

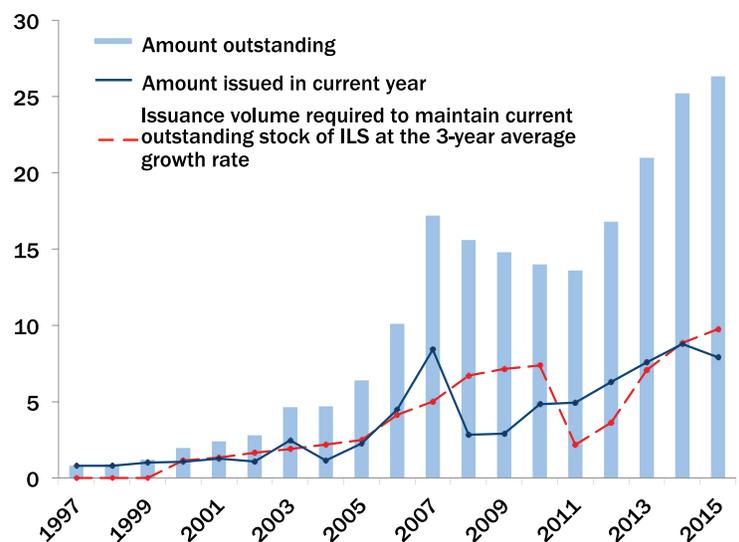
SUMMARY

The total amount of outstanding ILS increased by 4.0% in 2015, a slower pace than previous years. A total of seven bonds were issued in the fourth quarter in the amount of \$1.6 billion, while five ILS deals matured with a notional value of \$914 million. The net issuance of bonds increased the total stock of outstanding capacity to \$26.3 billion.

Bermuda remains the leading jurisdiction for the issuance of catastrophe (cat) bonds. ILS issued from Bermuda represents 69.0% (\$18.1 billion of \$26.3 billion) of total outstanding ILS capacity. Since 2010, Bermuda-based Special Purpose Insurers (SPIs) have issued 119 ILS bonds while 157 SPIs have been registered.

Bermuda is also host to foreign ILS listings which augment the depth of the secondary market.* There are 82 ILS deals (103 tranches) listed on the Bermuda Stock Exchange (BSX) with an aggregate nominal value of \$18.2 billion. Five new ILS deals were listed on the BSX during the quarter while two 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

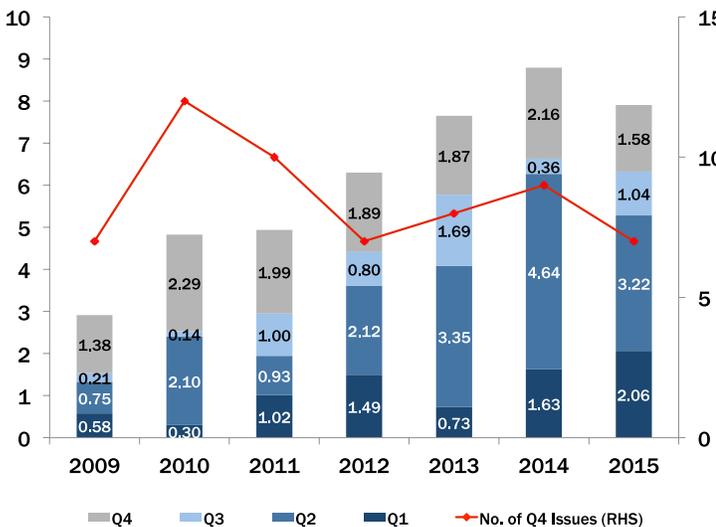
ILS issuance in the fourth quarter decreased 27.0% when compared to activity during the same period last year (Figure 2).¹ There were seven new bonds issued totalling \$1.6 billion (nine deals; \$2.2 billion in Q4-2014). Over the same period, five ILS deals matured with a notional value of \$914 million. The net issuance of bonds increased the total stock of outstanding capacity to \$26.3 billion. This represents an increase of 4.0% year over year.

