS, EQ	Parametric index	MMF	\$125,000			
May-17	Texas Windstorm Insurance Association	Alamo Re Ltd.	Series 2017-1	Class A	TX HU, ST	Indemnity	MMF	\$400,000			

\*Equity

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
May-17	Great American Insurance Company and its affiliates	Riverfront Re Ltd.		Class A	US/CAN HU, EQ, ST, WS, WF, VE, MI	Indemnity	MMF	\$142,500			
May-17	Great American Insurance Company and its affiliates	Riverfront Re Ltd.		Class B	US/CAN HU, EQ, ST, WS, WF, VE, MI	Indemnity	MMF	\$47,500			
May-17	Castle Key Insurance Company and Castle Key Indemnity Company	Sanders Re Ltd.	Series 2017-2	Class A	FL HU, ST, VE, MI, WF	Indemnity	MTN	\$200,000			
Jun-17	Avatar Property and Casualty Insurance Company	Casablanca Re Ltd.	Series 2017-1	Class A	FL HU	Indemnity	MTN	\$66,950			
Jun-17	Avatar Property and Casualty Insurance Company	Casablanca Re Ltd.	Series 2017-1	Class B	FL HU	Indemnity	MTN	\$26,300			
Jun-17	Avatar Property and Casualty Insurance Company	Casablanca Re Ltd.	Series 2017-1	Class C	FL HU	Indemnity	MTN	\$6,750			
Jun-17	Massachusetts Property Insurance Underwriting Association	Cranberry Re Ltd.	Series 2017-1	Class A	MA HU, ST, WS	Indemnity	MTN	\$350,000			
Jun-17	Tokio Millennium Re AG	Spectrum Capital Ltd.	Series 2017-1	Class A	US/CAN EQ and US HU, ST, WS, WF	Industry index	MTN	\$160,000			
Jun-17	Tokio Millennium Re AG	Spectrum Capital Ltd.	Series 2017-1	Class B	US/CAN EQ and US HU, ST, WS, WF	Industry index	MTN	\$270,000			
Jun-17	Assicurazioni Generali S.p.A	Lion II Re DAC			EU WS, FL and IT EQ	Indemnity	MTN	€ 200,000			
Jun-17	AXIS Specialty Limited	Northshore Re II Limited	Series 2017-1	Class A	US HU and US/CAN EQ	Industry index	MMF	\$350,000			
Jun-17	Achmea Reinsurance Company N.V.	Windmill I Re Ltd.	Series 2017-1	Class A	EU Wind	Indemnity	MTN	€ 40,000			
Jul-17	AmTrust Financial Services	Fortius Re II Ltd.	Series 2017-1		US HU, EQ and CAN EQ	Multiple		\$100,000			
Jul-17	The Fund for Natural Disasters	IBRD CAR	Series 113	Class A	Mex EQ	Parametric		\$150,000			
Jul-17	The Fund for Natural Disasters	IBRD CAR	Series 114	Class B	Mex NS	Parametric		\$100,000			
Jul-17	The Fund for Natural Disasters	IBRD CAR	Series 115	Class C	Mex NS	Parametric		\$110,000			
Nov-17	XL Insurance (Bermuda) Ltd	Galileo Re Ltd.	Series 2017-1	Class A	US HU, EQ, ST, EU Wind, and AU TC, EQ	Industry index	MMF	\$75,000			
Nov-17	XL Insurance (Bermuda) Ltd	Galileo Re Ltd.	Series 2017-1	Class B	US HU, EQ, ST, EU Wind, and AU TC, EQ	Industry index	MMF	\$75,000			
Dec-17	United Services Automobile Association	Residential Reinsurance 2017 Limited	Series 2017-II	Class 1	US TC, EQ, WS, ST, WF, VE, MI, OP	Indemnity	MMF	\$55,000			
Dec-17	United Services Automobile Association	Residential Reinsurance 2017 Limited	Series 2017-II	Class 2	US TC, EQ, WS, ST, WF, VE, MI, OP	Indemnity	MMF	\$110,000			
Dec-17	United Services Automobile Association	Residential Reinsurance 2017 Limited	Series 2017-II	Class 3	US TC, EQ, WS, ST, WF, VE, MI, OP	Indemnity	MMF	\$130,000		B-	
Dec-17	California Earthquake Authority	Ursa Re Ltd.	Series 2017-2	Class C	CAL EQ	Indemnity	MMF	\$200,000			
Dec-17	California Earthquake Authority	Ursa Re Ltd.	Series 2017-2	Class D	CAL EQ	Indemnity	MMF	\$200,000			

