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Bermuda Insurance-Linked Securities (ILS) Market Report

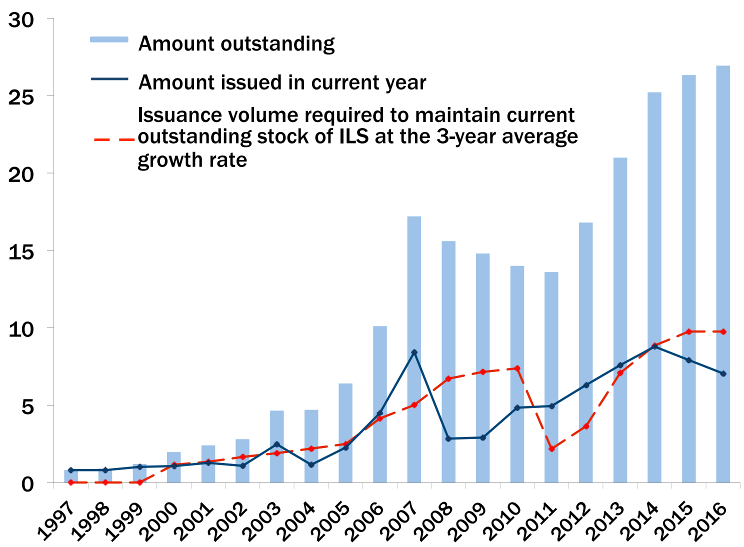
SUMMARY

The total nominal amount of outstanding ILS increased 2.4% year-over-year to $26.9 billion. There were six bonds issued in the fourth quarter totaling $2.1 billion, while two deals matured with a notional value of $600.0 million.

Bermuda remains the leading jurisdiction for the issuance of catastrophe bonds. ILS issued from Bermuda represents 71.1% ($19.2 billion of $26.9 billion) of total outstanding capacity at the end of Q4-2016. Since 2010, 174 Bermuda-based Special Purpose Insurers (SPIs) have been registered and have issued 149 ILS.

Bermuda is also host to foreign ILS listings on the Bermuda Stock Exchange (BSX) which augment the depth of the secondary market*. A total of 84 foreign ILS (comprising 124 tranches) are listed on the BSX with an aggregate nominal value of approximately $20.1 billion. Five new ILS deals were listed on the BSX during the quarter while one matured.

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



Source: Swiss Re, Artemis, and Bermuda Monetary Authority (Authority) staff calculations.

* 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.

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PRIMARY MARKET: GLOBAL MARKET OVERVIEW

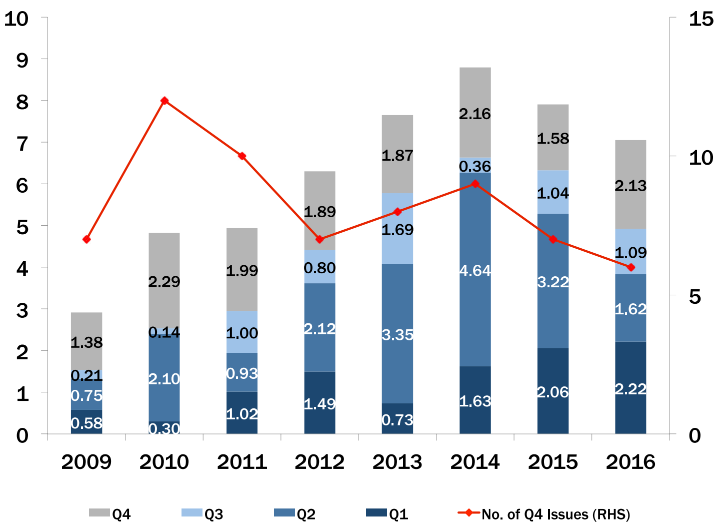
ILS issuance volume in the fourth quarter increased 34.3% when compared to activity during the same period last year.[1] There were six new bonds issued totaling $2.1 billion during the quarter (seven deals; $1.6 billion in Q4-2015) (Figure 2). Over the same period, two ILS deals matured with a notional value of $600.0 million. The net issuance of bonds during the quarter increased the total stock of outstanding capacity to $26.9 billion, representing an increase of 2.4% year-over-year.

The average deal size for Q4-2016 is the highest on record since 2009. During the quarter, the average deal size was approximately $354.2 million, up from $226.0 million in the same quarter last year (Figure 3). The largest deal during the quarter was issued by Galilei Re Ltd. 2016-1, a Bermuda-domiciled SPI which provides coverage for multi-regional natural catastrophes in the amount of $750.0 million. At the lower end, there was a privately placed deal in the amount of $10.0 million issued by Bermuda-domiciled Li Re Ltd 2016-2.

In terms of 2016 as a whole, ILS issuance contracted for a second consecutive year. ILS issuance fell 10.9% to $7.0 billion ($7.9 billion in 2015) for the year, while there was also a decrease in the number of deals completed. There were 38 transactions during the year with an average deal size of $185.5 million (compared to $164.7 million in 2015).

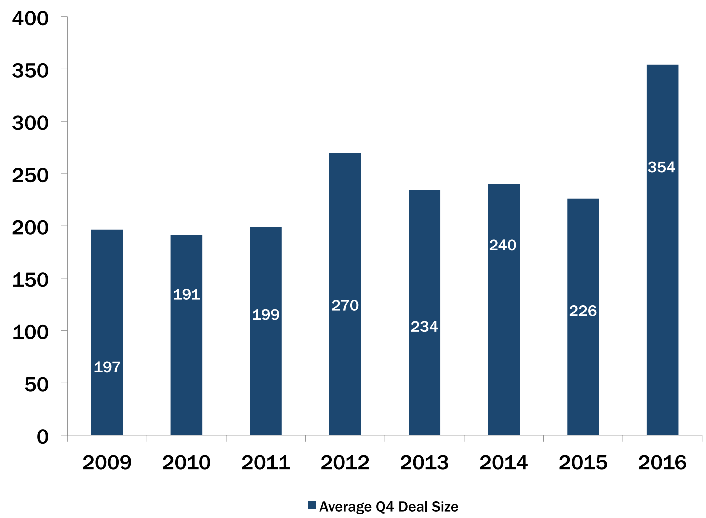
Indemnity triggers continue to account for over half of the outstanding volume of ILS deals. ILS deals with an indemnity trigger represent 61.6% ($16.6 billion of $29.6 billion) of total outstanding volume of the ILS market. This is followed by the industry loss index trigger type which accounts for 25.7% ($6.9 billion) of the outstanding volume (Table IV). During the quarter, 64.2% of the issued deal volume used an indemnity trigger, while 35.3% used the industry loss index trigger type. In 2016, 66.0% of the issued deal volume ($4.7 billion of $7.0 billion) used indemnity triggers, while 28.7% used an industry loss index trigger type.

Figure 2. Quarterly ILS Issuance by Deal Volume (In US$ bln) and Number of Q4 Deals — Global Market, 2009 to Q4-2016



Source: Artemis and Authority staff calculations.

Figure 3. Global Q4 ILS Issuance (Average Deal Volume), Q4-2009 to Q4-2016 (In US$ mln)



Source: Artemis and Authority staff calculations.

1 Note that the quarter-on-quarter (q/q) change compares the change in a value between the current quarter and the corresponding quarter of the previous year, e.g., Q4-2016 and Q4-2015.

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

ILS Issuance by Country of Risk (In US$ bln)						
Country	2011	2012	2013	2014	2015	2016
Bermuda	1.6	2.5	4.7	7.7	5.6	5.1
Cayman Islands	2.0	3.5	1.9	0.7	1.1	1.2
Ireland	0.9	0.2	1.0	0.4	0.6	0.8
United States	0.4	0.1	–	–	0.3	–
Other	–	–	–	0.03	0.3	–

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

Number of Issuances by Country of Risk (SPV)						
Country	2011	2012	2013	2014	2015	2016
Bermuda	8	11	25	36	36	30
Cayman Islands	12	15	9	4	6	5
Ireland	6	1	3	2	4	3
United States	2	1	–	–	1	–
Other	–	–	–	1	1	–

Table III: Triggers in ILS Issuance in Selected Jurisdictions (Total Issued Deal Volume, 2009 to Q4-2016 in US$ bln)

Trigger (In US$ bln)	Bermuda	Cayman Islands	Ireland	United States & Other
Indemnity	17.0	8.4	0.8	–
Industry Loss Index	8.2	2.6	3.5	0.5
Longevity Index	–	0.1	–	–
Medical benefit ratio index	–	1.2	–	–
Modelled Loss	0.9	0.6	–	–
Mortality Index	–	0.8	0.2	0.3
Multiple	0.2	0.6	0.3	0.2
Parametric	1.4	0.6	–	0.3
Parametric Index	–	0.7	0.2	–
Unknown	0.9	0.1	–	–