The average deal size for Q4-2015 is consistent with fourth quarter transactions over the past four years. During the quarter, the average deal size was approximately \$226 million, down from \$240 million in the same quarter last year (Figure 3). The largest deal during the quarter was issued by Kilimanjaro Re Ltd. 2015-1, a Bermuda-domiciled SPI which provides coverage for US earthquakes, in the amount of \$625 million. At the lower end, there was a privately-placed deal in the amount of \$57 million issued by Bermuda-domiciled Resilience Re Ltd.

Annual ILS issuance contracted for the first time in seven years during 2015. Global ILS issuance fell 10.0% to \$7.9 billion (\$8.8 billion in 2014) for the year despite an increase in the number of deals completed. There were 48 transactions during the year (compared to 43 in 2014) with an average deal size of \$165 million (compared to \$204 million in 2014). The decline in average size per deal can be attributed to the increased use of ‘cat bond light’ platforms which issue smaller deals that are often privately placed.

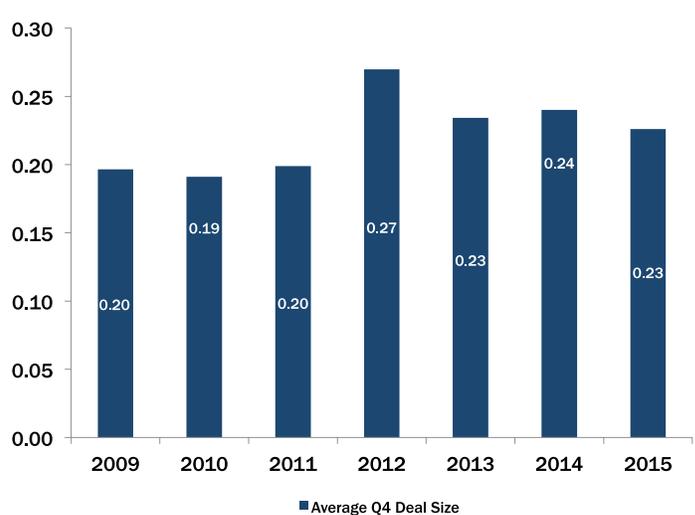
Indemnity triggers account for over half of the outstanding volume of ILS deals. ILS with an indemnity trigger represented 58.0% (\$15.4 billion of \$26.3 billion) of total outstanding volume of the ILS market. This is followed by the industry loss index trigger type which accounts for 23.0% of the outstanding volume (Table IV). In 2015, 57.0% of the issued deal volume (\$4.5 billion of \$7.9 billion) used indemnity triggers, while 18.0% 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 Q4-2015



Source: Artemis and Authority staff calculations.

Figure 3. Global Q4 ILS Issuance (Average Deal Volume), Q4-2009 to Q4-2015 (In US\$ bln)



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., Q4-2015 and Q4-2014.

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	2010	2011	2012	2013	2014	2015
Bermuda	1.2	1.6	2.5	4.7	7.7	5.6
Cayman Islands	2.7	2.0	3.5	1.9	0.7	1.1
Ireland	0.7	0.9	0.2	1.0	0.4	0.6
United States	0.2	0.4	0.1	—	—	0.3
Other	0.04	—	—	—	0.03	0.3

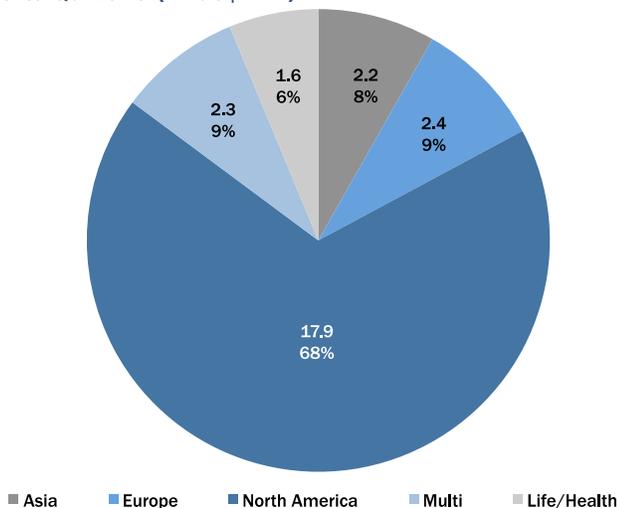
Table III: Triggers in ILS Issuance in Selected Jurisdictions (Total Issued Deal Volume, 2009 to Q4-2015 in US\$ bln)