\*Equity

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
Dec-17	Covea Group	Hexagon Reinsurance DAC	Series 2017-1	Class A	EU Wind	Indemnity	MTN	\$54,000			
Dec-17	Covea Group	Hexagon Reinsurance DAC	Series 2017-1	Class B	EU Wind	Indemnity	MTN	\$54,000			
Dec-17	Validus Holdings	Tailwind Re Ltd.	Series 2017-1	Class A	CA EQ, HU and US HU, EQ	Industry index	MMF	\$150,000			
Dec-17	Validus Holdings	Tailwind Re Ltd.	Series 2017-1	Class B	CA EQ, HU and US HU, EQ	Industry index	MMF	\$150,000			
Dec-17	Validus Holdings	Tailwind Re Ltd.	Series 2017-1	Class C	CA EQ, HU and US HU, EQ	Industry index	MMF	\$100,000			
Feb-18	Republic of Chile	IBRD CAR		Class 116	Chile EQ	Parametric	MTN	\$500,000			
Feb-18	Republic of Colombia	IBRD CAR		Class 117	Colombia EQ	Parametric	MTN	\$400,000			
Feb-18	The Fund for Natural Disasters	IBRD CAR		Class 118	Mex EQ	Parametric	MTN	\$160,000			
Feb-18	The Fund for Natural Disasters	IBRD CAR		Class 119	Mex EQ	Parametric	MTN	\$100,000			
Feb-18	Republic of Peru	IBRD CAR		Class 120	Peru EQ	Parametric	MTN	\$200,000			
Mar-18	Zenkyoren	Nakama Re Ltd.	Series 2018-1	Class 1	JP EQ	Indemnity	MTN	\$500,000			
Mar-18	Zenkyoren	Nakama Re Ltd.	Series 2018-1	Class 2	JP EQ	Indemnity	MTN	\$200,000			
Mar-18	Tokio Marine & Nichido Fire Insurance Co	Kizuna Re II Ltd.	Series 2018-1	Class A	JP EQ	Indemnity	MMF	\$150,000			
Mar-18	Tokio Marine & Nichido Fire Insurance Co	Kizuna Re II Ltd.	Series 2018-1	Class B	JP EQ	Indemnity	MMF	\$50,000			
Mar-18	MS&AD Insurance Group Holdings	Akibare Re Ltd.	Series 2018-1	Class A	JP TY, EQ, FLD, EQFF	Indemnity	MTN	\$220,000			
Mar-18	MS&AD Insurance Group Holdings	Akibare Re Ltd.	Series 2018-1	Class B	JP TY, EQ, FLD, EQFF	Indemnity	MTN	\$100,000			
Mar-18	State Farm Fire and Casualty Company	Merna Re Ltd.	Series 2018-1	Class A	US (New Madrid) EQ	Indemnity	MMF	\$300,000			
Mar-18	Allstate Insurance Company	Sanders Re Ltd.	Series 2018-1	Class A	US, NS, EQ, SW, FI, OT	Indemnity	MMF	\$500,000			
Apr-18	Safepoint Insurance Company	Manatee Re II Ltd.	Series 2018-1	Class A	US WS and SCS	Indemnity	MMF	\$160,000			
Apr-18	Safepoint Insurance Company	Manatee Re II Ltd.	Series 2018-1	Class B	US WS and SCS	Indemnity	MMF	\$40,000			
Apr-18	American Coastal Insurance Company	Armor Re II Ltd.	Series 2018-1		US HU, EQ	Indemnity	MMF	\$100,000			
Apr-18	Everest Reinsurance Company	Kilimanjaro Re Ltd.	Series 2018-1	Class A-1	US/CAN/PR HU and EQ	Industry index	MTN	\$62,000			
Apr-18	Everest Reinsurance Company	Kilimanjaro Re Ltd.	Series 2018-1	Class B-1	US/CAN/PR HU and EQ	Industry index	MTN	\$200,000			
Apr-18	Everest Reinsurance Company	Kilimanjaro Re Ltd.	Series 2018-2	Class A-2	US/CAN/PR HU and EQ	Industry index	MTN	\$62,500			
Apr-18	Everest Reinsurance Company	Kilimanjaro Re Ltd.	Series 2018-2	Class B-2	US/CAN/PR HU and EQ	Industry index	MTN	\$200,000			
Apr-18	American Integrity Insurance Company of Florida	Integrity Re	Series 2018-1	Class A	FL HU and SCS	Indemnity	MTN	\$75,000			
Apr-18	American Integrity Insurance Company of Florida	Integrity Re	Series 2018-1	Class B	FL HU and SCS	Indemnity	MTN	\$4,000			
Apr-18	Aspen Insurance Limited	Kendall Re Ltd.	Series 2018-1	Class A	US NS, EQ, ST, WF, WS; CAN EQ, and EU WS	Industry index	MTN	\$225,000			