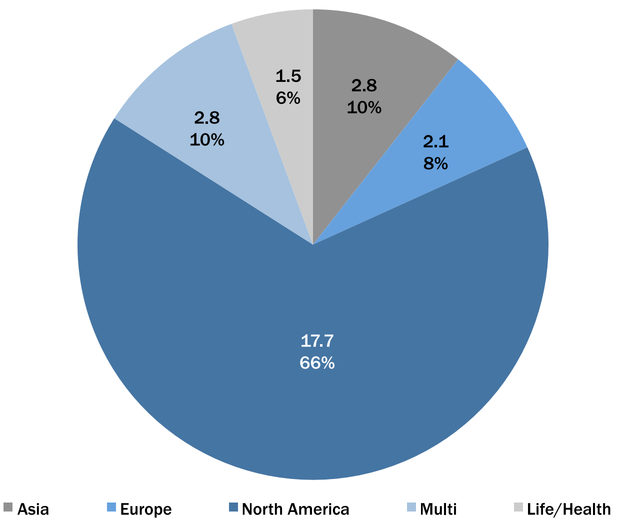
Table IV: Triggers in ILS Issuance in Selected Jurisdictions (Outstanding Deal Volume, end Q4-2016 in US$ bln)

Trigger (In US$ bln)	Bermuda	Cayman Islands	Ireland	United States & Other
Indemnity	12.6	3.2	0.8	–
Industry Loss Index	5.2	–	1.7	–
Longevity Index	–	0.1	–	–
Medical benefit ratio index	–	0.6	–	–
Modelled Loss	0.3	–	–	–
Mortality Index	–	0.4	0.2	0.3
Multiple	0.2	0.2	0.1	–
Parametric	0.4	–	–	0.3
Parametric Index	–	–	–	–
Unknown	0.5	–	–	–

The ILS market remains small relative to traditional (re)insurance business (see tables above). The $26.9 billion of risk covered by ILS represents 4.5% of global reinsurer capital which is estimated to be $595.0 billion.[2] Since Bermuda entered the market in 2009, 263 ILS bonds have been issued; there are currently 121 (84 Bermuda deals) outstanding bonds that have not matured. Bermuda maintained its position as the leading jurisdiction in the ILS industry over the past quarter, accounting for 71.1% ($19.2 of $26.9 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 16.6% and 10.1%, respectively.

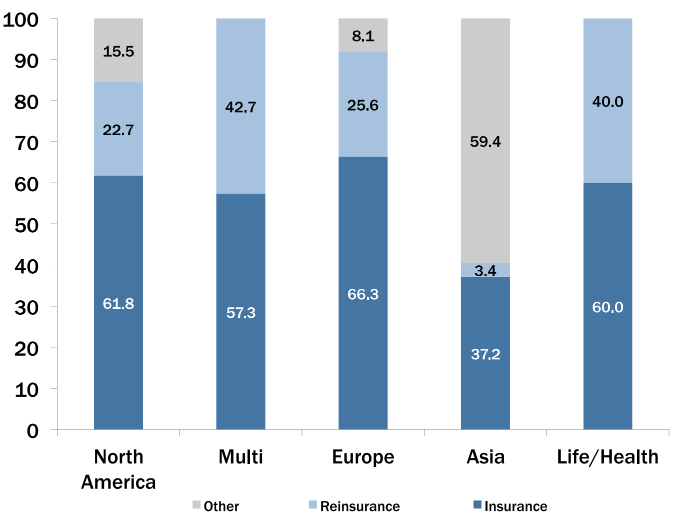
The majority of ILS covers North American perils which account for 65.8% of total outstanding volume (Figures 4 and 5).[3] Asian and multi-regional perils account for 10.6% and 10.4% of the market, respectively, while the remaining categories account for approximately 13.3% of the market by volume. Primary insurers sponsored 61.8% of total coverage for North American perils ($10.9 billion of $17.7 billion). In contrast, the sponsor-type for 59.4% of the volume for Asian bonds ($1.7 billion of $2.8 billion) falls under the other category. This includes government agencies and pooled associations/cooperatives. Multi-regional perils account for 10.4% (or $2.8 billion) of the market and the sponsor-type is distributed between reinsurers and insurers. Bond volume for European deals represents 7.6% ($2.1 billion) of the overall ILS bond market while life and health securities account for the remaining 5.6% of the market ($1.5 billion).

Figure 4. Total Outstanding Volume of ILS by Region/Peril, end Q4-2016 (In US$ bln)



Source: Artemis and Authority staff calculations.

Figure 5. Coverage per Region/Peril by ILS Sponsor Type, 2009 to Q4-2016 (In %)



Source: Artemis and Authority staff calculations.

2 AON Benfield January 2017, "Reinsurance Market Outlook"
3 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

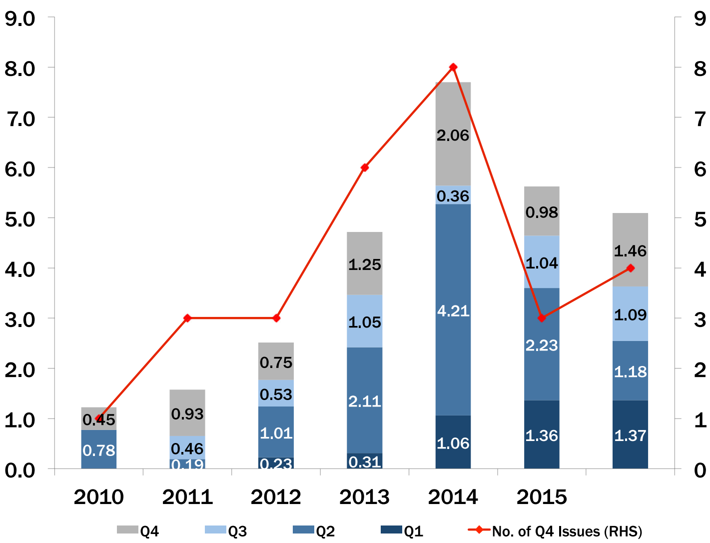
Bermuda continues to maintain its position as the leading jurisdiction for the issuance of ILS. Bermuda-based SPIs accounted for 68.7% ($1.5 billion of $2.1 billion) of issuance volume during the quarter. During the quarter, Bermuda-based SPIs underwrote $1.5 billion of property and catastrophe (P&C) risks via four ILS transactions (Figure 6) covering North American and multi-regional perils. Overall, Bermuda-issued ILS represents 71.1% ($19.2 of $26.9 billion) of total outstanding capacity at the end of Q4-2016.

The average deal size for Bermuda-issued ILS in Q4-2016 was $365.0 million, the highest level since 2010. This represents an increase of $37.7 million per deal compared to the same quarter last year which recorded an average volume of $327.3 million (Figure 7). The largest deal of the quarter was issued by Bermuda-based SPI Galilei Re Ltd 2016-1 in the amount of $750.0 million.

In line with ILS market developments in other countries, annual issuance volume for Bermuda-based SPIs contracted for a second year during 2016. Domestic ILS issuance was down 9.5% to $5.1 billion ($5.6 billion in 2015) via 30 completed ILS deals during the year (36 deals in 2015) (Table I and Table II). The average deal size during 2016 was $169.7 million (compared to $156.2 million in 2015).

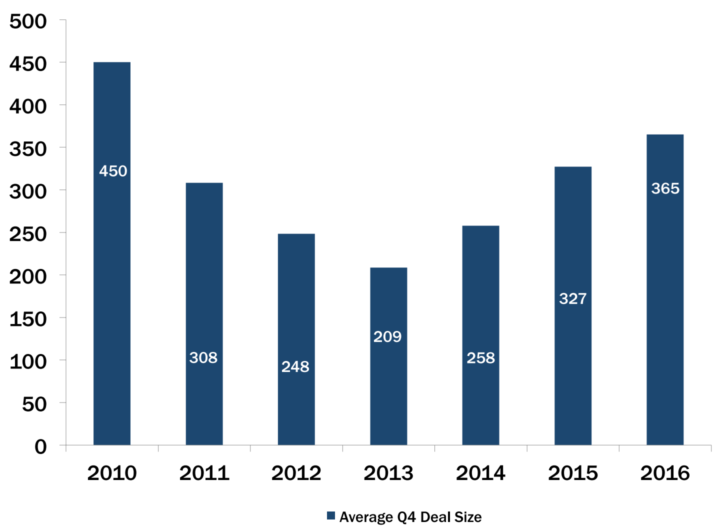
The BSX accounted for 74.6% of the global market capitalisation of ILS at the end of Q4-2016. A total of 84 ILS deals (comprising 124 tranches) are listed on the BSX with an aggregate nominal value of approximately $20.1 billion,[4] of which $1.5 billion (7.6%) are issued by non-Bermuda entities, namely Ireland and the United States. Five (12 tranches) of the six deals issued during the quarter were listed on the BSX, with a notional $1.7 billion amount. Over the same period, one deal (one tranche) previously listed on the exchange worth $200.0 million matured.