Trigger (In US\$ bln)	Bermuda	Cayman Islands	Ireland	United States & Other
Indemnity	13.6	7.4	0.5	—
Industry Loss Index	6.6	2.6	3.0	0.5
Longevity Index	—	0.1	—	—
Medical Benefit Ratio Index	—	1.0	—	—
Modeled Loss	0.9	0.6	—	—
Mortality Index	—	0.8	0.2	0.3
Multiple	0.2	0.6	0.3	0.2
Parametric	1.3	0.6	—	0.3
Parametric Index	—	0.7	0.2	—
Unknown	0.8	0.1	—	—

The ILS market remains small relative to traditional (re)insurance business (see tables above). The \$26.3 billion of risk covered by ILS represents 5.0% of global reinsurer capital which is estimated to be \$565 billion.² Since Bermuda entered the market in 2009, 225 ILS bonds have been issued, of which 130 (90 Bermuda deals) have yet to mature. Bermuda has increased its market share as the leading jurisdiction in the ILS industry over the past quarter, accounting for 69.0% (\$18.1 billion of \$23.6 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 21.0% and 8.0% respectively.

The majority of ILS covers North American perils, which account for 68.0% of total outstanding volume (Figures 4 and 5).³ European and

Figure 4. Total Outstanding Volume of ILS by Region/Peril, 2009 to Q3-2015 (In US\$ mln)



Source: Artemis and Authority staff calculations.

² AON Benfield 2014, "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.

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

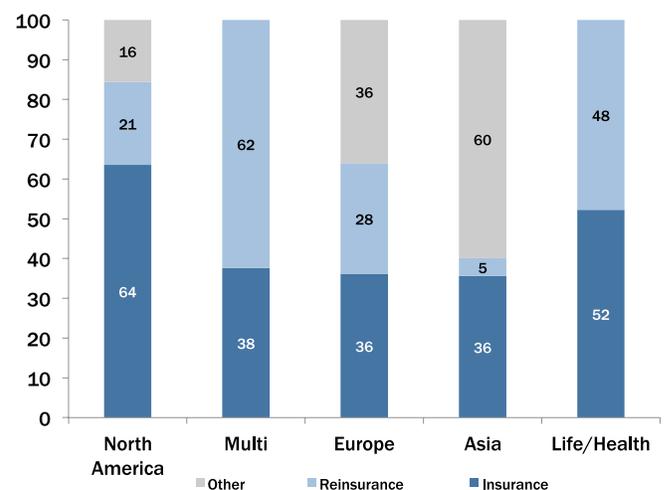
Number of Issuances by Country of Risk (SPV)						
Country	2010	2011	2012	2013	2014	2015
Bermuda	3	8	11	25	36	36
Cayman Islands	16	12	15	9	4	6
Ireland	4	6	1	3	2	4
United States	1	2	1	—	—	1
Other	1	—	—	—	1	1

Table IV: Triggers in ILS Issuance in Selected Jurisdictions (Outstanding Deal Volume, end Q4-2015 in US\$ bln)

Trigger (In US\$ bln)	Bermuda	Cayman Islands	Ireland	United States & Other
Indemnity	11.4	3.6	0.5	—
Industry Loss Index	4.4	0.2	1.4	—
Longevity Index	—	0.1	—	—
Medical Benefit Ratio Index	—	0.6	—	—
Modeled Loss	0.4	0.1	—	—
Mortality Index	—	0.6	0.2	0.3
Multiple	0.2	0.2	0.1	—
Parametric	1.0	—	—	0.3
Parametric Index	—	0.2	—	—
Unknown	0.8	—	—	—

multi-regional perils account for 9.0% of the market while the remaining categories account for approximately 14.0% of the market by volume. This may be explained by the fact that the majority of primary insurers in the ILS market are US-based firms, while European sponsors of ILS tend to be reinsurers. Primary insurers sponsored 64.0% of total coverage for North American perils (\$11.4 billion of \$17.9 billion). In contrast, reinsurers ceded 62.0% of the volume for multi-regional bonds (\$1.4 billion of \$2.3 billion), which comprises portfolios including catastrophic events in two or more regions, and 28.0% of European perils (\$656 million of \$2.4 billion). Bond volume for the Asian region represents 8.0% (\$2.2 billion) of the overall ILS bond market while life and health securities account for the remaining 6.0% of the market (\$1.6 billion).