\*Equity

Issuance Date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Collateral	Size (thousands)	Moody's	S&P	Fitch
Apr-18	Louisiana Citizens Property Insurance Corporation	Pelican IV Re Ltd.	Series 2018-1	Class A	LA HU and ST	Indemnity	MMF	\$100,000			
May-18	United Services Automobile Association	Residential Reinsurance 2018 Limited	Series 2018-1	Class 11	US TC, EQ, WS, ST, WF, VE, MI, OP	Indemnity	MMF	\$100,000			
May-18	United Services Automobile Association	Residential Reinsurance 2018 Limited	Series 2018-1	Class 13	US TC, EQ, WS, ST, WF, VE, MI, OP	Indemnity	MMF	\$200,000			
May-18	The Travelers Indemnity Company	Long Point Re III Ltd.	Series 2018-1		Northeast HU, EQ, ST, WS	Indemnity	MMF	\$500,000			
May-18	Texas Windstorm Insurance Association	Alamo Re Ltd.	Series 2018-1	Class A	TX HU and SCS	Indemnity	MMF	\$400,000			
May-18	Nationwide Mutual Insurance Company	Caelus Re V Ltd.	Series 2018-1	Class A	US HU, EQ, ST, WS, WF, VE, MI, OP	Indemnity	MMF	\$125,000			
May-18	Nationwide Mutual Insurance Company	Caelus Re V Ltd.	Series 2018-1	Class B	US HU, EQ, ST, WS, WF, VE, MI, OP	Indemnity	MMF	\$75,000			
May-18	Nationwide Mutual Insurance Company	Caelus Re V Ltd.	Series 2018-1	Class C	US HU, EQ, ST, WS, WF, VE, MI, OP	Indemnity	MMF	\$175,000			
May-18	Nationwide Mutual Insurance Company	Caelus Re V Ltd.	Series 2018-1	Class D	US HU, EQ, ST, WS, WF, VE, MI, OP	Indemnity	MMF	\$75,000			
May-18	Citizens Property Insurance Corporation	Everglades Re II Ltd.	Series 2018-1	Class A	FL HU	Indemnity	MMF	\$250,000			
May-18	Transatlantic Reinsurance Company	Bowline Re Ltd.	Series 2018-1		US/PR/VI/DC/CANS, EQ, ST	Industry index	MMF	\$250,000			
May-18	SCOR Global P&C SE	Atlas Capital UK	Series 2018		US NS, EQ; CA EQ, and EU WS	Industry index	MTN	\$300,000			
Jun-18	Frontline Insurance	Frontline Re Ltd.	Series 2018-1	Class A	US NS	Indemnity	MMF	\$250,000			
Jun-18	Frontline Insurance	Frontline Re Ltd.	Series 2018-1	Class B	US NS	Indemnity	MMF	\$100,000			