Figure 6. Quarterly ILS Issuance by Volume (In US$ bln) and Number of Q4 Deals - Bermuda only, 2010 to Q4-2016



Source: Artemis and Authority staff calculations.

Figure 7. Domestic Q4 ILS Issuance (Average Deal Volume), Q4-2010 to Q4-2016 (In US$ mln)

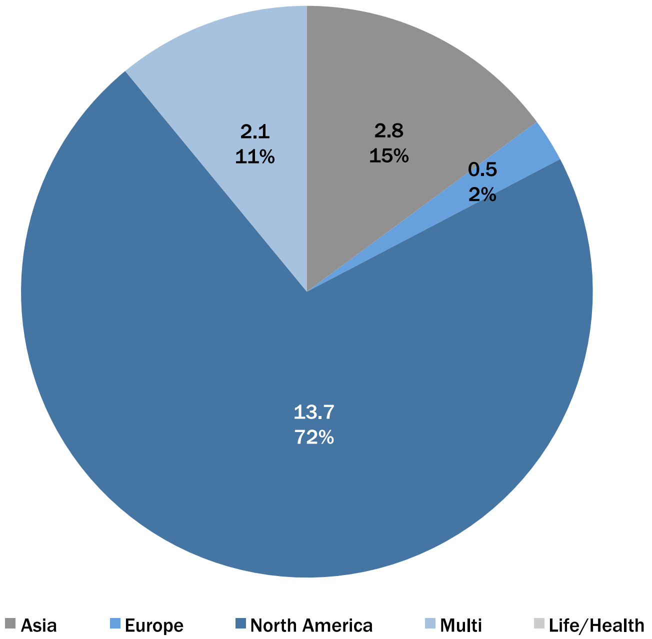


Source: Artemis and Authority staff calculations.

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

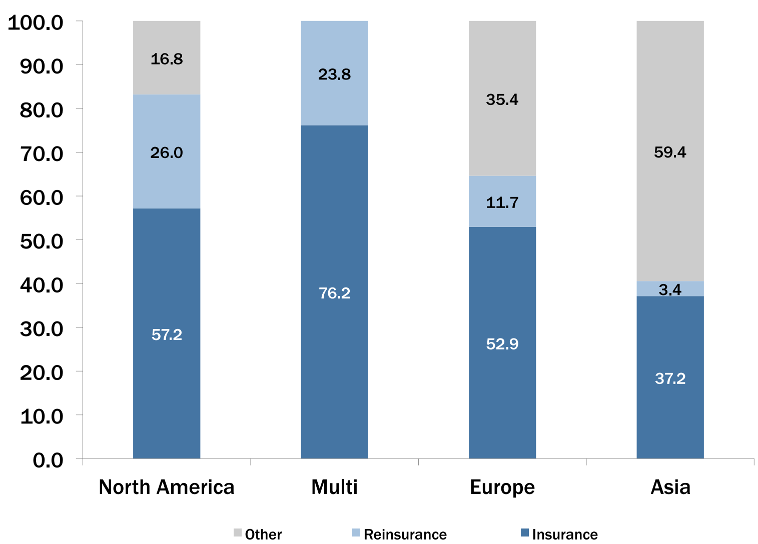
The Bermuda market is a leader in the specialisation of cat bonds, with the majority of transactions based on indemnity triggers. Since the first Bermuda ILS deal was issued in 2010, an indemnity trigger has accounted for 65.8% ($12.6 billion of $19.2 billion) of outstanding deal volume for transactions issued by Bermuda-based SPIs. North American perils by direct underwriters claim the largest share of outstanding ILS (Figures 8 and 9). Primary insurers sponsored 57.2% of total coverage for those bonds ($7.9 billion of $13.7 billion) while reinsurers sponsored 26.0% ($3.6 million). Primary insurers also ceded 76.2% and 52.9% of multi-region and European risks, respectively. Other sponsor types (insurance pools/associations) ceded 59.4% and 35.4% of Asian and European risks, respectively (Figure 9). 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.

Figure 8. Total Outstanding Volume of Bermuda-issued Deals by Region/Peril, end Q4-2016 (In US$ bin)



Source: Artemis and Authority staff calculations.

Figure 9. Percent of Coverage per Region/Peril by ILS Sponsor Type for Bermuda-issued Deals, 2010 to Q4-2016 (In %)



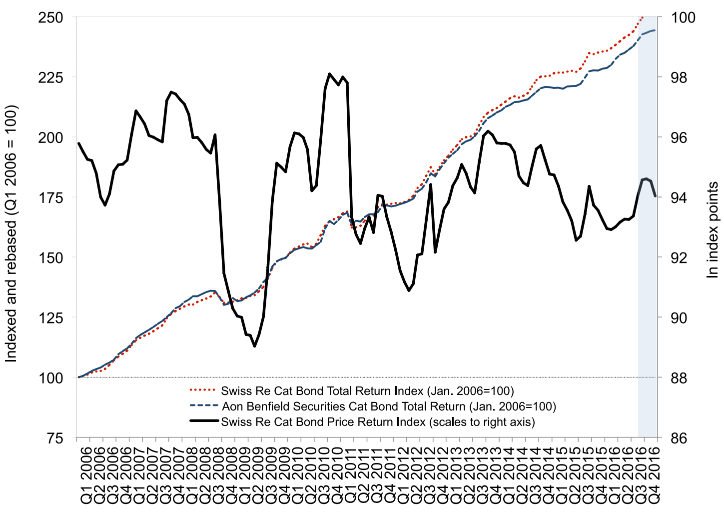
Source: Artemis and Authority staff calculations.

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 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).

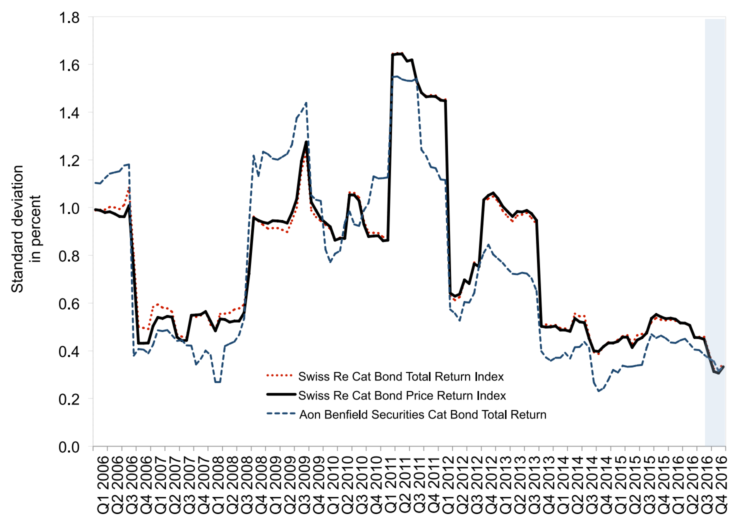
The risk-return trade-off for cat bonds was more favourable following higher total returns compared to the same quarter one year prior. Table V provides a summary of selected indicators of market performance over the last six quarters (Q3-2015 to Q4-2016) comparing the recent development of the Swiss Re Cat Bond Total Return Index and the Aon Benfield Securities Cat Bond Total Return Index as the global market benchmarks.[5] During the fourth quarter, the two indices recorded a return of 0.29% (down from 0.97% during the previous quarter) and 0.24% (down from 0.87%). The annualised return volatility of each index was lower than the previous quarter, down to 0.33% and 0.34%, respectively, during the quarter. Figure 10 shows the quarterly closing levels of the two total return indices by Swiss Re and Aon Benfield which illustrate 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 while capital gains have been positive since 2006, prices at the end of Q4-2016 continued to persist beneath the peak levels achieved in early 2011. Figure 11 highlights that during the same time, the annualised return volatility (as a measure of risk) has dropped significantly.

Figure 10. ILS Total Return and Price Return Benchmark Indices, 2006 — Q4-2016 (In index points)



Source: Artemis and Authority staff calculations.

Figure 11. ILS Total Return and Price Return Benchmark Indices: Annualised Return Volatility, 2006 — Q4-2016 (In %)



Source: Artemis and Authority staff calculations.

5 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 U.S. 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”, “U.S. Hurricane Bond”, and “US Earthquake Bond”.

