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SUMMARY

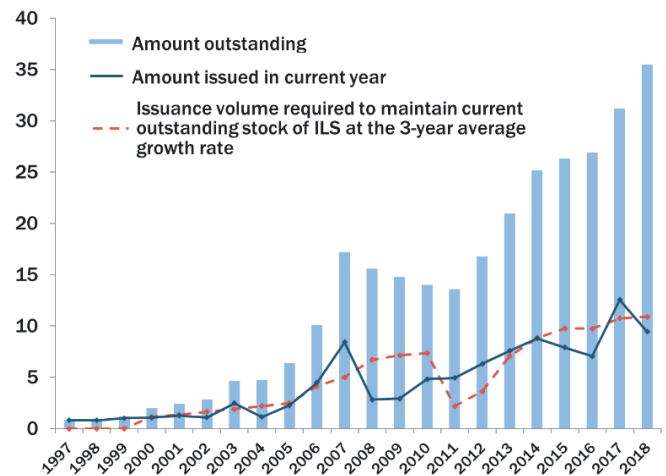
Issuance volume in the third quarter of 2018 rose significantly year over year. There was \$2.5 billion of new risk capital issued via nine catastrophe bond deals – \$1.6 billion higher than the amount issued during the same period last year.

Total issuance of \$12.0 billion for the first three quarters of 2018 is the highest on record for this point in the year. The total nominal amount of outstanding ILS increased to \$36.9 billion.

Bermuda remains the leading jurisdiction for the issuance of catastrophe bonds. ILS catastrophe bonds issued from Bermuda represented 74.2% (\$27.4 of \$36.9 billion) of total outstanding capacity at the end of Q3-2018. Since 2010, 210 Bermuda-based Special Purpose Insurers (SPIs) have been registered and there have been 243 Bermuda domiciled ILS deals issued.

Bermuda is also host to foreign ILS listings on the Bermuda Stock Exchange (BSX) which augments the depth of the secondary market.* A total of 91 ILS (comprising 147 tranches) are listed on the BSX with an aggregate nominal value of \$24.1 billion. Eight new ILS deals totalling \$2.0 billion were listed on the BSX during the quarter while seven deals in the amount of \$1.1 billion matured.

Figure 1. Global Capacity Issues and Outstanding by Year (In US\$ bln)



Source: Swiss Re, Artemis and BMA Staff

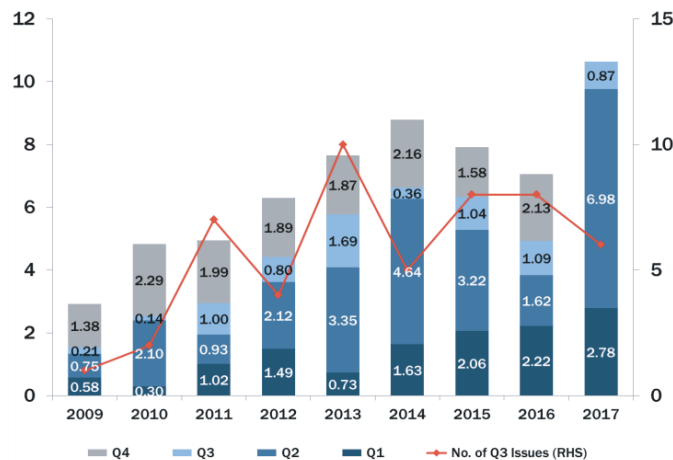
* Notes programmes are excluded from the number of BSX listings. Moreover, the aggregate nominal value of listed ILS does not include ordinary shares issued by (re)insurance funds or participatory notes issued by sidecars.

Primary Market: Global Market Overview

The volume of ILS deals issued in Q3-2018 increased \$1.6 billion year over year. There were nine new bonds issued, totalling \$2.5 billion. Over the same period, seven deals matured with a notional value of \$1.3 billion. The \$1.4 billion of net issuance increased the total stock of outstanding capacity to \$36.9 billion which is a 23% increase year over year. At quarter end, year to date issuance volume totalled \$12 billion; the highest level on record for all years since 2009. (Figure 2).

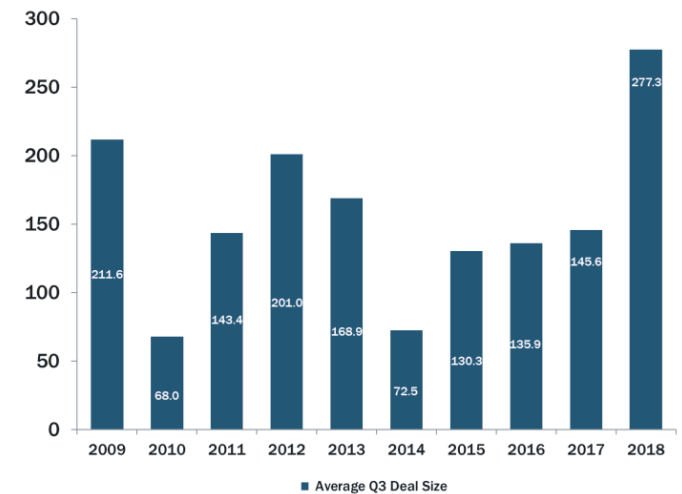
The average deal size for Q3-2018 transactions was higher relative to the same quarter last year. The average deal size during the quarter was \$277.3 million, up from \$145.6 million in Q3-2017 (Figure 3). The largest deal during the quarter, at \$653.3 million in size, was issued by Bellemeade Re 2018-2 Ltd. The deal will provide reinsurance protection to cover a portfolio of mortgage insurance policies related to 357,594 loans underwritten by Arch Capital. Also of note was the \$500 million FloodSmart Re 2018-1 cat bond, which was designed to transfer a portion of the US National Flood Insurance Program (NFIP) risk to Capital Markets. The FloodSmart Re 2018-1 cat bond was the first to provide reinsurance coverage for flood risk. and the first for the NFIP

Figure 2. Quarterly ILS Issuance by Deal Volume (In US\$ bln) and Number of Q3 Deals - Global Market, 2009 to Q3-2018



Source: Artemis and BMA staff calculations.

Figure 3. Global Q3 ILS Issuance (Average Deal Volume), 2009 to 2018 (In US\$ mln)



Source: Artemis and BMA staff calculations.

Indemnity triggers continue to be the most popular trigger-type used in ILS deals. ILS deals with an indemnity trigger represent 60% (\$22.0 billion of \$36.9 billion) of total outstanding volume in the ILS market. This is followed by the industry loss index trigger type which accounts for 26.1% (\$9.6 billion) of outstanding volume (Table IV).

The ILS market remains small relative to traditional (re)insurance business. The \$36.9 billion of risk covered by ILS represents 6.0% of global reinsurer capital which is estimated to be \$605.0 billion.¹ Since 2009, 377 ILS bonds have been issued. Bermuda continued to maintain its position as the leading jurisdiction in ILS over the past quarter accounting for 74.2% (\$27.4 billion of \$36.9 billion) of the outstanding volume in the market. Other countries with significant insurance securitisation activity in this area include the Cayman Islands and Ireland which represent 13.47% (\$5.0 billion) and 4.73% (\$1.7 billion), respectively.