\*Equity



# Appendix II

## *Life and Health Catastrophe Bonds— Transaction Summary*

*As of June 30, 2018*

*Source: Aon Securities Inc.*

## Summary of life and health catastrophe bonds—December 1996 through June 2018

Issuance date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Size (thousands)	S&P
Dec-03	Swiss Reinsurance Company Ltd.	Vita Capital Ltd.	Series 1		Extreme mortality	Index	\$400,000	A+
Apr-05	Swiss Reinsurance Company Ltd.	Vita Capital II Ltd.	Series 1	Class B	Extreme mortality	Index	\$62,000	A-
Apr-05	Swiss Reinsurance Company Ltd.	Vita Capital II Ltd.	Series 1	Class C	Extreme mortality	Index	\$200,000	BBB+
Apr-05	Swiss Reinsurance Company Ltd.	Vita Capital II Ltd.	Series 1	Class D	Extreme mortality	Index	\$100,000	BBB-
Apr-06	Scottish Annuity & Life Insurance Company (Cayman) Ltd.	Tartan Capital Limited	Series 1	Class A	Extreme mortality	Index	\$75,000	AAA
Apr-06	Scottish Annuity & Life Insurance Company (Cayman) Ltd.	Tartan Capital Limited	Series 1	Class B	Extreme mortality	Index	\$80,000	A-
Nov-06	AXA Cessions	OSIRIS Capital plc	Series 1	Class B	Extreme mortality	Index	€100,000	BBB
Nov-06	AXA Cessions	OSIRIS Capital plc	Series 2	Class B	Extreme mortality	Index	€50,000	BB+
Nov-06	AXA Cessions	OSIRIS Capital plc	Series 3	Class C	Extreme mortality	Index	\$150,000	A
Nov-06	AXA Cessions	OSIRIS Capital plc	Series 3	Class D	Extreme mortality	Index	\$100,000	A
Dec-06	Swiss Reinsurance Company Ltd.	Vita Capital III Ltd.	Series 1	Class B	Extreme mortality	Index	\$90,000	A
Dec-06	Swiss Reinsurance Company Ltd.	Vita Capital III Ltd.	Series 2	Class B	Extreme mortality	Index	\$50,000	AAA
Dec-06	Swiss Reinsurance Company Ltd.	Vita Capital III Ltd.	Series 3	Class B	Extreme mortality	Index	€30,000	AAA
Jan-07	Swiss Reinsurance Company Ltd.	Vita Capital III Ltd.	Series 4	Class A	Extreme mortality	Index	\$100,000	AAA
Jan-07	Swiss Reinsurance Company Ltd.	Vita Capital III Ltd.	Series 5	Class A	Extreme mortality	Index	\$100,000	AAA
Jan-07	Swiss Reinsurance Company Ltd.	Vita Capital III Ltd.	Series 5	Class B	Extreme mortality	Index	\$50,000	AAA
Jan-07	Swiss Reinsurance Company Ltd.	Vita Capital III Ltd.	Series 6	Class A	Extreme mortality	Index	€55,000	AAA
Jan-07	Swiss Reinsurance Company Ltd.	Vita Capital III Ltd.	Series 6	Class B	Extreme mortality	Index	€55,000	AAA
Jan-07	Swiss Reinsurance Company Ltd.	Vita Capital III Ltd.	Series 7	Class A	Extreme mortality	Index	€100,000	AA-
Feb-08	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Nathan Ltd.	Series 1	Class A	Extreme mortality	Index	\$100,000	A-
Jan-09	Swiss Reinsurance Company Ltd.	Vita Capital IV Ltd.	Series 1	Class E	Extreme mortality	Index	\$75,000	BB+
May-10	Swiss Reinsurance Company Ltd.	Vita Capital IV Ltd.	Series III	Class E	Extreme mortality	Index	\$50,000	BB+
Oct-10	Swiss Reinsurance Company Ltd.	Vita Capital IV Ltd.	Series III	Class E	Extreme mortality	Index	\$100,000	BB+
Oct-10	Swiss Reinsurance Company Ltd.	Vita Capital IV Ltd.	Series IV	Class E	Extreme mortality	Index	\$75,000	BB+
Dec-10	Aetna Life Insurance Company	Vitality Re Limited	Series 2010-1	Class A	Health	Indemnity - MBR	\$150,000	BBB-
Dec-10	Swiss Reinsurance Company Ltd.	Kortis Capital Ltd.	Series 2010-1	Class E	Longevity	Index	\$50,000	BB+
Apr-11	Aetna Life Insurance Company	Vitality Re II Limited	Series 2011-1	Class A	Health	Indemnity - MBR	\$110,000	BBB