Table V. Selected ILS Market Performance Indicators, Q3-2015 to Q4-2016

Selected ILS Market Performance Indicators
In % unless indicated otherwise

	2015		2016			
	Q3	Q4	Q1	Q2	Q3	Q4
Price Return 1/						
Swiss Re Cat Bond Total Return Index	1.13	0.09	0.41	0.57	0.97	0.29
Swiss Re Cat Bond Price Return Index (scales to right axis)	0.64	-0.39	-0.08	0.09	0.47	-0.19
Aon Benfield Securities Cat Bond Total Return	0.91	0.15	0.60	0.55	0.87	0.24
Return Volatility						
Annualised Standard Deviation 2/						
Swiss Re Cat Bond Total Return Index	0.49	0.53	0.52	0.49	0.44	0.33
Swiss Re Cat Bond Price Return Index (scales to right axis)	0.49	0.54	0.53	0.49	0.43	0.32
Aon Benfield Securities Cat Bond Total Return	0.41	0.46	0.44	0.43	0.38	0.34
Normalised Squared Returns (In standard deviations) 3/						
Swiss Re Cat Bond Total Return Index	1.57	-0.47	-0.26	-0.21	0.96	-0.59
Swiss Re Cat Bond Price Return Index (scales to right axis)	1.09	-0.34	-0.78	-0.67	0.51	-0.06
Aon Benfield Securities Cat Bond Total Return	1.59	-0.43	0.31	-0.20	0.82	-0.86

Notes:

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

2/ quarterly average of the 12-month standard deviation of the logarithmic returns of last prices.

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.

Source: Bloomberg LP and Authority staff calculations.

Table VI. Transaction Overview of Global ILS Issuance, Q4-2015 to Q4-2016

	Sponsor	Short Name	Issue Date	Maturity Date	Amount Issued ($ mln)	Region/Peril Covered	Trigger	Country of Issuance (SPI)	BSX Listings
Q4-2015	Amtrak	PENN UNION RE LTD 2015-1	8-Oct-15	7-Dec-18	275	North America	Parametric	United States	✔
	Everest Re	KILIMANJARO RE LTD 2015-1	1-Dec-15	6-Dec-19	625	North America	Industry Loss Index	Bermuda	✔
	USAA	RESIDENTIAL REINS LTD 2015-2	2-Dec-15	6-Dec-19	125	North America	Indemnity	Cayman Islands	
	Munich Re	QUEEN STREET XI RE	18-Dec-15	7-Jun-19	100	Multi	Industry Loss Index	Ireland	✔
	Swiss Re	VITA CAPITAL VI LTD 2015-1	22-Dec-15	8-Jan-21	100	Life/Health	Mortality Index	Cayman Islands	
	Zenkyoren	NAKAMA RE LTD 2015-1	29-Dec-15	14-Jan-21	300	Asia	Indemnity	Bermuda	✔
	Unknown cedant	RESILIENCE RE LTD	31-Dec-15	9-Jan-17	57	North America	Unknown	Bermuda	✔
Q1-2016	SCOR Global P&C SE	ATLAS IX CAPITAL DAC 2016-1	2-Jan-16	8-Jan-20	300	North America	Industry Loss Index	Ireland	
	XL Insurance (Bermuda) Ltd.	GALILEO RE LTD 2016-1	27-Jan-16	8-Jan-19	300	Multi	Industry Loss Index	Bermuda	✔
	Aetna	VITALITY RE VII 2016-1	28-Jan-16	7-Jan-20	200	Life/Health	Medical benefit ratio index	Cayman Islands	
	Heritage P&C Insurance Co. and Zephyr Insurance Co.	CITRUS RE LTD 2016-1	24-Feb-16	25-Feb-19	250	North America	Indemnity	Bermuda	✔
	Nationwide Mutual Insurance Co.	CAELUS RE IV LTD 2016-1	29-Feb-16	6-Mar-20	300	North America	Indemnity	Cayman Islands	
	USAA	ESPADA REINS LTD 2016-1	1-Mar-16	6-Jun-20	50	North America	Indemnity	Cayman Islands	
	State Farm	MERNA RE LTD 2016-1	3-Mar-16	8-Apr-19	300	North America	Indemnity	Bermuda	✔
	Safepoint Insurance Company	MANATEE RE LTD 2016-1	10-Mar-16	13-Mar-19	95	North America	Indemnity	Bermuda	✔
	Mitsui Sumitomo Ins. Co.	AKIBARE II LTD 2016-1	14-Mar-16	7-Apr-20	200	Asia	Indemnity	Bermuda	✔
	Sompo Japan & Nipponkoa Ins. Co.	AOZORA RE LTD 2016-1	29-Mar-16	7-Apr-20	220	Asia	Indemnity	Bermuda	✔
Q2-2016	Unknown cedant	RESILIENCE RE LTD	12-Apr-16	7-Apr-17	85	North America	Unknown	Bermuda	✔
	United Guaranty (AIG)	BELLEMEADE RE II LTD 2016-1	9-May-16	25-Apr-26	299	North America	Indemnity	Bermuda	✔
	USAA	RESIDENTIAL REINS LTD 2016-1	11-May-16	6-Jun-20	250	North America	Indemnity	Cayman Islands	
	Munich Re	QUEEN STREET XII RE	20-May-16	8-Apr-20	190	Multi	Industry Loss Index	Ireland	✔
	Zurich Insurance Co. Ltd.	OPERATIONAL RE LTD	26-May-16	8-Apr-21	218	Europe	Indemnity	Bermuda	✔
	Unknown cedant	LI RE 2016-1	26-May-16	31-May-17	4	North America	Unknown	Bermuda	✔
	Security First Insurance Company	FIRST COAST RE LTD 2016-1	31-May-16	7-Jun-19	75	North America	Indemnity	Bermuda	✔
	United P&C Ins., Family Security Ins., Interbobo Ins.	LAETERE RE LTD 2016-1	31-May-16	6-Jun-17	100	North America	Indemnity	Bermuda	✔
	Unknown cedant	DODEKA VIII	6-Jun-16	5-Jan-17	24	North America	Industry Loss Index	Bermuda	✔
	Unknown cedant	MARKET RE LTD 2016-2	7-Jun-16	7-Jun-17	79	North America	Indemnity	Bermuda	
	Southern Oak Insurance Company	OAK LEAF RE LTD 2016-1	8-Jun-16	10-Jun-17	54	North America	Indemnity	Bermuda	
	Unknown cedant	MARKET RE LTD 2016-4	12-Jun-16	12-Jun-17	25	North America	Indemnity	Bermuda	
	Unknown cedant	RESILIENCE RE LTD	14-Jun-16	2-Jun-17	34	North America	Unknown	Bermuda	✔
	Allianz Risk Transfer	BLUE HALO RE LTD 2016-1	16-Jun-16	21-Jun-19	185	North America	Industry Loss Index	Bermuda	✔
Q3-2016	Unknown cedant	DODEKA V 2016	8-Jul-16	5-Jan-17	11	North America	Industry Loss Index	Bermuda	✔
	Unknown cedant	MARKET RE LTD 2016-3	8-Jul-16	8-Jul-19	75	North America	Indemnity	Bermuda	
	Unknown cedant	DODEKA IX	8-Jul-16	20-Jan-17	15	North America	Industry Loss Index	Bermuda	✔
	Allianz Risk Transfer	BLUE HALO RE LTD 2016-2	21-Jul-16	26-Jul-19	225	North America	Industry Loss Index	Bermuda	✔
	Unknown cedant	DODEKA X	21-Jul-16	27-Jul-17	21	North America	Industry Loss Index	Bermuda	✔
	Unknown cedant	ARTEX SAC LTD - SERIES CX NOTES	31-Aug-16	9-Jun-17	9	North America	Unknown	Bermuda	✔
	Allianz Risk Transfer	MARKET RE LTD 2016-5	8-Sep-16	30-May-17	31	Europe	Parametric	Bermuda	
	Zenkyoren	NAKAMA RE LTD 2016-1	29-Sep-16	13-Oct-21	700	Asia	Indemnity	Bermuda	✔
Q4-2016	USAA	RESIDENTIAL REINS LTD 2016-2	18-Nov-16	6-Dec-20	400	North America	Indemnity	Cayman Islands	
	California Earthquake Authority	URSA RE LTD 2016-1	30-Nov-16	10-Dec-19	500	North America	Indemnity	Bermuda	✔
	American Strategic Ins. Group	BONANZA RE LTD 2016-1	1-Dec-16	3-Dec-19	200	North America	Indemnity	Bermuda	✔
	Assicurazioni Generali S.p.A.	HORSE CAPITAL I DAC	19-Dec-16	15-Jun-20	265	Europe	Indemnity	Ireland	✔
	XL Bermuda Ltd.	GALILEI RE LTD 2016-1	28-Dec-16	8-Jan-20	750	Multi	Industry Loss Index	Bermuda	✔
	Unknown cedant	LI RE LTD 2016-2	30-Dec-16	10-Apr-18	10	North America	Unknown	Bermuda	✔

Source: Artemis, Bermuda Stock Exchange, AON Benfield and Authority staff calculations.