¹ AON Benfield April 2018, "Reinsurance Market Outlook"

Table I: Summary ILS Issuance in Selected Jurisdictions
(Total Issued Deal Volume in US\$ bln)

ILS Issuance by Country of Risk (In US\$ billions)						
Country	2013	2014	2015	2016	2017	2018
Bermuda	4.7	7.7	5.6	5.1	10.1	8.8
Cayman Islands	1.9	0.7	1.1	1.2	1.4	1.5
Ireland	1.0	0.4	0.6	0.8	0.3	—
Other	—	0.03	0.3	—	0.7	1.7

Table II: Summary ILS Issuance in Selected Jurisdictions
(Number of Deals)

Number of Issuances by Country of Risk (SPV)						
Country	2013	2014	2015	2016	2017	2018
Bermuda	25	36	36	30	52	42
Cayman Islands	9	4	6	5	5	4
Ireland	3	2	4	3	2	0
Other	—	1	1	—	3	6

Table III: Triggers in ILS Issuance in Selected Jurisdictions
(Total Issued Deal Volume, 2009 to Q3-2018 in US\$ bln)

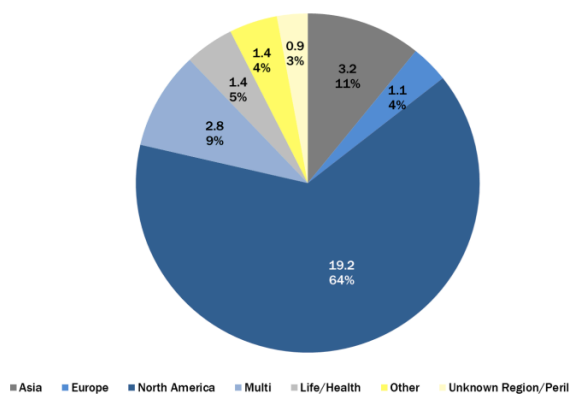
Trigger (In US\$ bln)	Bermuda	Cayman Islands	Ireland	United States & Other
Indemnity	29.0	11.0	1.1	30.0
Industry Loss Index	13.2	2.6	3.5	0.8
Longevity Index	—	0.1	—	—
Medical benefit ratio Index	—	1.4	—	—
Modelled Loss	0.9	0.6	—	—
Mortality Index	—	0.8	0.2	0.3
Multiple	0.2	0.6	0.3	0.2
Parametric	2.0	0.6	—	2.3
Parametric Index	—	0.7	0.2	—
Unknown	2.3	0.01	—	—

Table IV: Triggers in ILS Issuance in Selected Jurisdictions
(Outstanding Deal Volume, end Q3-2018 in US\$ bln)

Trigger (In US\$ bln)	Bermuda	Cayman Islands	Ireland	United States & Other
Indemnity	17.0	4.3	0.8	29.8
Industry Loss Index	8.6	—	0.7	0.3
Longevity Index	—	—	—	—
Medical benefit ratio index	—	0.6	—	—
Modelled Loss	0.3	—	—	—
Mortality Index	—	0.1	0.2	0.3
Multiple	—	—	—	—
Parametric	0.5	—	—	2.2
Parametric Index	—	—	—	—
Unknown	1.1	—	—	—

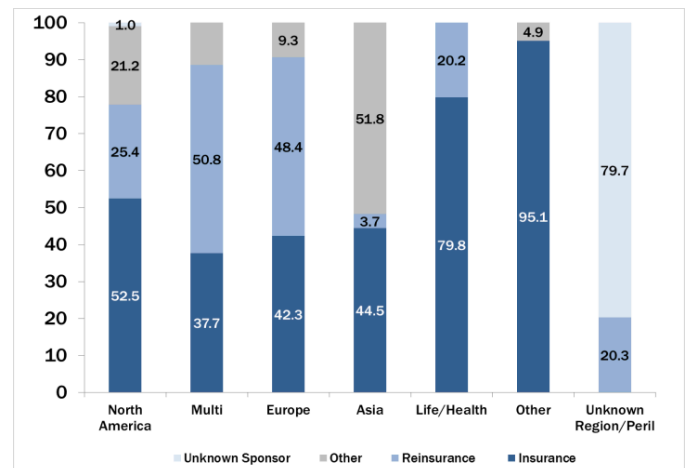
The majority of ILS covers North American perils which account for 64.6% (\$23.8 billion) of total outstanding volume (Figures 4 and 5).² Asian and multi-regional perils account for 10.5% (\$3.9 billion) and 10.2% (\$3.7 billion) of the market, respectively. Primary insurers sponsored 50.6% of total coverage for North American perils (\$12.1 billion of \$23.8 billion). In contrast, the sponsor-type for 35.6% of the volume for Asian bonds falls under the “Other” category (\$1.4 billion of \$3.9 billion) which includes government agencies and pooled associations/cooperatives. Multi-regional perils account for 10.0% (\$3.7 billion) of the market of which 53.8% (\$2.0 billion) is sponsored by reinsurers. Following the increase in privately placed deals, for which information is sometimes limited, the region of coverage is unknown for 3.0% (\$1.0 billion) of the market.

Figure 4. Total Outstanding Volume of ILS by Region/Peril, end Q3-2018 (In US\$ bln)



Source: Artemis and BMA staff calculations.

Figure 5. Outstanding Coverage per Region/Peril by ILS Sponsor Type, end Q3-2018 (In %)



Source: Artemis and BMA staff calculations.

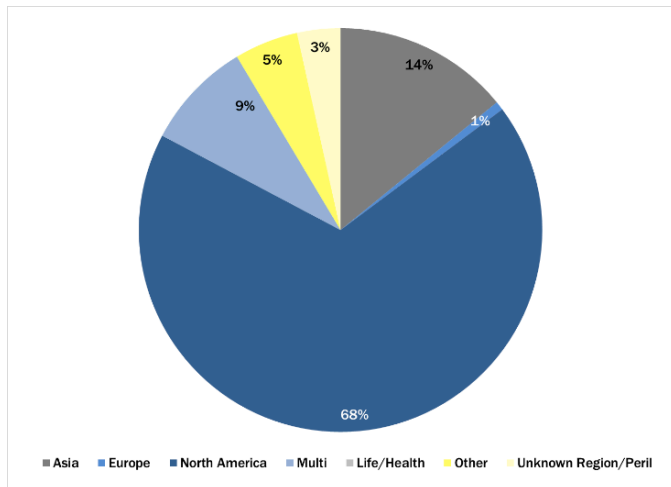
² The proportion of coverage for this region relative to the total market is actually higher given that most multi-regional bonds include US events.

Primary Market: Domestic Issuance

Bermuda remains the leading jurisdiction for the issuance of ILS. Bermuda-based SPIs accounted for all catastrophe bond issuances in the third quarter. Overall, Bermuda-issued ILS catastrophe bonds represent 74% (\$27.4 billion) of total outstanding capacity at the end of Q3-2018.