Issuance date	Beneficiary	Issuer	Series	Class	Perils	Trigger	Size (thousands)	S&P
Apr-11	Aetna Life Insurance Company	Vitality Re II Limited	Series 2011-1	Class B	Health	Indemnity - MBR	\$40,000	BB+
Aug-11	Swiss Reinsurance Company Ltd.	Vita Capital IV Ltd.	Series V	Class D	Extreme mortality	Index	\$100,000	BBB-
Aug-11	Swiss Reinsurance Company Ltd.	Vita Capital IV Ltd.	Series VI	Class E	Extreme mortality	Index	\$80,000	BB+
Jan-12	Aetna Life Insurance Company	Vitality Re III Limited	Series 2012-1	Class A	Health	Indemnity - MBR	\$105,000	BBB+
Jan-12	Aetna Life Insurance Company	Vitality Re III Limited	Series 2012-1	Class B	Health	Indemnity - MBR	\$45,000	BB+
Jul-12	Swiss Reinsurance Company Ltd.	Vita Capital V Ltd.	Series 2012-I	Class D-1	Extreme mortality	Index	\$125,000	BBB-
Jul-12	Swiss Reinsurance Company Ltd.	Vita Capital V Ltd.	Series 2012-I	Class E-1	Extreme mortality	Index	\$150,000	BB+
Jan-13	Aetna Life Insurance Company	Vitality Re IV Limited	Series 2013-1	Class A	Health	Indemnity - MBR	\$105,000	BBB+
Jan-13	Aetna Life Insurance Company	Vitality Re IV Limited	Series 2013-1	Class B	Health	Indemnity - MBR	\$45,000	BB+
Sep-13	SCOR Global Life SE	Atlas IX Capital Limited	Series 2013-1	Class B	Extreme mortality	Index	\$180,000	BB
Jan-14	Aetna Life Insurance Company	Vitality Re V Limited	Series 2014-1	Class A	Health	Indemnity - MBR	\$140,000	BBB+
Jan-14	Aetna Life Insurance Company	Vitality Re V Limited	Series 2014-1	Class B	Health	Indemnity - MBR	\$60,000	BB+
Jan-14	Aetna Life Insurance Company	Vitality Re V Limited	Series 2014-1	Class A	Health	Indemnity - MBR	\$140,000	BBB+
Jan-14	Aetna Life Insurance Company	Vitality Re V Limited	Series 2014-1	Class B	Health	Indemnity - MBR	\$60,000	BB+
Jan-15	Aetna Life Insurance Company	Vitality Re VI Limited	Series 2015-1	Class A	Health	Indemnity - MBR	\$140,000	BBB+
Jan-15	Aetna Life Insurance Company	Vitality Re VI Limited	Series 2015-1	Class B	Health	Indemnity - MBR	\$60,000	BB+
Apr-15	AXA Global Life	Benu Capital Limited		Class A	Extreme mortality	Index	€ 135,000	BB+
Apr-15	AXA Global Life	Benu Capital Limited		Class B	Extreme mortality	Index	€ 150,000	BB
Dec-16	Swiss Reinsurance Company Ltd.	Vita Capital Limited	Series 2015-1	Class A	Extreme mortality	Index	\$100,000	BB
Jan-16	Aetna Life Insurance Company	Vitality Re VII Limited	Series 2016-1	Class A	Health	Indemnity - MBR	\$140,000	BBB+
Jan-16	Aetna Life Insurance Company	Vitality Re VII Limited	Series 2016-1	Class B	Health	Indemnity - MBR	\$60,000	BB+
Jan-17	Aetna Life Insurance Company	Vitality Re VIII Limited	Series 2017	Class A	Health	Indemnity - MBR	\$140,000	BBB+
Jan-17	Aetna Life Insurance Company	Vitality Re VIII Limited	Series 2017	Class B	Health	Indemnity - MBR	\$60,000	BB+
Jul-17	Pandemic Emergency Financing Facility	IBRD CAR		Class A	WW Pandemic, Flu & Coronavirus	Parametric	\$225,000	
Jul-17	Pandemic Emergency Financing Facility	IBRD CAR		Class B	WW Pandemic, Flu & Coronavirus	Parametric	\$95,000	
Jan-18	Aetna Life Insurance Company	Vitality Re IX Limited	Series 2018-1	Class A	MBR	Indemnity	\$140,000	BBB+
Jan-18	Aetna Life Insurance Company	Vitality Re IX Limited	Series 2018-1	Class B	MBR	Indemnity	\$60,000	BB+