BERMUDA: OVERVIEW OF ILS LISTINGS AT THE BERMUDA STOCK EXCHANGE (BSX)

Table VII. Transaction Overview of BSX-listed ILS Issuance, 2013 to Q4-2016

	Short Name	Issue Date	Maturity Date	Amount Issued ($ mln)	Region/Peril Covered	Trigger Type	Country of Issuance (SPI)
2013	SANDERS RE LTD 2013	3-May-13	5-May-17	350	North America	Industry Loss Index	Bermuda
	TRAMLINE RE II LTD	27-Jun-13	7-Jul-17	75	North America	Industry Loss Index	Bermuda
	MONA LISA RE LTD	8-Jul-13	7-Jul-17	150	North America	Industry Loss Index	Bermuda
	TRADEWYND RE LTD	9-Jul-13	9-Jul-18	125	North America	Indemnity	Bermuda
	GALILEO RE LTD	30-Oct-13	9-Jan-17	300	Multi	Industry Loss Index	Bermuda
	TRADEWYND RE LTD	18-Dec-13	9-Jan-17	400	North America	Indemnity	Bermuda
	QUEEN CITY RE LTD	23-Dec-13	6-Jan-17	75	North America	Indemnity	Bermuda
	WINDMILL I RE LTD	23-Dec-13	5-Jan-17	55	Europe	Indemnity	Bermuda
	LOMA RE (BERMUDA) LTD	30-Dec-13	8-Jan-18	172	North America	Multiple	Bermuda
	VENTERRA RE LTD	30-Dec-13	9-Jan-17	250	Multi	Indemnity	Bermuda
2014	OMAMORI	17-Jan-14	24-Jan-17	25	North America	Unknown	Bermuda
	QUEEN STREET IX RE LTD	26-Feb-14	8-Jun-17	100	Multi	Multiple	Ireland
	GATOR RE LTD	10-Mar-14	9-Jan-17	200	North America	Indemnity	Bermuda
	KIZUNA RE II LTD	14-Mar-14	6-Apr-18	245	Asia	Indemnity	Bermuda
	MERNA RE V LTD	31-Mar-14	7-Apr-17	300	North America	Indemnity	Bermuda
	RIVERFRONT RE LTD	31-Mar-14	6-Jan-17	95	North America	Indemnity	Bermuda
	CITRUS RE LTD 2014-1	17-Apr-14	18-Apr-17	150	North America	Indemnity	Bermuda
	CITRUS RE LTD 2014-2	24-Apr-14	24-Apr-17	50	North America	Indemnity	Bermuda
	KILIMANJARO RE LTD	24-Apr-14	30-Apr-18	450	North America	Industry Loss Index	Bermuda
	LION I RE LTD	24-Apr-14	28-Apr-17	263	Europe	Indemnity	Ireland
	EVERGLADES RE LTD 2014-1	2-May-14	28-Apr-17	1,500	North America	Indemnity	Bermuda
	SANDERS RE LTD 2014-1	22-May-14	28-May-19	750	North America	Industry Loss Index	Bermuda
	AOZORA RE LTD 2014-1	30-May-14	7-Apr-17	100	Asia	Indemnity	Bermuda
	NAKAMA RE LTD 2014-1	30-May-14	13-Apr-18	300	Asia	Indemnity	Bermuda
	SANDERS RE LTD 2014-2	30-May-14	7-Jun-17	200	North America	Indemnity	Bermuda
	ALAMO RE LTD 2014-1	26-Jun-14	7-Jun-17	400	North America	Indemnity	Bermuda
	DODEKA III	1-Aug-14	31-Jul-18	9	North America	Industry Loss Index	Bermuda
	HOPLON II INSURANCE LTD	22-Aug-14	8-Jan-18	66	Europe	Indemnity	Bermuda
	GOLDEN STATE RE II LTD 2014-1	16-Sep-14	8-Jan-19	250	North America	Modelled Loss	Bermuda
	KILIMANJARO RE LTD 2014-2	18-Nov-14	25-Nov-19	500	North America	Industry Loss Index	Bermuda
	URSA RE LTD 2014-1	1-Dec-14	7-Dec-17	400	North America	Indemnity	Bermuda
	TRADEWYND RE LTD 2014-1	18-Dec-14	8-Jan-18	500	North America	Indemnity	Bermuda
	NAKAMA RE LTD 2014-2	19-Dec-14	16-Jan-20	375	Asia	Indemnity	Bermuda
	TRAMLINE RE II LTD 2014-1	22-Dec-14	4-Jan-19	200	Multi	Industry Loss Index	Bermuda
2015	GALILEO RE LTD 2015-1	4-Feb-15	8-Jan-18	300	Multi	Industry Loss Index	Bermuda
	KIZUNA RE II LTD 2015-1	26-Mar-15	5-Apr-19	293	Asia	Indemnity	Bermuda
	MANATEE RE LTD 2015-1	27-Mar-15	22-Dec-17	100	North America	Indemnity	Bermuda
	QUEEN STREET X RE LTD	30-Mar-15	8-Jun-18	100	Multi	Industry Loss Index	Ireland
	MERNA RE LTD 2015-1	31-Mar-15	9-Apr-18	300	North America	Indemnity	Bermuda
	CITRUS RE 2015-1	8-Apr-15	9-Apr-18	278	North America	Indemnity	Bermuda
	PELICAN II RE LTD	14-Apr-15	16-Apr-18	100	North America	Indemnity	Bermuda
	CRANBERRY RE LTD 2015-1	30-Apr-15	6-Jul-18	300	North America	Indemnity	Bermuda
	EVERGLADES RE II LTD 2015-1	7-May-15	3-May-18	300	North America	Indemnity	Bermuda
	ALAMO RE LTD	13-May-15	7-Jun-19	700	North America	Indemnity	Bermuda
	AZZURRO RE I LTD	17-Jun-15	16-Jan-19	225	Europe	Indemnity	Ireland
	PANDA RE LTD 2015-1	29-Jun-15	9-Jul-18	50	Asia	Indemnity	Bermuda
	KANE SAC - TRALEE	1-Jul-15	20-Jul-17	18	Asia	Unknown	Bermuda
	HOTARU	1-Jul-15	7-Aug-17	48	Asia	Unknown	Bermuda
	ACORN RE LTD 2015-1	10-Jul-15	7-Jul-18	300	North America	Parametric	Bermuda
	BELLEMEADE RE LTD 2015-1	29-Jul-15	25-Jul-25	299	North America	Indemnity	Bermuda
	BOSPHORUS LTD 2015-1	17-Aug-15	17-Aug-18	100	Europe	Parametric	Bermuda
	URSA RE LTD 2015-1	15-Sep-15	21-Sep-18	250	North America	Indemnity	Bermuda
	PENN UNION RE LTD 2015-1	8-Oct-15	7-Dec-18	275	North America	Parametric	United States
	KILIMANJARO RE LTD 2015-1	1-Dec-15	6-Dec-19	625	North America	Industry Loss Index	Bermuda
	QUEEN STREET XI RE	18-Dec-15	7-Jun-19	100	Multi	Industry Loss Index	Ireland
	NAKAMA RE LTD 2015-1	29-Dec-15	14-Jan-21	300	Asia	Indemnity	Bermuda
	RESILIENCE RE LTD	31-Dec-15	9-Jan-17	57	North America	Unknown	Bermuda
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	95	North America	Indemnity	Bermuda
	AKIBARE II LTD 2016-1	14-Mar-16	7-Apr-20	200	Asia	Indemnity	Bermuda
	AOZORA RE LTD 2016-1	29-Mar-16	7-Apr-20	220	Asia	Indemnity	Bermuda
	RESILIENCE RE LTD	12-Apr-16	7-Apr-17	85	North America	Unknown	Bermuda
	BELLEMEADE RE II LTD 2016-1	9-May-16	25-Apr-26	299	North America	Indemnity	Bermuda
	QUEEN STREET XII RE	20-May-16	8-Apr-20	190	Multi	Industry Loss Index	Ireland
	OPERATIONAL RE LTD	26-May-16	8-Apr-21	218	Europe	Indemnity	Bermuda
	LI RE 2016-1	26-May-16	31-May-17	4	North America	Unknown	Bermuda
	FIRST COAST RE LTD 2016-1	31-May-16	7-Jun-19	75	North America	Indemnity	Bermuda
	LAETERE RE LTD 2016-1	31-May-16	6-Jun-17	100	North America	Indemnity	Bermuda
	DODEKA VIII	6-Jun-16	5-Jan-17	24	North America	Industry Loss Index	Bermuda
	RESILIENCE RE LTD	14-Jun-16	2-Jun-17	34	North America	Unknown	Bermuda
	BLUE HALO RE LTD 2016-1	16-Jun-16	21-Jun-19	185	North America	Industry Loss Index	Bermuda
	DODEKA V 2016	8-Jul-16	5-Jan-17	11	North America	Industry Loss Index	Bermuda
	DODEKA IX	8-Jul-16	20-Jan-17	15	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
	DODEKA X	21-Jul-16	27-Jul-17	21	North America	Industry Loss Index	Bermuda
	ARTEX SAC LTD - SERIES CX NOTES	31-Aug-16	9-Jun-17	9	North America	Unknown	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 I DAC	19-Dec-16	15-Jun-20	265	Europe	Indemnity	Ireland
	GALILEI RE LTD 2016-1	28-Dec-16	8-Jan-20	750	Multi	Industry Loss Index	Bermuda
	LI RE LTD 2016-2	30-Dec-16	10-Apr-18	10	North America	Unknown	Bermuda

Source: Artemis, Bermuda Stock Exchange, AON Benfield and Authority staff calculations.