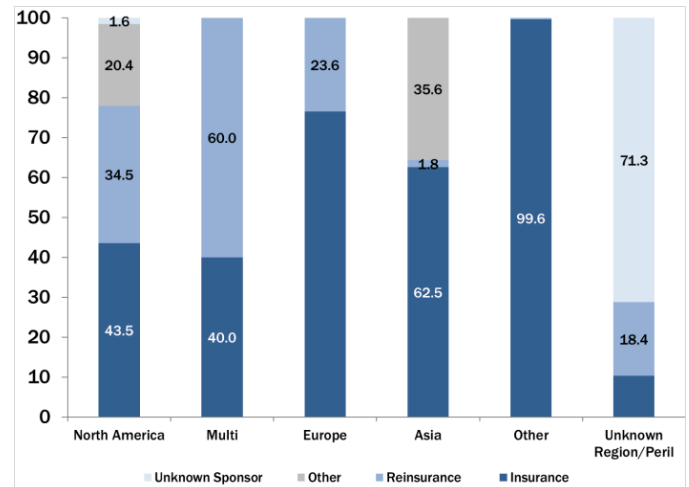
The BSX accounted for 65% of the global market capitalisation of ILS at the end of Q3-2018. A total of 91 ILS deals (comprising 147 tranches) are listed on the BSX with an aggregate nominal value of approximately \$24.1 billion,³ of which \$1.3 billion (5.0%) are issued by vehicles domiciled in Ireland and the United States. Eight deals issued during the quarter were listed on the BSX, with a notional value of \$2.0 billion.

Figure 6. Quarterly ILS Issuance by Volume (In US\$ bln) and Number of Q3 Deals - Domestic, 2010 to Q3-2018



Source: Artemis and BMA staff calculations.

Figure 7. Domestic Q3 ILS Issuance (Average Deal Volume), 2011 to 2018 (In US\$ mln)



Source: Artemis and BMA staff calculations.

The Bermuda market is a leader in the specialisation of cat bonds, with the majority of transactions based on indemnity triggers (Table IV). Since the first Bermuda ILS deal was issued in 2010, an indemnity trigger has accounted for 63.2% (\$16.4 billion of \$26.0 billion) of outstanding deal volume for transactions issued by Bermuda-based SPIs. This is followed by the industry loss index trigger type which accounts for 30.0% (\$7.7 billion) of the outstanding volume for Bermuda-issued deals. During the quarter 66.1% (\$2.4 billion) of the Bermuda-issued deal volume had an indemnity trigger and 29% (\$1.0 billion) were industry loss index.

North American perils by direct underwriters account for the largest share of outstanding volume for Bermuda-issued ILS (Figures 8 and 9). Primary insurers sponsored 42.2% of total coverage for those bonds (\$7.3 billion of \$17.3 billion) while reinsurers sponsored 33.6% (\$5.8 billion). Primary insurers also ceded 34.5% (\$750.0 million) and 61.7% (\$2.4 billion) of multi-region and Asian risks, respectively. Tables I-IV provide a summary of ILS issuance by volume and number of deals in key jurisdictions, as well as the distribution of trigger types.

³ This does not include notes programmes, ordinary shares issued by (re)insurance funds and participating notes issued by sidecar vehicles.

Secondary Market: Price Indices

Given the large footprint of P&C insurance risk in the ILS market, this section reviews the overall market performance of outstanding catastrophe (cat) bonds based on three of the most commonly used benchmark indices (Swiss Re Cat Bond Total Return Index, Aon Benfield Securities Cat Bond Total Return, Swiss Re Cat Bond Price Return Index).

Annualised volatility fell in the third quarter of 2017 following an active hurricane season and an earthquake off the coast of Mexico. Table V provides a summary of selected indicators of market performance over the last six quarters (Q3-2017 to Q3-2018) comparing the recent development of the Swiss Re Cat Bond Total Return Index and the Aon Benfield Securities Cat Bond Total Return Index as the global market benchmarks.⁴ During the third quarter, the two Cat Bond Total Return indices recorded returns of 0.29% (down from positive 0.48% during the previous quarter) and 0.53% (down from positive 0.70%) respectively. The annualised return volatility of each index fell comparison to the previous quarter, down to 1.66% (from 2.22%) and 1.56% (from 2.10%) respectively, during the quarter. Figure 10 shows the quarterly closing levels of the two total return indices by Swiss Re and Aon Benfield and illustrates the valuation gain of a broad cat portfolio since Q1-2006 (as base year) and the corresponding price return index as suitable relative benchmarks to other investments. Figure 11 shows the normalised return volatility over a 12-month rolling window. Figure 10 reflects that while capital gains have been positive since 2006, the total return indices fell sharply in Q3-2017 but have since rebounded. Figure 11 highlights that during the same time, the annualised return volatility (as a measure of risk) dropped significantly until it spiked during the active hurricane season of Q3 2017, since then volatility levels have fallen.

Figure 10. ILS Total Return and Price Return Benchmark Indices, Q1-2006 – Q3-2018 (In index points)

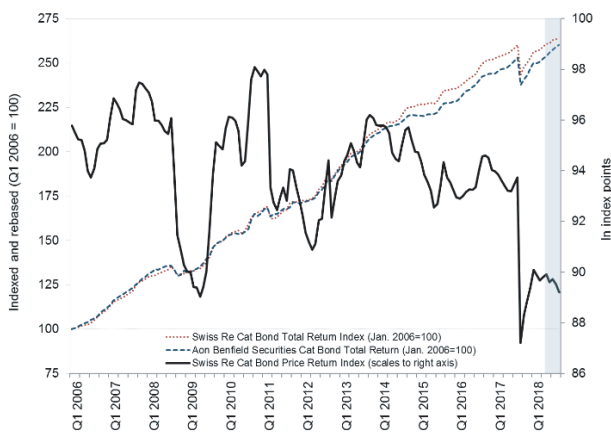
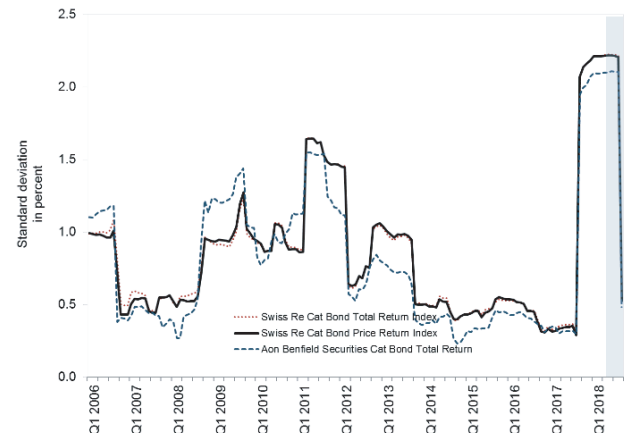


Figure 11. ILS Total Return and Price Return Benchmark Indices: Annualised Return Volatility, Q-1 2006 – Q3-2018 (In %)



⁴ The Swiss Re indices were launched in June 2007 and comprise a series of performance indices constructed to track the price return and total rate of return of performance of all outstanding dollar-denominated Cat bonds. The main index is divided into 18 different sub-indices, of which the most important ones are “Single-Peril US Wind Cat Bonds”, “Single-Peril California Earthquake Cat Bonds” and “BB Cat Bonds” (Standard & Poor’s-rated). The index is based on Swiss Re pricing indications only and base-weighted back to January 2002. Three years after Swiss Re, Aon Benfield Securities, the securities and investment banking operation of Aon Benfield, launched its own ILS indices in 2010. These indices are base-weighted back to December 2000 and track the performance of Cat bonds in four different baskets: “All Bond”, “BB-rated Bond”, “US Hurricane Bond”, and “US Earthquake Bond”.