# Appendix III

## *Summary of Sidecar Issuance*

*As of June 30, 2018*

*Source: Aon Securities Inc., various company filings and press releases.*

## Summary of sidacar issuance

Sidacar	Principal Sponsor	Inception	Lines of business	Size (\$ millions)
Top Layer Re	RenaissanceRe Holdings Ltd., SF	Dec-99	High excess US property cat	100.0
Olympus Re	White Mountains Insurance Group, Ltd.	Dec-01	Property cat, property risk, retro and marine	500.0
DaVinci Re	RenaissanceRe Holdings Ltd., SF	Dec-01	Property cat reinsurance	600.0
Rockridge Re	Montpelier Reinsurance Ltd.	Jun-05	High excess cat retrocessional	90.9
Blue Ocean Re	Montpelier Reinsurance Ltd.	Dec-05	Property cat retrocessional	300.0
Cyrus Re	XL Group Ltd	Dec-05	Property cat reinsurance and retrocessional	525.0
Flatiron Re	Arch Reinsurance Company	Dec-05	Property and marine reinsurance	900.0
Helicon Re	White Mountains Insurance Group, Ltd.	Dec-05	Short-tailed property and marine	146.0
Kaith/K5	Hannover Rück SE	Dec-05	Property cat, property risk, aviation and marine	370.0
Olympus Re II	White Mountains Insurance Group, Ltd.	Jan-06	Property cat, property risk, retro and marine	156.0
Petrel Re	Validus Holdings, Ltd.	May-06	Marine and offshore energy reinsurance contracts	125.0
Starbound Re	RenaissanceRe Holdings Ltd.	May-06	Short-tailed property and marine	310.5
Bay Point Re	Harbor Point Limited	Jun-06	US property, marine, retro and workers' comp	150.0
Sirocco Re	Lancashire Holdings Limited	Jun-06	Marine and offshore energy insurance contracts	75.0
Timicuan Re	RenaissanceRe Holdings Ltd.	Jul-06	Reinstatement premium protection	70.0
Concord Re	Lexington Insurance Company	Aug-06	US commercial property	730.0
Mont Fort Re	Flagstone Reinsurance Holdings, S.A.	Aug-06	Peak zone and ILW	60.0
Cyrus Re	XL Group Ltd	Nov-06	Property cat reinsurance and retrocessional	635.0
Panther Re	Hiscox Inc.	Dec-06	Property cat reinsurance	360.0
Syncro Ltd.	Lloyd's #4242 (Chaucer)	Dec-06	Property cat reinsurance	100.0
Norton Re	Brit plc	Dec-06	Property cat retrocessional	107.7
New Point Re	Harbor Point Limited	Dec-06	Property cat retrocessional	250.0
Triomphe Re	Paris Re	Dec-06	Property cat retrocessional	185.0
Sector Re	Swiss Reinsurance Company Ltd.	Jan-07	Property cat, aviation	220.0
MaRI Ltd.	ACE Tempest Re	Jan-07	Property cat reinsurance	400.0
Syndicate 6105	Ark Underwriting	Jan-07	Property cat reinsurance	40.0
Syndicate 6104	Hiscox Inc.	Jan-07	Property cat reinsurance	69.0
Syndicate 6103	MAP Underwriting	Jan-07	Property cat reinsurance	78.6
Bridge Re	Swiss Reinsurance Company Ltd.	Apr-07	Property cat, aviation	182.5
Starbound Re II	RenaissanceRe Holdings Ltd.	Jun-07	Property cat reinsurance	341.5
Mont Gele Re	Flagstone Reinsurance Holdings, S.A.	Jul-07	Property cat reinsurance	60.0
Norton Re II	Brit plc	Dec-07	Property cat retrocessional	118.2
Sector Re II	Swiss Reinsurance Company Ltd.	Apr-08	Property cat, aviation	150.0
Cyrus Re II	XL Group Ltd	Dec-07	Property cat reinsurance and retrocessional	140.0
New Point Re II	Harbor Point Limited	Dec-07	Property cat retrocessional	100.0
Globe Re	Hannover Rück SE	May-08	Property cat retrocessional	133.0
Kaith/K6	Hannover Rück SE	Mar-09	Property cat, property risk, aviation and marine	180.0
Timicuan Re II	RenaissanceRe Holdings Ltd.	Jun-09	Property cat retrocessional, primarily Florida	60.4