Figure 5. Coverage per Region/Peril by ILS Sponsor Type, 2009 to Q4-2015 (In %)



Source: Artemis and Authority staff calculations.

PRIMARY MARKET: DOMESTIC ISSUANCE

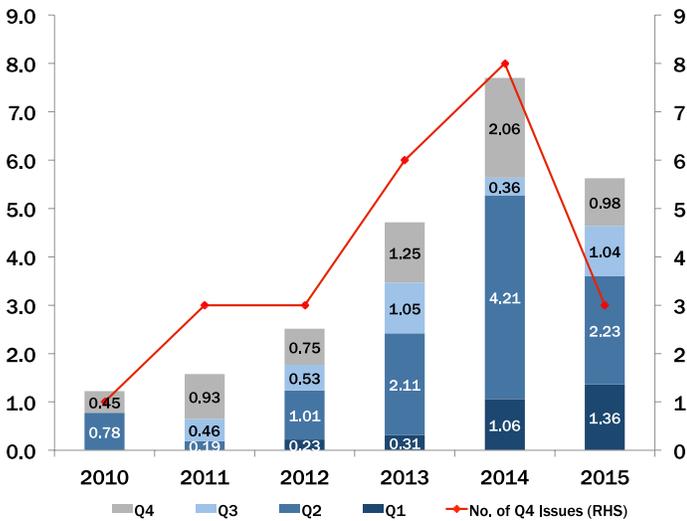
Bermuda maintained its dominance as the leading jurisdiction for the issuance of ILS. Bermuda-based SPIs accounted for 62.0% (\$982 million of \$1.6 billion) of issuance volume during the quarter. During the quarter, Bermuda-based SPIs underwrote \$982 million of property and catastrophe (P&C) risks via three ILS transactions (Figure 6), covering North American and Asian perils. Overall, Bermuda-issued ILS represents 69.0% (\$18.1 billion of \$26.3 billion) of total outstanding capacity at the end of Q4-2015.

The average deal size for Bermuda-issued ILS in Q4-2015 was \$327 million, the highest on record since 2011. This represents an increase of \$69 million per deal compared to the same quarter last year which recorded an average volume of \$258 million (Figure 7). The largest of the three Bermuda-based deals during the quarter was issued by Kilimanjaro Re Ltd. 2015-1 in the amount of \$625 million.

Bermuda maintained its position as the leading jurisdiction within the ILS market during 2015 despite a fall in annual issuance volume. Domestic ILS issuance was down 27.0% to \$5.6 billion (\$7.7 billion in 2014) via 36 ILS deals completed during the year (also 36 in 2014) (Table I and II). The average deal size during 2015 was \$156 million (compared to \$214 million in 2014).

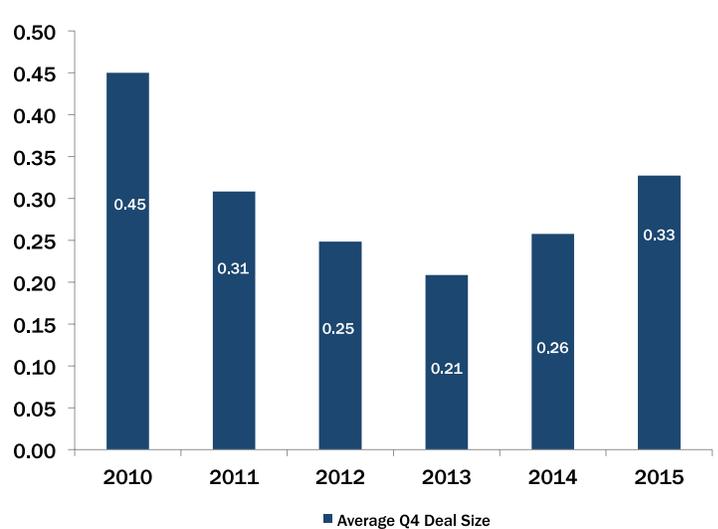
The BSX accounted for 69.0% of the global market capitalisation of ILS at the end of Q4-2015. A total of 82 ILS (comprising 103 tranches) are listed on the BSX with an aggregate nominal value of approximately \$18.2 billion,⁴ of which \$1.1 billion (6.0%) are issued by non-Bermuda entities, namely Ireland and the United States. Five (seven tranches) of the seven deals issued during the quarter were listed on the BSX, with a notional \$1.4 billion amount. Over the same period, two deals (two tranches) worth \$319 million matured.