Table V. Selected ILS Market Performance Indicators, Q1-2017 to Q3-2018

Selected ILS Market Performance Indicators

In % unless indicated otherwise

	2017		2018		
	Q3	Q4	Q1	Q2	Q3
Price Return 1/					
Swiss Re Cat Bond Total Return Index	-1.71	1.31	0.59	0.48	0.29
Swiss Re Cat Bond Price Return Index (scales to right axis)	-2.13	0.82	0.12	-0.03	-0.15
Aon Benfield Securities Cat Bond Total Return	-1.53	1.32	0.49	0.70	0.53
Return Volatility					
<i>Annualised Standard Deviation 2/</i>					
Swiss Re Cat Bond Total Return Index	0.91	2.16	2.21	2.22	1.66
Swiss Re Cat Bond Price Return Index (scales to right axis)	0.90	2.16	2.21	2.22	1.65
Aon Benfield Securities Cat Bond Total Return	0.86	2.03	2.09	2.10	1.56
<i>Normalised Squared Returns (In standard deviations) 3/</i>					
Swiss Re Cat Bond Total Return Index	1.42	-0.18	-0.30	-0.34	-0.33
Swiss Re Cat Bond Price Return Index (scales to right axis)	0.99	-0.25	-0.29	-0.31	-0.31
Aon Benfield Securities Cat Bond Total Return	1.69	-0.16	-0.31	-0.34	-0.34

Notes:

1/ quarterly average of month-on-month change of last prices.

2/ quarterly average of the 12-month standard deviation of the logarithmic

3/ quarterly average of the 12-month moving average of squared month-on-month changes of last prices, normalised over a rolling window of 12 months; a positive (negative) value indicates above (below) average performance conditional on return volatility.