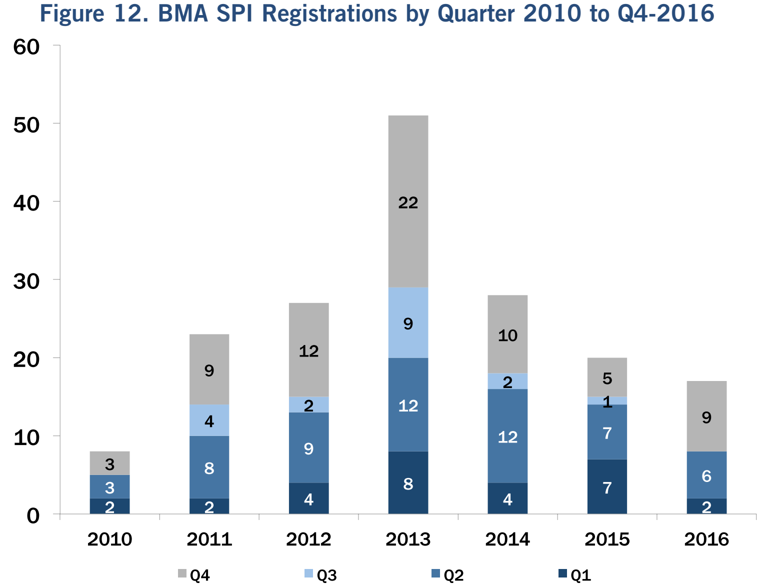
BERMUDA: REGISTRATION OF SPECIAL PURPOSE INSURERS (SPIs) AND NUMBER OF ILS ISSUED

The number of SPI registrations during the quarter increased year-over-year (Figure 12). The BMA licensed nine SPIs during Q4-2016, compared to five registrations during the same period last year. On an annual basis, the number of registrations declined for a third consecutive year. Up until 2013, structures were primarily temporary for a period of up to three years and a new SPI would be registered for each contract renewal. However, the present trend is to establish permanent structures that roll contracts over from year to year. The contract roll-over occurs within the same structure but generally in a segregated account that legally separates it from other contract years. Accordingly, it is less meaningful to compare current and historical registration numbers.

		SPI Registrations	Bermuda-based ILS
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

Source: Authority

Figure 12. BMA SPI Registrations by Quarter 2010 to Q4-2016



Source: Authority

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 only four years 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 with total assets of more than $583.0 billion at end-2014.

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.[6] 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 and, 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.

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

APPENDIX
BACKGROUND: THE EVOLUTION OF INSURANCE-LINKED SECURITIES (ILS)

The emergence of ILS has been one of the most significant developments in the (re)insurance sector during recent years. These securities are products of the convergence between the insurance and capital markets. They may be used in addition or as an alternative to the purchase of reinsurance. More specifically, ILS structures represent Alternative Risk Transfer (ART) instruments. They enable insurance risk to be sold in capital markets, raising funds that can be used by issuers to pay claims arising from catastrophes and other loss events. The most prominent type of ILS are CAT bonds which are fully collateralised debt instruments that pay off on the occurrence of defined catastrophic events. Although the ILS market is small relative to the overall (re)insurance market, it is significant when compared to the P&C sector of the traditional (re)insurance market.

Insurance securitisation increased from near zero in 1997 to about $15.0 billion in 2007, before falling sharply due to the financial crisis and a lack of investor appetite for life insurance transactions "wrapped" with monoline insurer guarantees.[7] Until 2007, ILS issuance was largely motivated by long-term business (i.e., life insurance) as a result of Regulation XXX and capital management objectives.[8] Since Regulation XXX securitisation depended on monoline wraps to achieve the "AAA" ratings required by investors, the financial challenges of monoline insurers have inhibited any significant growth in this segment of the ILS market since 2007. Natural catastrophe risk securitisation through CAT bonds also formed a key segment of the market and represented almost half of the ILS market when it peaked in 2007 at approximately $7.0 billion.[9] However, as with the life-related securitisation transactions, issuance dropped in early 2008 due to a surplus of traditional (re)insurance capacity. It dried up completely after the collapse of Lehman Brothers whose credit derivative contracts backed low-quality collateral underlying some of the transactions.[10] When these bonds were sharply downgraded, investors stepped back on fears other CAT bonds were similarly exposed to credit risk.

Shortly after the height of the financial crisis in February 2009, ILS issuance began to recover as issuers introduced more conservative collateralisation procedures and reinsurance markets tightened. Since then, issuance volumes have steadily grown. If the trend continues, it may not be long before the 2007 record issuance is surpassed. Outstanding natural ILS and sidecars peaked at just under $16.0 billion at end-2007 (Goldman Sachs, 2011). In comparison, global-insured CAT losses were about $40.0 billion in 2010. Those losses ranged from $10.0 billion to $30.0 billion between 1990 and 2009 (indexed to 2010 US dollars), except for 2006, which spiked to over $100.0 billion (Swiss Re, 2011).

In 2012, the global ILS market continued to expand. It amounted to more than $16.0 billion (up from $13.8 billion in 2011), with an overall market capitalisation of almost $6.0 billion. After relatively limited growth between 2010 and 2011, primary market activity picked up significantly in 2012 in spite of several natural disasters, including Superstorm Sandy in the US. Most recent ILS issuance was motivated by current economic conditions, which have allowed the cost-efficient structure of these instruments to benefit from low risk premia, which lowered the cost of capital.

7 However, such transactions were more about regulatory arbitrage than actual risk transfer. Note that the present data do not include "life settlement" transactions (where whole life insurance policies are sold by the beneficiary or insured for an amount greater than its surrender value, but lower than the policy's face or insured value).

8 The National Association of Insurance Commissioners' (NAIC) Model Regulation XXX requires insurers to establish heightened statutory reserves for term life insurance policies with long-term premium guarantees.

9 Cat bonds were first created in the mid-to-late 1990s in response to a severe property catastrophe insurance crisis in the US caused by Hurricane Andrew (1992, Florida and Louisiana) and the Northridge Earthquake (1994, California).

10 For a typical cat bond, issuance proceeds are invested in collateral to ensure that all interest, principal, and cat-contingent payments can be made in a timely manner. The issuers of the four bonds in question opted to hold lower-quality collateral coupled with a total return swap with Lehman Brothers to protect against any collateral deterioration.