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



Source: Artemis and Authority staff calculations.

Figure 7. Domestic Q2 ILS Issuance (Average Deal Volume), Q4-2010 to Q4-2015 (In US\$ bln)

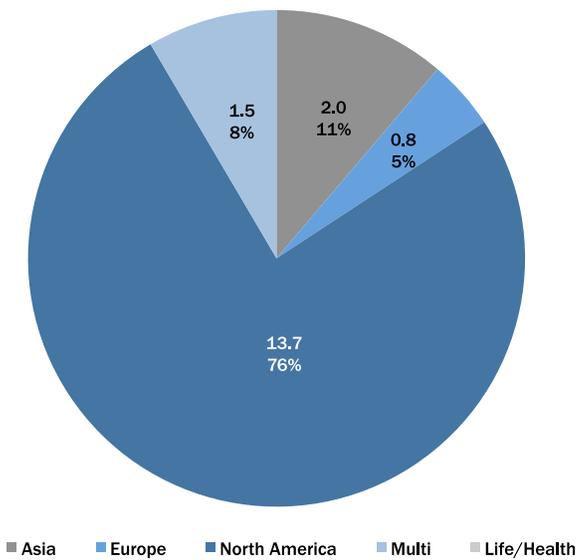


Source: Artemis and Authority staff calculations.

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 issued in 2010, an indemnity trigger has accounted for 63.0% (\$11.4 billion of \$18.1 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). There is some global activity in life securitisation but domestic issuance is motivated by P&C underwriting, given the large footprint of the business line in Bermuda. This serves to

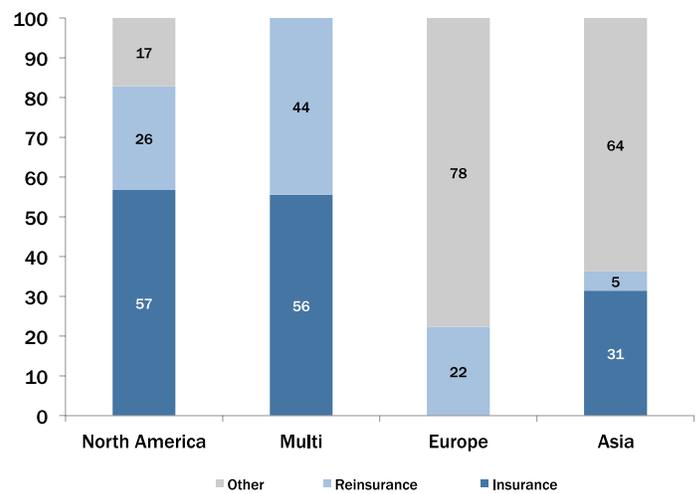
Figure 8. Total Outstanding Volume of Bermuda-issued Deals by Region/Peril (In US\$ mln)



Source: Artemis and Authority staff calculations.

further explain the prevalence of non-parametric, indemnity-based ILS triggers. Primary insurers sponsored 57.0% of total coverage for those bonds (\$7.8 billion of \$13.7 billion). In contrast, reinsurers ceded 44.0% and 22.0% of multi-region and European risks, respectively. Other sponsor types (insurance pools/associations) ceded 78.0% and 64.0% of European and Asian 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 9. Percent of Coverage per Region/Peril by ILS Sponsor Type for Bermuda-issued Deals, 2010 to Q4-2015 (In %)



Source: Artemis and Authority staff calculations.