Global ILS Issuance

Table VI. Transaction Overview of Global ILS Issuance, Q3-2017 to Q3-2018

	Sponsor	Short Name	Issue Date	Maturity Date	Amount Issued (\$mln)	Region/Peril Covered	Trigger	Country of Issuance	BSX Listings	
Q3 2017	Tokio Millenium Re AG	HOTARU 2	3-Jul-17	7-Aug-19	71	Asia	Unknown	Bermuda	✓	
	Pandemic Emergency Financing Facility (PEF)	IBRD CAR 111-112	7-Jul-17	15-Jul-20	320	Multi	Parametric	Other		
	AmTrust Financial Services	FORTIUS RE II LTD (2017-1)	19-Jul-17	7-Jul-21	100	North America	Indemnity	Bermuda	✓	
	Unknown cedant	ARTEX SAC LTD - SERIES EX NOTES	20-Jul-17	8-Jun-18	8	Unknown Region/Peril	Unknown	Bermuda	✓	
	FONDEN / Agrosemex S.A.	IBRD / FONDEN 2017	4-Aug-17	11-Aug-20	360	North America	Parametric	Other		
Q4 2017	Unknown cedant	DOM RE IC LTD 2017	4-Aug-17	4-Aug-23	15	North America	Indemnity	Other		
	Arch Capital Group Ltd.	BELLEMEADE RE 2017-1 LTD	1-Oct-17	25-Oct-27	368	Other	Indemnity	Bermuda	✓	
	XL Bermuda Ltd.	GALILEO RE LTD (2017-1)	3-Nov-17	6-Jan-20	150	North America	Industry Loss Index	Bermuda	✓	
	USAA	RESIDENTIAL REINSURANCE	17-Nov-17	6-Dec-21	295	North America	Indemnity	Cayman Islands		
	California Earthquake Authority	URSA RE LTD (2017-2)	30-Nov-17	10-Dec-20	400	North America	Indemnity	Bermuda	✓	
	Unknown cedant	ARTEX SAC LTD SERIES GX NOTES	1-Dec-17	5-Apr-19	50	North America	Unknown	Bermuda	✓	
	Unknown cedant	LI RE (2017-1)	12-Dec-17	10-Apr-19	10	North America	Unknown	Bermuda	✓	
	Allianz Risk Transfer	MARKET RE LTD (2017-2)	14-Dec-17	30-May-18	15	Europe	Parametric	Bermuda	✓	
	Covea Group	HEXAGON REINSURANCE DAC (2017-1)	15-Dec-17	19-Jan-22	106	Europe	Indemnity	Ireland		
	Unknown cedant	SEASIDE RE 2018-1	19-Dec-17	15-Jan-19	20	North America	Unknown	Bermuda	✓	
	Unknown cedant	SEASIDE RE 2018-3	22-Dec-17	15-Jan-19	27	North America	Unknown	Bermuda	✓	
	Validus Holdings	TAILWIND RE LTD (2017-1)	27-Dec-17	8-Jan-22	400	Multi	Industry Loss Index	Bermuda	✓	
	Unknown cedant	SEASIDE RE 2018-2	29-Dec-17	15-Jan-19	50	North America	Unknown	Bermuda	✓	
	Unknown cedant	DODEKA XIV	29-Dec-17	8-Jan-19	34	North America	Industry Loss Index	Bermuda	✓	
	Q1 2018	Aetna	VITALITY RE IX LTD. (SERIES 2018-1)	1-Jan-18	10-Jan-22	200	North America	Indemnity	Insurance	
Unknown		FIBONACCI REINSURANCE	10-Jan-18	10-Jan-19	70	Unknown Region/Peril	Unknown	Bermuda	✓	
Terra Brasis Re		ALPHA TERRA VALIDUS II	1-Jan-18	15-Jan-19	5	Other	Indemnity	Bermuda	✓	
Unknown cedant		RESILIENCE RE LTD. (SERIES 1812A)	1-Feb-18	8-Jan-19	60	Unknown Region/Peril	Unknown	Bermuda	✓	
Unknown		PANTHERA RE LIMITED (SERIES 2018-1)	1-Feb-18	9-Mar-20	100	Unknown Region/Peril	Unknown	Bermuda	✓	
Unknown		JUNGFRAU IC LIMITED 2018	1-Feb-18		15	Unknown Region/Peril	Indemnity	Guemsey		
Republic of Peru		IBRD CAR 120	1-Feb-18	15-Feb-21	200	Multi	Parametric	Other		
FONDEN / AGROSEMEX S.A.		IBRD CAR 118-119	1-Feb-18	14-Feb-21	260	Multi	Parametric	Other		
Republic of Colombia		IBRD CAR 117	1-Feb-18	15-Feb-21	400	Other	Parametric	Other		
Republic of Chile		IBRD CAR 116	1-Feb-18	15-Feb-21	500	Other	Parametric	Other		
State Farm		MERNA RE LTD. (SERIES 2018-1)	1-Mar-18	8-Apr-21	300	North America	Indemnity	Bermuda	✓	
Allstate		SANDERS RE LTD. (SERIES 2018-1)	1-Mar-18	7-Apr-22	500	North America	Indemnity	Bermuda	✓	
Tokio Marine & Nichido Fire Insurance Co. Ltd.		KIZUNA RE II LTD. (SERIES 2018-1)	1-Mar-18	11-Apr-23	200	Asia	Indemnity	Bermuda	✓	
Mitsui Sumitomo Insurance Co. Ltd., Aioi Nissay Dowa Insuranc		AKIBARE RE LTD. (SERIES 2018-1)	1-Mar-18	7-Apr-22	320	Asia	Indemnity	Bermuda	✓	
Essent Guaranty		RADNOR RE 2018-1 LTD.	1-Mar-18	25-Mar-28	424	North America	Indemnity	Bermuda	✓	
Unknown cedant		RESILIENCE RE LTD. (SERIES 1811A)	1-Mar-18	8-Jan-19	53	Unknown Region/Peril	Unknown	Bermuda	✓	
Zenkyoren		NAKAMA RE LTD. (SERIES 2018-1)	1-Mar-18	13-Apr-23	700	Asia	Indemnity	Bermuda	✓	
United Property & Casualty Insurance, Family Security Insuranc		AMMOR RE II LTD. (SERIES 2018-1)	1-Apr-18	8-Jun-20	100	North America	Indemnity	Bermuda	✓	
Q2 2018		Arch Capital Group Ltd.	BELLEMEADE RE 2018-1 LTD.	1-Apr-18	20-Apr-28	375	North America	Indemnity	Bermuda	✓
		Build America Mutual Assurance Company	FIDUS RE LTD. (SERIES 2018-1)	1-Apr-18	31-Mar-30	100	North America	Indemnity	Bermuda	✓
	Safepoint Insurance Company	MANATEE RE II LTD. (SERIES 2018-1)	3-Apr-18	7-Jun-21	200	North America	Indemnity	Bermuda	✓	
	Estera	RESILIENCE RE LTD. (SERIES 1841A)	9-Apr-18	8-Apr-19	150	Unknown Region	Unknown	Bermuda	✓	
	American Integrity Insurance Company of Florida, Inc. via Han	INTEGRITY RE LTD. (SERIES 2018-1)	23-Apr-18	10-Jun-22	79	North America	Indemnity	Bermuda	✓	
	Aspen Insurance	KENDALL RE LTD. (SERIES 2018-1)	25-Apr-18	6-May-21	225	North America	Industry Loss Index	Bermuda	✓	
	Louisiana Citizens	PELICAN IV RE LTD. (SERIES 2018-1)	27-Apr-18	7-May-21	100	North America	Indemnity	Bermuda	✓	
	Everest Re	KILIMANJARO RE LTD. (SERIES 2018-1)	30-Apr-18	6-May-22	263	North America	Industry Loss Index	Bermuda	✓	
	Everest Re	KILIMANJARO RE LTD. (SERIES 2018-2)	30-Apr-18	6-May-22	263	North America	Industry Loss Index	Bermuda	✓	
	Unknown	DODEKA XIII	1-May-18	9-May-19	24	North America	Industry Loss Index	Bermuda	✓	
	U.S. Coastal Insurance Company	ECLIPSE RE LTD. (SERIES 2018-01A)	1-May-18	1-May-19	53	North America	Indemnity	Bermuda	✓	
	USAA	RESIDENTIAL REINSURANCE 2018 LTD. (S	1-May-18	1-May-22	300	North America	Indemnity	Cayman Islands		
	SCOR Global P&C SE	ATLAS CAPITAL UK 2018 PLC (SERIES 20	3-May-18	7-Jun-22	300	Multi	Industry Loss Index	Other		
	Nationwide Mutual Insurance Co.	CAELUS RE V LTD. (SERIES 2018-1)	10-May-18	7-Jun-21	450	North America	Indemnity	Cayman Islands		
	Citizens Property Insurance	EVERGLADES RE II LTD. (SERIES 2018-1)	15-May-18	4-May-21	250	North America	Indemnity	Bermuda	✓	
	Transatlantic Reinsurance Co.	BOWLINE RE LTD. (SERIES 2018-1)	16-May-18	23-May-22	250	North America	Industry Loss Index	Bermuda	✓	
	Travelers	LONG POINT RE III LTD. (SERIES 2018-1)	24-May-18	1-Jun-22	500	North America	Indemnity	Cayman Islands		
	Texas Windstorm Insurance Association (TWIA) / Hannover Re	ALAMO RE LTD. (SERIES 2018-1)	30-May-18	7-Jun-21	400	North America	Indemnity	Bermuda	✓	
	Unknown	DODEKA XV	1-Jun-18	9-May-19	9	North America	Industry Loss Index	Bermuda	✓	
	Unknown	ECLIPSE RE LTD. (SERIES 2018-02A)	1-Jun-18	1-May-19	98	Unknown Region	Indemnity	Bermuda	✓	
Zurich Insurance Co. Ltd.	OPERATIONAL RE II LTD.	1-Jun-18	8-Apr-21	148	Europe	Indemnity	Bermuda	✓		
Unknown	MARKET RE LTD. (SERIES 2018-1)	11-Jun-18	4-Jun-19	84	North America	Indemnity	Bermuda	✓		
Estera	RESILIENCE RE LTD. (SERIES 1861A)	11-Jun-18	7-Jun-19	37	Unknown Region	Unknown	Bermuda	✓		
Southern Oak Insurance Company	OAK LEAF RE LTD. (SERIES 2018-1)	14-Jun-18	4-Jun-19	45	North America	Indemnity	Bermuda	✓		
Frontline Insurance	FRONTLINE RE LTD. (SERIES 2018-1)	26-Jun-18	6-Jul-22	350	North America	Indemnity	Bermuda	✓		
California Earthquake Authority	Ursa Re Ltd. (Series 2018-1)	14-Sep-18	24-Sep-21	250	North America	Indemnity	Bermuda	✓		
Q3 2018	Arch Capital Group Ltd.	Bellemeade Re 2018-2 Ltd.	1-Aug-18	1-Aug-28	653	North America	Industry Loss Index	Bermuda	✓	
	Unknown	Dodeka XVII	6-Jun-18	27-Dec-18	18	North America	Industry Loss Index	Bermuda	✓	
	PG&E Corporation	Cal Phoenix Re Ltd. (Series 2018-1)	2-Aug-18	13-Aug-21	200	North America	Indemnity	Bermuda	✓	
	FEMA / NFIP via Hannover Re	FoodSmart Re Ltd. (Series 2018-1)	30-Jul-18	6-Aug-21	500	North America	Indemnity	Bermuda	✓	
	National Mortgage Insurance Corporation	Oakton Re II Ltd.	1-Jul-18	1-Jul-28	265	North America	Indemnity	Bermuda	✓	
	Hannover Rück SE / Oak Tree Assurance, Ltd.	Acorn Re Ltd. (Series 2018-1)	10-Jul-18	10-Nov-21	400	North America	Parametric	Bermuda	✓	
	Artex SAC	Dodeka XVI	6-Jul-18	27-Dec-18	10	North America	Industry Loss Index	Bermuda	✓	
AXIS Capital Holdings Ltd. subsidiaries	Northshore Re II Ltd. (Series 2018-1)	6-Jul-18	8-Jul-22	200	Multi	Industry Loss Index	Bermuda	✓		

Bermuda: Overview of ILS Listings at the Bermuda Stock Exchange (BSX)