APPENDIX continued
BACKGROUND: BENEFITS AND DRAWBACKS OF ILS

Benefits	
Ability to lock in multi-year protection	Multi-year capacity and pricing shelter the sponsor from cyclical price fluctuations in the reinsurance market (Note: traditional reinsurance contracts usually cover a one-year period while maturities for ILS are typically three to five years).
Trigger familiarity	The administration of an indemnity-based ILS reinsurance agreement is less complicated than that of a portfolio of complex reinsurance contracts.
Reduced transaction costs	ILS imply economies of scale while offering the tax and accounting benefits associated with traditional reinsurance. Many ILS are issued as part of a bond series, meaning that the majority of the documentation and structure may be used for a successor bond with relatively modest
Complementarity	ILS provide alternative options to traditional reinsurance diversify sources of capacity.
Collateralised coverage	ILS are fully collateralised risk-transfer facilities and prevent the cedant from losing reinsurance in the event of insolvency, negating concerns about counterparty credit risk.
"Pure play" investment risk	ILS isolate general business, credit-rating risks, and insolvency risks of the sponsor.
Diversification	ILS have low correlations to traditional asset classes, high risk adjusted returns, low volatility compared to other asset classes and strong collateral structures.
Drawbacks	
Capital market sensitivity	ILS issuance is highly dependent on capital market demand and liquidity.
Lower solvency buffers	ILS increase the possibility of transferring risks from the liability side onto the asset side of the balance sheet, thereby lowering solvency buffers.
Fixed up-front costs	ILS typically have fixed up-front costs that can include legal fees, modelling costs, brokerage fees, ratings fees and bank fees. All of these can be cost intensive for small issuers.
Basis risk	ILS with parametric triggers could imply "basis risk", which can be understood as the difference between the actual losses experienced by the sponsor and the payment received by the sponsor based on the design of underlying model and trigger structure. The basis risk from the model risk, trigger error or both would need to be evaluated by investor(s).
Competition for traditional reinsurance	ILS might drive traditional business away from reinsurers and lower premiums for traditional underwriting.
Regulatory arbitrage	ILS increase the possibilities of regulatory arbitrage; repackaging of transferred portfolios further weakens market transparency.
More complex supervision required	ILS introduces additional prudential considerations (e.g., security design, investment risks, and collateralisation) and therefore leads to more complex supervision (demands for integrated supervision).

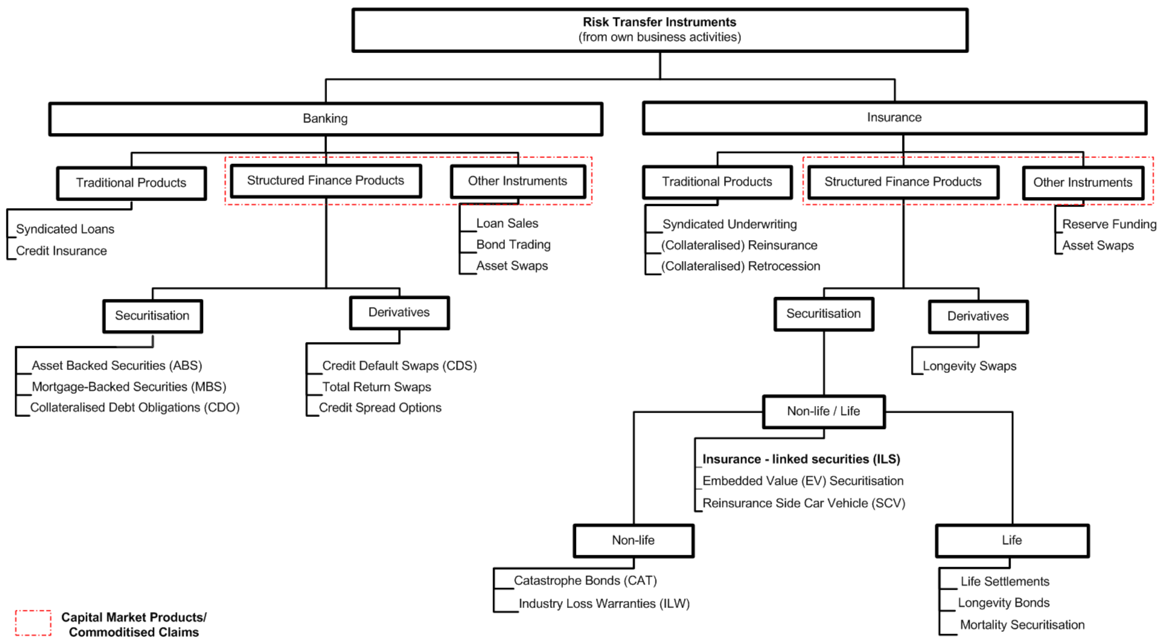
APPENDIX continued

BACKGROUND: RISK TRANSFER IN STRUCTURED FINANCE AND INSURANCE SECURITISATION

Insurance-linked securities (ILS) securitise insurance risk as a form of capital market-based structured finance within the broad spectrum of risk transfer techniques (Figure 13). Opportunities for structured finance arise if (i) established forms of external finance are unavailable (or depleted) for a particular financing need, or (ii) traditional sources of funds are too expensive for issuers to mobilise sufficient funds for what would otherwise be an unattractive investment based on the issuer's desired cost of capital. In general, structured finance comprises:

> "All advanced private and public financial arrangements that serve to efficiently refinance and hedge any profitable economic activity beyond the scope of conventional forms of on-balance sheet securities (debt, bonds, equity) at lower capital cost and agency costs from market impediments and liquidity constraints. In particular, most structured investments (i) combine traditional asset classes with contingent claims, such as risk transfer derivatives and/or derivative claims on commodities, currencies or receivables from other reference assets, or (ii) replicate traditional asset classes through synthetication or new financial instruments." (Jobst, 2007, pp. 200f)

Figure 13. Risk Transfer Instruments and Insurance Securitisation



Source: Authority and Jobst (2007)

Insurance securitisation is distinct from asset securitisation, which is commonly used by credit institutions and corporates. Insurance securitisation by means of ILS represents an alternative, capital market-based source of funding profitable underwriting activities in lieu of raising capital from shareholders and borrowing from creditors (since reserves remain unchanged). The transfer of clearly defined insurance risk enables sponsors of ILS to benefit from more cost-efficient terms of funding without increasing their on-balance sheet liabilities or changing their underwriting capacity. Even though insurance securitisation shares with asset securitisation the premise of cost-efficient funding of diversified risk exposures and the reduction of the economic cost of capital, it is predicated on the creation of reinsurance recoverables in return for a pre-specified payment to investors, whose investment represents the collateralisation of the transferred insurance risk (up to the contractual policy limit).[11] In contrast, asset securitisation describes the process and the result of converting (or "monetising") cash flows from a designated asset portfolio into tradable liability and equity obligations, which represents an effective method of redistributing asset risks to investors and broader capital markets (transformation and fragmentation of asset exposures).[12]

Insurance securitisation, much like structured finance in general, offers issuers enormous flexibility to create securities with distinct risk-return profiles in terms of maturity structure, security design and the type of underlying insurance risk. However, the increasing complexity of insurance securitisation, with a multiplicity of valuation models, loss triggers and pricing mechanisms, and the ever-growing range of products being made available to investors invariably create challenges in terms of efficient management and dissemination of information. Securitisation also involves a complex structured finance technology, which necessitates significant initial investment of managerial and financial resources.

11 Moreover, some of the characteristics of asset securitisation that contributed to the financial crisis between 2008 and 2011, such as insufficient screening of creditors, incentive problems of both sponsors and servicers in monitoring securitised loans, and the erroneous valuation models do not apply to insurance securitisation. For instance, in most cases sponsor retain loss provisions for insurance risk ceded to ILS structures, which provides incentives for the adequate actuarial assessment of underwriting risks.

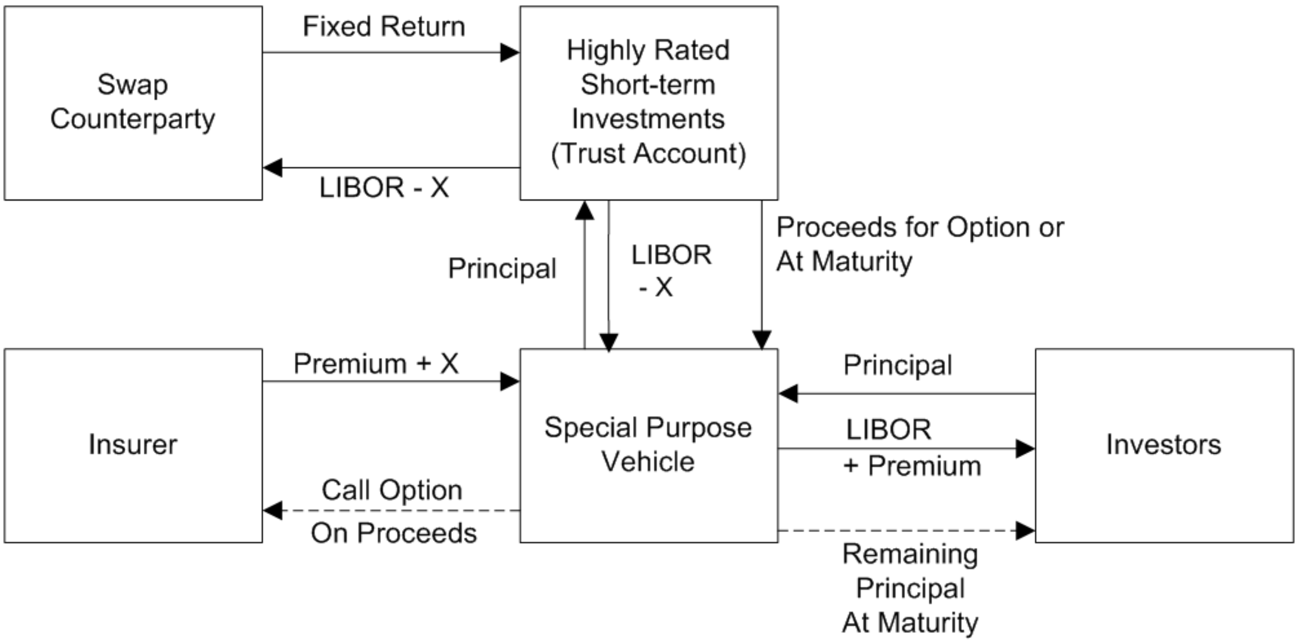
12 Embedded Value (EV) securitisation is the only form of structured finance used by insurance firms that comes close to the concept of asset securitisation. EV securitisation transactions commoditise future cash flows that are released from a block of in force insurance business, future underwriting margins, investment income on reserves and required capital supporting the business, and anticipated reserve releases. By executing such a transaction, an insurer is able to receive an upfront payment using these future cash flows as collateral.