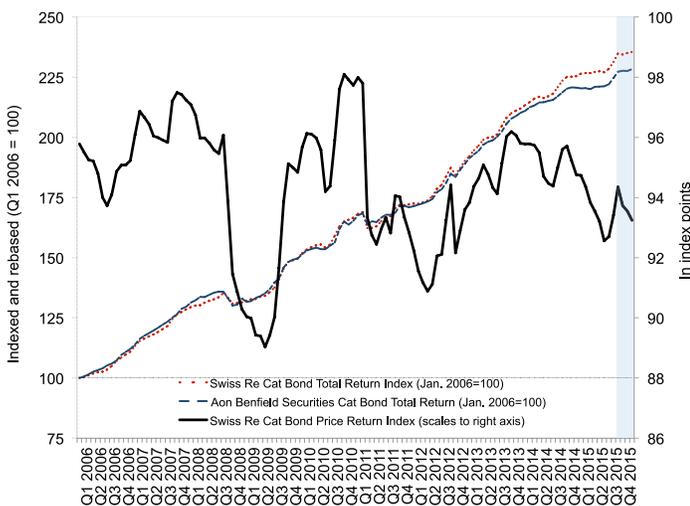
SECONDARY MARKET: PRICE INDICES

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 cat bond indices generated positive performance in the final quarter of the year as the Swiss Re and Aon Benfield Total Return indices returned 0.09% and 0.15% respectively. In 2015, the annual total return performance of the Swiss Re and Aon Benfield bond indices was 4.45% and 3.50% respectively, far outpacing the total return of 1.19% by the S&P 500 index. Lower returns in Q4 can be attributed to a marginal widening in cat bond spreads and increased selling in the secondary market of shorter-dated issues, as investors positioned ahead of new issuance in the January renewal period. The influx of alternative capital into ILS and catastrophe bonds over the past few years have driven spreads to tighter levels when compared to other higher yielding

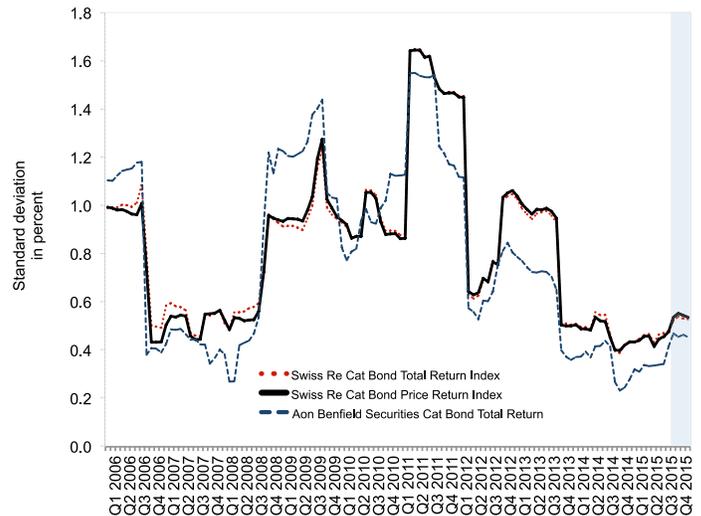
fixed income benchmarks. Based on various industry surveys the returns for the ILS market will remain challenging given the low yields, soft market pricing and the lack of catastrophe loss events. With interest rates in the US expected to rise over the next year and the recent spread widening of other fixed income assets, investors will be interested to see how these events will influence the pricing of ILS securities. On the demand side, investor interest in the asset class remains strong, particularly from pension funds and endowments, due to the lack of correlation between the ILS market and the other asset classes. With financial market volatility on the rise investors will appreciate the diversification benefits and the lower volatility offered by ILS securities.

Figure 10. ILS Total Return and Price Return Benchmark Indices, 2006-Q4 2015 (In index points)



Source: Artemis and Authority staff calculations.

Figure 11. ILS Total Return and Price Return Benchmark Indices: Annualised Return Volatility, 2006-Q4 2015 (In %)



Source: Artemis and Authority staff calculations.

The risk-return trade-off was more favourable following higher price returns compared to the same quarter a year ago. Table V provides a summary of selected indicators of market performance over the last six quarters (Q3-2014 to Q4-2015) 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 0.09% (down from 1.13% during the previous quarter) and 0.15% (down from 0.91%). The annualised return volatility of each index was moderately higher, up to 0.53% and 0.46% 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 that while capital gains have been positive since 2006, prices at the end of Q4-2015 continued to persist beneath the peak levels achieved in early 2011, having decreased for a fourth time over the past five quarters during Q4-2015. Figure 11 highlights that during the same time, the annualised return volatility (as a measure of risk) dropped significantly despite increasing over the past few quarters.