Sidecar	Principal Sponsor	Inception	Lines of business	Size (\$ millions)
Fac Pool Re	Hannover Rück SE	Sep-09	Worldwide facultative	60.0
AlphaCat Re	Validus Holdings, Ltd.	May-11	Property cat reinsurance and retrocessional	180.0
Accordion Re	Lancashire Holdings Limited	Jul-11	Property cat	200.0
New Point Re IV	Alterra Capital Group	Jul-11	Property cat retrocessional	225.0
Upsilon Re	RenaissanceRe Holdings Ltd.	Jan-12	Property cat retrocessional	73.7
SPS 2088 <sup>1</sup>	Catlin Insurance Company Ltd.	Jan-12	Various lines (Syndicate 2003 quota share)	77.5
SPS 6111 <sup>1</sup>	Catlin Insurance Company Ltd.	Jan-12	Various lines (Syndicate 2003 quota share)	93.0
SPS 6112 <sup>1</sup>	Catlin Insurance Company Ltd.	Jan-12	Various lines (Syndicate 2003 quota share)	41.9
PacRe	Validus Holdings, Ltd.	Mar-12	Property cat reinsurance (top layer)	500.0
Timicuan Re III	RenaissanceRe Holdings Ltd.	Jun-12	Property cat retrocessional, primarily Florida	73.7
New Point Re V	Alterra Capital Group	Jun-12	Property cat retrocessional	210.0
AlphaCat Re 2012	Validus Holdings, Ltd.	Jun-12	Property cat reinsurance and retrocessional	70.0
Saltire Re I	Lancashire Holdings Limited	Nov-12	Combined exposure UNL aggregate reinsurance product	250.0
New Point Re V	Alterra Capital Group	Dec-12	Property cat retrocessional	37.0
Upsilon Re II	RenaissanceRe Holdings Ltd.	Jan-13	Worldwide aggregate retrocessional reinsurance	185.0
Harambee Re	Argo Group International Holdings, Ltd.	Jan-13	Portfolio for both insurance and reinsurance	Undisclosed
AlphaCat Re 2013	Validus Holdings, Ltd.	Jan-13	Worldwide property cat reinsurance and retrocession	230.0
Mt. Logan Re	Everest Re Group, Ltd.	Jan-13	Worldwide property cat reinsurance	250.0
K Cession	Hannover Rück SE	Mar-13	Peak property cat and whole account XOL non-marine	328.0
Lorenz Re	Partner Reinsurance Company Ltd.	Mar-13	Worldwide property cat reinsurance for select accounts	75.0
Altair Re	ACE Tempest Re	Apr-13	Worldwide property cat insurance and reinsurance	95.0
Kinesis	Lancashire Holdings Limited	Jul-13	Property, energy, marine, aviation and Lloyd's	270.0
New Ocean Capital Management	XL Group Ltd	Jul-13	Collateralized reinsurance and capital markets	Est. 200
New Point VI	Markel Corporation	Jul-13	Property cat retrocessional	215.0
Blue Capital Re. Holdings	Montpelier Reinsurance Ltd.	Nov-13	Property cat reinsurance	175.0
AlphaCat 2014	Validus Holdings, Ltd.	Dec-13	Worldwide property cat reinsurance	160.0
Atlas Reinsurance X	SCOR Global P&C	Dec-13	Property cat reinsurance	56.0
Silverton Re	Aspen Bermuda Limited	Dec-13	Property cat reinsurance	65.0
Eden Re	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Jan-14	Property cat reinsurance	63.0
Altair Re II	ACE Tempest Re	Jan-14	Worldwide property cat insurance and reinsurance	95.0
Harambee Re	Argo Group International Holdings, Ltd.	Jan-14	Property reinsurance	Undisclosed
Upsilon RFO	RenaissanceRe Holdings Ltd.	Jan-14	Worldwide aggregate cat retrocessional	265.0
Pangaea IX	Transatlantic Reinsurance Company	May-14	Retrocessional	Undisclosed
Silverton Re	Aspen Bermuda Limited	Dec -14	Property cat reinsurance	85.0
Eden Re II	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Dec-14	Property cat reinsurance	75.0
Eden Re I 2015-1	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Dec-14	Property cat reinsurance	Undisclosed
Pangaea Re	Transatlantic Reinsurance Company	Dec-14	Property cat reinsurance	Undisclosed