APPENDIX continued
BACKGROUND: ILS STRUCTURE AND SECURITY DESIGN

A typical ILS transaction begins with the formation of a special purpose vehicle (SPV) or special purpose entity (SPE) subject to the registration and licensing by a regulatory authority (Figure 14). The SPV issues bonds to investors and invests the proceeds in safe, short-term securities such as government bonds or highly-rated corporates, which are held in a trust account. Embedded in the bonds is a call option that is triggered by a defined loss event. On the occurrence of the event, proceeds are released from the SPV to help the insurer pay claims arising from the event. For most ILS, the principal is fully at risk, i.e., if the contingent event is sufficiently large, the investors could lose the entire principal in the SPV. In return for the option, the insurer pays a premium to the investors. The fixed returns on the securities held in the trust are usually swapped for floating returns based on LIBOR (London Interbank Offered Rate) or some other widely accepted money market rate. The reason for the swap is to immunise the insurer and the investors from the variability of interest rates. Consequently, the investors receive LIBOR plus the risk premium in return for providing capital to the trust. If no contingent event occurs during the term of the issued bonds, the principal amount is returned to the investors upon the expiration of the bonds.

In the absence of a traded underlying asset, ILS are structured to pay off on several types of triggering variables: (i) *indemnity triggers,* where pay-outs are based on the size of the sponsoring insurer's actual losses; (ii) *index triggers,* where pay-outs are based on an index not directly tied to the sponsoring firm's losses;(iii) *parametric triggers,* based on the physical characteristics of the event; (iv) *modelled loss triggers,* based on the results of a simulation model; or (v) *hybrid triggers,* which blend more than one trigger in a single bond (Cummins, 2012).[13] If a trigger event occurs, it can result in an unwinding of the transaction or a haircut to the investor. To date, indemnity and industry loss index triggers have been most prevalent, accounting for approximately 75.0% of all deals issued since 2009.

Figure 14. Typical Structure of an Insurance-Linked Security (ILS).



Note: ILS structures have become more sophisticated as the market has grown in complexity with multiple perils as securitised risk and tranche subordination becoming more frequent. The illustration above represents a stylised version of an ILS structure.

13 A more comprehensive definition of each trigger type can be found on the next page.

GLOSSARY

TRIGGER DEFINITIONS

Indemnity refers to when the triggering event is the actual loss incurred by the sponsor following the occurrence of a specific event, in a specified region and for a specified line of business, as if traditional catastrophe reinsurance had been purchased. If the layer specified in the CAT bond is $100.0 million excess of $500.0 million, and the total claims add up to more than $500.0 million, then the bond is triggered.

Industry Loss Index is a "pooled indemnity" solution where the indemnity loss experience of a number of companies is used to determine the industry loss estimate. The bond is triggered when the industry loss from a certain peril reaches the specified threshold, typically determined by a recognised agency.

Hybrid triggers combine two or more triggers in a single bond.

Modelled Loss structures refer to the construction of an exposure portfolio using modelling software. Once an event occurs, the event parameters are run against the exposure database. The structure is triggered if modelled losses exceed a specified threshold.

Parametric refers to those transactions that depend on the physical characteristics of a catastrophic event in order for the bond to be triggered. That is, the bond is triggered when the characteristics of the catastrophic event meet pre-specified conditions. Typical parameters include magnitude, proximity, wind-speed or whatever else is deemed appropriate for the given peril.

GENERAL TERMS

Alternative Risk Transfer (ART) refers to non-traditional forms of insurance and reinsurance as risk is transferred to other entities/business models or capital market investors as alternative providers of risk protection. Examples of the former include, for instance, self-insurance, captives, pools and risk retention groups, whereas insurance-linked securities (ILS) and industry loss warranties (ILWs) are examples of the latter.

Asset-Backed Security (ABS) is a security that is collateralised by the cash flows from a pool of underlying assets such as loans, mortgages, leases and receivables.

Basis Risk is the difference between the actual losses experienced by the sponsor and the payment received by the sponsor based on the design of underlying model and trigger structure when ILS use parametric triggers.

Catastrophe Bond is a risk-linked security that transfers a specified set of risks from the cedant or sponsor to investors in the capital market in order to provide cover for potential losses caused by catastrophic events.

Capital Market is a market in which individuals and institutions trade financial securities. Organisations/ institutions in the public and private sectors also often sell securities on the capital markets in order to raise funds.

Cedant refers to an insurance company purchasing reinsurance cover. In the context of ILS, a cedant can be an insurer or reinsurer as the added cover is provided by the capital market.

Counterparty Risk is the risk faced by one party in a contract that the other, the counterparty, will fail to meet its obligations under the contract. In most financial contracts, counterparty risk is also known as "default risk" or "credit risk."

Credit Rating is a measure of risk that the payment terms agreed to by an entity or contained in a financial instrument will not be fulfilled. The rating is typically expressed as a letter grade issued by private sector credit rating agencies.

Diversification is a risk management technique that mixes a wide variety of investments within a portfolio to lower its level of risk as positive performance of some investments will offset to some extent the negative performance of others.

Event Risk is the insurable risk from an occurrence such as a catastrophe

Insurance-Linked Security (ILS) is a financial instrument through which insurance risk is transferred to capital markets and whose value is determined by insurance loss events.

Longevity Bond is a bond that pays a coupon proportional to the number of survivors in a selected birth cohort, creating an effective hedge against longevity risk.

Longevity Risk is the risk that people live longer than expected and life insurers will be exposed to higher than expected pay-out ratios.

Mean-Variance Efficient Frontier is a set of points showing the minimum return volatilities of portfolios for any given level of expected returns of portfolios.

Moral Hazard is a condition in which an individual or institution will tend to act less carefully than it otherwise would because the consequences of a bad outcome will be largely shifted to another party.

Peril refers to a specific risk or cause of loss covered by an insurance policy or insurance-linked security such as a catastrophe bond.

Premium is the specified amount of payment required by an insurer to provide coverage under a given plan for a defined period of time.

Primary Insurer is the insurer that cedes risk to a reinsurer.

Principal is the original amount invested, separate from any interest payments.

Regulatory Arbitrage refers to taking advantage of differences in regulatory capital requirements of financial activities across countries or different financial sectors, which might also involve differences between economic risk and that measured by regulatory standards.

Reinsurance defines the practice of insurers transferring portions of risk portfolios to other parties by some form of agreement in order to reduce the likelihood of having to pay a large obligation resulting from an insurance claim.

Securitisation is the creation of securities from a reference portfolio of pre-existing assets or future receivables that are placed under the legal control of investors through a special intermediary created for this purpose (SPI or SPV).

Special Purpose Insurer, Vehicle or Entity (SPI, SPV or SPE) assumes (re) insurance risks and typically fully funds its exposure to such risks through a debt issuance or some other financing.

Tranches of Securities represent a hierarchy of payment and risk typically associated with an asset-backed security. Higher tranches are less risky and have first priority on the payment of claims.

Trigger Type refers to how the principal impairment is triggered. The most common trigger types for ILS market structures include indemnity, industry loss index, modelled loss and parametric.

Underwriting Capacity is the maximum amount of money an insurer is willing to risk in a single loss event on a single risk or in a single period.

REFERENCES

Main Data Sources

Artemis Deal Directory **(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.

Research

Cummins, J. David, 2012, "CAT Bonds and Other Risk-Linked Securities: Product Design and Evolution of the Market," Geneva Association Geneva Reports: Risk and Insurance Research, Vol. 5, pp. 39-61, available at **http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1997467.**

Jobst, Andreas A., 2007, "A Primer on Structured Finance," Journal of Derivatives and Hedge Funds, Vol. 13, No. 3, pp. 199-213.

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