Table VII. Transaction Overview of BSX-listed ILS Issuance, 2015 – 2017

	Short Name	Issue Date	Maturity Date	Amount Issued (\$mln)	Region/Peril Covered	Trigger Type	Country of Issuance (SPI)
2016	GALILEO RE LTD 2016-1	27-Jan-16	8-Jan-19	300	Multi	Industry Loss Index	Bermuda
	CITRUS RE LTD 2016-1	24-Feb-16	25-Feb-19	250	North America	Indemnity	Bermuda
	MERNA RE LTD 2016-1	3-Mar-16	8-Apr-19	300	North America	Indemnity	Bermuda
	MANATEE RE LTD 2016-1	10-Mar-16	13-Mar-19	75	North America	Indemnity	Bermuda
	AKIBARE II LTD 2016-1	14-Mar-16	7-Apr-20	200	Asia	Indemnity	Bermuda
	AZORA RE LTD 2016-1	29-Mar-16	7-Apr-20	220	Asia	Indemnity	Bermuda
	BELLEMEADE RE II LTD 2016-1	9-May-16	25-Apr-26	299	Other	Indemnity	Bermuda
	QUEENSTREET XII RE	20-May-16	8-Apr-20	190	Multi	Industry Loss Index	Ireland
	OPERATIONAL RE LTD	26-May-16	8-Apr-21	218	Other	Indemnity	Bermuda
	FIRST COAST RE LTD 2016-1	31-May-16	7-Jun-19	75	North America	Indemnity	Bermuda
	BLUE HALO RE LTD 2016-1	16-Jun-16	21-Jun-19	185	North America	Industry Loss Index	Bermuda
	BLUE HALO RE LTD 2016-2	21-Jul-16	26-Jul-19	225	North America	Industry Loss Index	Bermuda
	NAKAMA RE LTD 2016-1	29-Sep-16	13-Oct-21	700	Asia	Indemnity	Bermuda
	URSA RE LTD 2016-1	30-Nov-16	10-Dec-19	500	North America	Indemnity	Bermuda
	BONANZA RE LTD 2016-1	1-Dec-16	3-Dec-19	200	North America	Indemnity	Bermuda
	HORSE CAPITAL DAC	19-Dec-16	15-Jun-20	265	Other	Indemnity	Ireland
	GALILEI RE LTD 2016-1	28-Dec-16	8-Jan-20	750	Multi	Industry Loss Index	Bermuda
	RESILIENCE RE LTD (1712)	3-Jan-17	8-Jan-19	187	Unknown Region/Peril	Unknown	Bermuda
	GALILEI RE LTD 2017-1	11-Jan-17	8-Jan-21	525	Multi	Industry Loss Index	Bermuda
	BUFFALO RE LTD 2017-1	10-Mar-17	7-Apr-20	165	North America	Indemnity	Bermuda
	CITRUS RE LTD 2017-1	13-Mar-17	18-Mar-20	125	North America	Indemnity	Bermuda
	AZORA RE LTD 2017-1	29-Mar-17	7-Apr-21	480	Asia	Indemnity	Bermuda
	SANDERS RE LTD 2017-1	30-Mar-17	6-Dec-21	375	North America	Indemnity	Bermuda
ECLIPSE RE LTD 2017-01A	31-Mar-17	1-Apr-19	20	Unknown Region/Peril	Unknown	Bermuda	
MERNA RE LTD 2017-1	31-Mar-17	8-Apr-20	300	North America	Indemnity	Bermuda	
KILIMANJARO II RE LTD 2017-1	13-Apr-17	20-Apr-21	950	North America	Industry Loss Index	Bermuda	
KILIMANJARO I RE LTD 2017-1	13-Apr-17	21-Apr-22	300	North America	Industry Loss Index	Bermuda	
PELICAN IV RE LTD 2017-1	19-Apr-17	5-May-20	100	North America	Indemnity	Bermuda	
FIRST COAST RE LTD 2017-1	25-Apr-17	7-Jun-21	175	North America	Indemnity	Bermuda	
INTEGRITY RE LTD 2017-1	2-May-17	10-Jun-20	210	North America	Indemnity	Bermuda	
OAKTOWN RE LTD 2017-1	2-May-17	25-Apr-27	211	Other	Indemnity	Bermuda	
TORREY PINES RE LTD 2017-1	8-May-17	9-Jun-20	166	North America	Indemnity	Bermuda	
EVERGLADES RE II LTD 2017-1	9-May-17	8-May-20	300	North America	Indemnity	Bermuda	
CITRUS RE LTD 2017-2	11-May-17	18-Mar-20	35	North America	Indemnity	Bermuda	
URSA RE LTD 2017-1	16-May-17	27-May-20	925	North America	Indemnity	Bermuda	
METHOCAT RE LTD	22-May-17	8-May-20	125	North America	Parametric	Bermuda	
ALAMO RE LTD 2017-1	30-May-17	8-Jun-20	400	North America	Indemnity	Bermuda	
SANDERS RE LTD 2017-2	31-May-17	5-Jun-20	200	North America	Indemnity	Bermuda	
RIVERFRONT RE LTD 2017-1	31-May-17	15-Jan-21	190	North America	Indemnity	Bermuda	
CRANBERRY RE LTD 2017-1	12-Jun-17	13-Jul-20	350	North America	Indemnity	Bermuda	
SPECTRUM CAPITAL LTD 2017-1	19-Jun-17	8-Jun-21	430	North America	Industry Loss Index	Bermuda	
LION II RE DAC	28-Jun-17	15-Jul-21	228	Europe	Indemnity	Ireland	
NORTHSHORE RE II LTD 2017-1	29-Jun-17	6-Jul-20	350	North America	Industry Loss Index	Bermuda	
WINDMILL RE LTD 2017-1	30-Jun-17	5-Jul-20	46	Europe	Indemnity	Bermuda	
Tokio Millennium Re AG	3-Jul-17	7-Aug-19	71	Asia	Unknown	Bermuda	
AmTrust Financial Services	19-Jul-17	7-Jul-21	100	North America	Indemnity	Bermuda	
BELLEMEADE RE 2017-1 LTD	1-Oct-17	25-Oct-27	368	Other	Indemnity	Bermuda	
GALILEO RE LTD (2017-1)	3-Nov-17	8-Jan-20	150	North America	Industry Loss Index	Bermuda	
URSA RE LTD (2017-2)	30-Nov-17	10-Dec-20	400	North America	Indemnity	Bermuda	
ARTEX SAC LTD SERIES GX NOTES	1-Dec-17	5-Apr-19	50	North America	Unknown	Bermuda	
LI RE (2017-1)	12-Dec-17	10-Apr-19	10	North America	Unknown	Bermuda	
SEASIDE RE 2018-1	19-Dec-17	15-Jan-19	20	North America	Unknown	Bermuda	
SEASIDE RE 2018-3	22-Dec-17	15-Jan-19	27	North America	Unknown	Bermuda	