<sup>1</sup> Converted at £1.00 = \$1.55 as of Jan. 1, 2012. Whole account quota share of the Catlin Syndicate at Lloyd's (Syndicate, 2003).

Sidecar	Principal Sponsor	Inception	Lines of business	Size (\$ millions)
Versutus	Brit plc	Jan-15	Worldwide property cat reinsurance	75.0
AlphaCat 2015	Validus Holdings, Ltd.	Jan-15	Property cat reinsurance	155.0
Sector Re V	Swiss Reinsurance Company Ltd.	Apr-15	Property cat reinsurance	190.7
Lorenz Re	Partner Reinsurance Company Ltd.	Apr-15	Property cat reinsurance	84.0
Silverton Re	Aspen Bermuda Limited	Jan-16	Property cat reinsurance	125.0
Eden Re II	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Jan-16	Property cat reinsurance	360.0
Altair Re IV	ACE Tempest Re	Jan-16	Property cat reinsurance	Undisclosed
K-Cessions	Hannover Ruck SE	Jan-16	Property cat reinsurance	500.0
Versutus	Brit plc	Jan-16	Property cat reinsurance	82.5
Fibonacci Re	Renaissance Re	Dec-16	Property cat reinsurance	140.0
Leo Re	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Dec-16	Property cat reinsurance	200.0
Limestone Re	Liberty Mutual Insurance Company	Dec-16	Property cat insurance and London market specialty lines	160.0
Silverton Re	Aspen Bermuda Limited	Dec-16	Property cat reinsurance	130.0
K-Cessions	Hannover Rück SE	Jan-17	Property cat reinsurance	550.0
Eden Re II	Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft	Jan-17	Property cat reinsurance	258.7
Versutus	Brit plc	Mar-17	Worldwide property cat reinsurance and binder insurance	150.0
Turing Re	Hamilton Re	Jun-17	Property cat reinsurance	65.0
Limestone Re	Liberty Mutual Insurance	Jun-18	US property cat, US homeowners, and London Market specialty insurance	278.0
Fibonacci Re	Renaissance Re	Jun-18	Property cat risks	125.0
Oxbridge Re NS	Oxbridge Re	Jun-18	Property cat risks	2.0
Daedalus I Re	XL Catlin / New Ocean Capital Management	2018	Property cat risks	600.0
Socium Re	Fidelis	Jun-18	Property cat reinsurance	50.0
Versutus	Brit plc	Feb-18	Property cat reinsurance, US binder insurance	187.0
Fibonacci Re	Renaissance Re	Feb-18	Property cat risks	70.0
Mt. Logan Re	Everest Re	Jan-18	Property cat risks	10.3
Harambee Re	Argo Group	Jan-18	Property cat reinsurance	undisclosed
Viribus Re	MS Amlin	Jan-18	Property cat reinsurance	+60.0
K-Cession	Hannover Re	Jan-18	Multi-line retrocession	600.0
Eden Re II	Munich Re	Jan-18	Property cat reinsurance and retrocession	216.3
NCM Re (UK PCC)	Neon Syndicate 2468	Jan-18	Property cat risks and direct & facultative	72.0
Blue Lotus Re	Sompo International	Dec-17	Property cat reinsurance	62.0
Leo Re	Funded by PGGM on behalf of PFZW pension	Dec-17	Property cat risks	140.0
Leo Re	Funded by PGGM on behalf of PFZW pension	Dec-17	Property cat risks	260.0
Thopas Re	Chaucer plc	Dec-17	Property cat reinsurance	95.0
Eden Re II	Munich Re	Dec-17	Property cat reinsurance and retrocession	83.7
Mt. Logan Re	Everest Re	Jul-17	Property cat risks	949.0

# Contact

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