TAILWIND RE LTD (2017-1)	27-Dec-17	8-Jan-22	400	Multi	Industry Loss Index	Bermuda	
SEASIDE RE 2018-2	29-Dec-17	15-Jan-19	50	North America	Unknown	Bermuda	
DODEKA XIV	29-Dec-17	8-Jan-19	34	North America	Industry Loss Index	Bermuda	
Fibonacci Reinsurance	10-Jan-18	10-Jan-19	70	Unknown Region/Peril	Unknown	Bermuda	
Alpha Terra Valudus II	1-Jan-18	15-Jan-19	5	Other	Indemnity	Bermuda	
Resilience Re Ltd. (Series 1812A)	1-Feb-18	8-Jan-19	60	Unknown Region/Peril	Unknown	Bermuda	
Panthera Re Limited (Series 2018-1)	1-Feb-18	9-Mar-20	100	Unknown Region/Peril	Unknown	Bermuda	
Merna Re Ltd. (Series 2018-1)	1-Mar-18	8-Apr-21	300	North America	Indemnity	Bermuda	
Sanders Re Ltd. (Series 2018-1)	1-Mar-18	7-Apr-22	500	North America	Indemnity	Bermuda	
Kizuna Re II Ltd. (Series 2018-1)	1-Mar-18	11-Apr-23	200	Asia	Indemnity	Bermuda	
Akibare Re Ltd. (Series 2018-1)	1-Mar-18	7-Apr-22	320	Asia	Indemnity	Bermuda	
Radhon Re 2018-1 Ltd.	1-Mar-18	25-Mar-28	424	North America	Indemnity	Bermuda	
Resilience Re Ltd. (Series 1811A)	1-Mar-18	8-Jan-19	53	Unknown Region/Peril	Unknown	Bermuda	
Nakama Re Ltd. (Series 2018-1)	1-Mar-18	13-Apr-23	700	Asia	Indemnity	Bermuda	
Armor Re II Ltd. (Series 2018-1)	1-Apr-18	8-Jun-20	100	North America	Indemnity	Bermuda	
Bellemeade Re 2018-1 Ltd.	1-Apr-18	20-Apr-28	375	North America	Indemnity	Bermuda	
Fidus Re Ltd. (Series 2018-1)	1-Apr-18	31-Mar-30	100	North America	Indemnity	Bermuda	
Manatee Re Ltd. (Series 2018-1)	3-Apr-18	7-Jun-21	200	North America	Indemnity	Bermuda	
Resilience Re Ltd. (Series 1841A)	9-Apr-18	8-Apr-19	150	Unknown Region	Unknown	Bermuda	
Integrity Re Ltd. (Series 2018-1)	23-Apr-18	10-Jun-22	79	North America	Indemnity	Bermuda	
Kendall Re Ltd. (Series 2018-1)	25-Apr-18	6-May-21	225	North America	Industry Loss Index	Bermuda	
Pelican IV Re Ltd. (Series 2018-1)	27-Apr-18	7-May-21	100	North America	Indemnity	Bermuda	
Kilimanjaro Re Ltd. (Series 2018-1)	30-Apr-18	6-May-22	263	North America	Industry Loss Index	Bermuda	
Kilimanjaro Re Ltd. (Series 2018-2)	30-Apr-18	6-May-22	263	North America	Industry Loss Index	Bermuda	
Dodeka XIII	1-May-18	9-May-19	24	North America	Industry Loss Index	Bermuda	
Eclipse Re Ltd. (Series 2018-01A)	1-May-18	1-May-19	53	North America	Indemnity	Bermuda	
Everglades Re II Ltd. (Series 2018-1)	15-May-18	4-May-21	250	North America	Indemnity	Bermuda	
Bowline Re Ltd. (Series 2018-1)	16-May-18	23-May-22	250	North America	Industry Loss Index	Bermuda	
Alamo Re Ltd. (Series 2018-1)	30-May-18	7-Jun-21	400	North America	Indemnity	Bermuda	
Dodeka XV	1-Jun-18	9-May-19	9	North America	Industry Loss Index	Bermuda	
Eclipse Re Ltd. (Series 2018-02A)	1-Jun-18	1-May-19	98	Unknown Region	Indemnity	Bermuda	
Operational Re II Ltd.	1-Jun-18	8-Apr-21	148	Europe	Indemnity	Bermuda	
Resilience Re Ltd. (Series 1861A)	11-Jun-18	7-Jun-19	37	Unknown Region	Unknown	Bermuda	
Frontline Re Ltd. (Series 2018-1)	26-Jun-18	6-Jul-22	350	North America	Indemnity	Bermuda	
Ursa Re Ltd. (Series 2018-1)	14-Sep-18	24-Sep-21	250	North America	Indemnity	Bermuda	
Bellemeade Re 2018-2 Ltd.	1-Aug-18	1-Aug-28	653	North America	Industry Loss Index	Bermuda	
Dodeka XVII	6-Jun-18	27-Dec-18	18	North America	Industry Loss Index	Bermuda	
Cal Phoenix Re Ltd. (Series 2018-1)	2-Aug-18	13-Aug-21	200	North America	Indemnity	Bermuda	
Oaktown Re II Ltd.	1-Jul-18	1-Jul-28	265	North America	Indemnity	Bermuda	
Acorn Re Ltd. (Series 2018-1)	10-Jul-18	10-Nov-21	400	North America	Parametric	Bermuda	
Dodeka XVI	6-Jul-18	27-Dec-18	10	North America	Industry Loss Index	Bermuda	
Northshore Re II Ltd. (Series 2018-1)	6-Jul-18	8-Jul-22	200	Multi	Industry Loss Index	Bermuda	
Ursa Re Ltd. (Series 2018-1)	14-Sep-18	24-Sep-21	250	North America	Indemnity	Bermuda	
Bellemeade Re 2018-2 Ltd.	1-Aug-18	1-Aug-28	653	North America	Industry Loss Index	Bermuda	
Dodeka XVII	6-Jun-18	27-Dec-18	18	North America	Industry Loss Index	Bermuda	
Cal Phoenix Re Ltd. (Series 2018-1)	2-Aug-18	13-Aug-21	200	North America	Indemnity	Bermuda	
Oaktown Re II Ltd.	1-Jul-18	1-Jul-28	265	North America	Indemnity	Bermuda	
Acorn Re Ltd. (Series 2018-1)	10-Jul-18	10-Nov-21	400	North America	Parametric	Bermuda	
Dodeka XVI	6-Jul-18	27-Dec-18	10	North America	Industry Loss Index	Bermuda	
Northshore Re II Ltd. (Series 2018-1)	6-Jul-18	8-Jul-22	200	Multi	Industry Loss Index	Bermuda	

Source: Artemis, Bermuda Stock Exchange and Bloomberg.

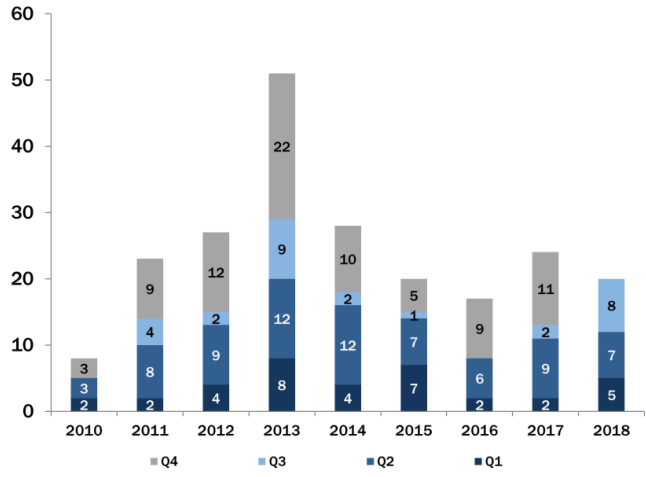
Bermuda: Registration of Special Purpose Insurers (SPIs) and Number of ILS

Table VIII. SPI Registrations and ILS issuance in Bermuda, 2010 to Q3-2018

		SPI Registrations	Bermuda-based ILS
2010	Q1	2	0
	Q2	3	2
	Q3	–	–
	Q4	3	1
	Annual Total	8	3
2011	Q1	2	–
	Q2	8	1
	Q3	4	4
	Q4	9	3
	Annual Total	23	8
2012	Q1	4	2
	Q2	9	3
	Q3	2	3
	Q4	12	3
	Annual Total	27	11
2013	Q1	8	2
	Q2	12	10
	Q3	9	7
	Q4	22	6
	Annual Total	51	25
2014	Q1	4	9
	Q2	12	14
	Q3	2	5
	Q4	10	8
	Annual Total	28	36
2015	Q1	7	11
	Q2	7	14
	Q3	1	8
	Q4	5	3
	Annual Total	20	36
2016	Q1	2	6
	Q2	6	12
	Q3	0	8
	Q4	9	4
	Annual Total	17	30
2017	Q1	2	14
	Q2	9	24
	Q3	2	3
	Q4	11	13
	Annual Total	24	52
2018	Q1	5	11
	Q2	7	22
	Q3	8	9
	Q4		
	Annual Total	20	42

Source: BMA

Figure 12. BMA SPI Registrations by Quarter Q1-2010 to Q3-2018



Source: BMA

Special Section

Q3-2018 Bermuda ILS Market Report

Natural Catastrophe Losses – 2017 Hurricane Season

The 2017 Atlantic hurricane season was one of the most intense and costliest on record. 2017 saw 17 named storms (including 10 hurricanes), six of which reached major intensities of category 3 or above. And for the first time on record, three category 4 storms (Hurricanes Harvey, Irma and Maria (HIM)) made landfall in the United States within under 30 days. HIM caused \$217.0 bln in economic damages and approximately \$92.0 bln in insured losses, making 2017 the second costliest North Atlantic hurricane season since 2005.

A.M. Best and Aon Benfield released reports which estimated that the ILS market could bear between \$15.0 billion to \$18.0 billion in insurance claims from HIM losses. This implies that total ILS capacity, currently estimated at \$89.0 billion, could be impacted by up to 20.0%. The types of ILS instruments affected by HIM losses are Industry Loss Warrantees (ILWs), catastrophe bonds, and collateralised reinsurance/sidecars. The website Captive.com, which is owned and operated by the International Risk Management Institute, reported that they expect publicly traded ILS instruments such as catastrophe bonds to be less likely impacted than private instruments such as ILWs and collateralised insurance due to their higher attachment points. According to A.M. Best estimates, the bulk of the losses will be borne by the collateralised reinsurance market, which potentially has to absorb approximately \$5.0 billion to \$6.0 billion. Catastrophe bonds are likely to experience the least amount of HIM-related events losses with projected claims payouts totalling approximately \$429.0 million.

Due to a shortage of detailed information on non-publicly traded ILS entities, this report will focus only on catastrophe bonds. Total new issuance of catastrophe bonds in the first half of 2018 has remained strong; \$9.5 bln from 43 transactions have been issued, slightly below the first half issuance in 2017 of \$9.8 bln through 43 transactions. While the total value of new issuances in the first halves of 2017 and 2018 are similar, the regions covered has changed. Catastrophe bonds covering North American perils fell by \$1.6 bln, or 21%, in the first half of 2018 (\$5.4 bln) compared to the same period in 2017 (\$7.4 bln). The World Bank's International Bank for Reconstruction and Development (IBRD) bonds, which covers perils in Peru, Mexico, Colombia, and Chile, had the largest combined value (\$1.4 bln) and made up the difference of the reduced US exposure.

The ILS market has experienced not only losses but also instances of trapped capital, which happens when the exact size of insurance losses is uncertain. When this happens, issuers of securities can exercise the right to hold back capital when potentially insured events have occurred but total losses have not yet been reported. The value of trapped capital varies depending on the terms and conditions of each contract. The Aon Benfield April 2018 Reinsurance Market Outlook Report estimated that 2017 second half losses from natural disasters generated the trapping of \$5.0 billion dollars in capital. The report also went on to explain that most of the trapped capital has since been replaced. HIM losses will continue to develop and the final loss results may not be known for at least three years.

Appendix

Bermuda: Structural Factors and Supervisory Regime

A sophisticated legal system, a strong regulatory framework, a developed infrastructure, as well as the local availability of highly-skilled human capital, underpin Bermuda's reputation as a quality jurisdiction and domicile of choice for insurance, reinsurance and financial services' companies. Bermuda is known for its innovative (re)insurance industry, which has shown resilience during the financial crisis.

Bermuda has emerged as a leader in the global ILS market after implementing a specific regulatory framework to facilitate the formation of such instruments through a new licence class for insurers. In 2009, the Bermuda Monetary Authority introduced the concept of a Special Purpose Insurer (SPI), following passage of the Insurance Amendment Act 2008. Bermuda's regulatory and supervisory framework also provides for the creation of sidecars, Industry Loss Warranties (ILWs) and collateralised reinsurance vehicles. The ILS market has benefitted from a large investor base and the existing (re)insurance expertise in Bermuda which hosts one of the world's largest reinsurance markets. The global reinsurance market had total assets of approximately \$605.0 billion at end Q2-2017.¹

BOX 1: REGULATORY FRAMEWORK FOR ILS IN BERMUDA

The following information provides a brief overview of the legislation governing the process of forming SPIs as issuers of ILS in Bermuda.⁵ For this purpose, SPIs are structured as "bankruptcy remote" entities which are required to be fully-funded and independent companies that accept pre-specified insurance risk from sophisticated (re)insurers. The regulatory focus during the licensing process of SPIs is on the assessment of the certainty of the contractual arrangements governing the SPI and the complete collateralisation of the policy limits of insurance risk ceded to the SPI. The SPI must have access to a sound infrastructure for underwriting and servicing claims, including sound governance surrounding the custody of collateral assets. Moreover, policyholders and investors are restricted to sophisticated participants.

Incorporation and Registration Process

The process of establishing an SPI is substantially similar to that of "conventional" commercial insurers. Key elements of the "Licensing Application" include: (i) a business plan, which provides the fundamental elements of the proposed transaction. Importantly, evidences both the fully collateralised nature of the business and sophisticated participants; (ii) a completed "SPI Checklist" (a standard BMA form); (iii) drafts of relevant transaction documents (such as reinsurance agreements, collateral trust agreements, etc.); and (iv) service provider agreements.

Supervision of SPIs

To ensure effective and prudent supervision of SPIs, the Authority has established a supervisory regime that reflects the unique characteristics of the SPI structures as well the evolving aspects of the SPI business model. The key pillars of the SPI supervisory program include: (i) Risk profiling; (ii) Review of annual and quarterly filings and closing documents; and (iii) On-site Review which involves supervisory teams conducting additional assessment work at the premises of the SPI.

References

Data Sources

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(http://www.artemis.bm/deal_directory/)

Bermuda Stock Exchange (BSX): Insurance-Linked Securities and Programmes
(<http://www.bsx.com/Comp-InsLinkSec.asp>)

Bloomberg L.P.

⁵ The material presented is not intended to be a substitute for professional legal advice.