Table V. Selected ILS Market Performance Indicators, Q3-2014 to Q4-2015

Selected ILS Market Performance Indicators <i>In % unless indicated otherwise</i>	2014		2015			
	Q3	Q4	Q1	Q2	Q3	Q4
Price Return 1/						
Swiss Re Cat Bond Total Return Index	0.98	0.28	0.19	0.05	1.13	0.09
Swiss Re Cat Bond Price Return Index (scales to right axis)	0.40	-0.29	-0.33	-0.45	0.64	-0.39
Aon Benfield Securities Cat Bond Total Return	0.54	0.29	-0.09	0.18	0.91	0.15
Return Volatility						
<i>Annualised Standard Deviation 2/</i>						
Swiss Re Cat Bond Total Return Index	0.47	0.41	0.45	0.45	0.49	0.53
Swiss Re Cat Bond Price Return Index (scales to right axis)	0.46	0.42	0.44	0.44	0.49	0.54
Aon Benfield Securities Cat Bond Total Return	0.37	0.25	0.32	0.34	0.41	0.46
<i>Normalised Squared Returns (In standard deviations) 3/</i>						
Swiss Re Cat Bond Total Return Index	0.91	-0.56	-0.57	-0.57	1.57	-0.47
Swiss Re Cat Bond Price Return Index (scales to right axis)	0.44	0.03	-0.17	0.24	1.09	-0.34
Aon Benfield Securities Cat Bond Total Return	0.03	-0.32	-0.77	-0.41	1.59	-0.43

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.

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 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 from 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".

GLOBAL ILS ISSUANCES Table VI. Transaction Overview of Global ILS Issuance, Q4-2014 to Q4-2015

Q4-2014	Sponsor	Short Name	Issue Date	Maturity Date	Amount Issued (\$ mln)	Region/Peril Covered	Trigger	Country of Issuance (SPI)	BSX Listings
	Unknown cedant	LI RE 2014-1	16-Oct-14	15-Jun-16	10	North America	Unknown	Bermuda	✓
	Everest Re	KILIMANJARO RE LTD 2014-2	18-Nov-14	25-Nov-19	500	North America	Industry Loss Index	Bermuda	✓
	California Earthquake Authority	URSA RE LTD 2014-1	1-Dec-14	7-Dec-17	400	North America	Indemnity	Bermuda	
	USA	RESIDENTIAL REINS 2014-2	3-Dec-14	6-Dec-18	100	North America	Indemnity	Cayman Islands	
	AIG	TRADEWIND RE LTD 2014-1	18-Dec-14	8-Jan-18	500	North America	Indemnity	Bermuda	✓
	Zenkyoren	NAKAMA RE LTD 2014-2	19-Dec-14	16-Jan-20	375	Asia	Indemnity	Bermuda	✓
	Amlin AG	TRAWLINE RE II LTD 2014-1	22-Dec-14	4-Jan-19	200	Mulli	Industry Loss Index	Bermuda	✓
	Unknown cedant	LEINE RE	24-Dec-14	15-Jan-16	71	Europe	Indemnity	Bermuda	✓
	Unknown cedant	LI RE 2014-2	29-Dec-14	10-Feb-16	5	North America	Unknown	Bermuda	✓
	Unknown cedant	KANE SAC - HEREFORD	2-Jan-15	12-Jan-16	17	North America	Industry Loss Index	Bermuda	✓
	Unknown cedant	KANE SAC - MUIRFIELD	2-Jan-15	12-Jan-16	27	North America	Industry Loss Index	Bermuda	✓
	Unknown cedant	KANE SAC - TROON	2-Jan-15	12-Jan-16	28	North America	Industry Loss Index	Bermuda	✓
	Unknown cedant	KANE SAC - EXETER	5-Jan-15	15-Jan-16	55	North America	Industry Loss Index	Bermuda	✓
	Aurigen Reinsurance	VALINS I LTD	15-Jan-15	15-Jan-21	175	North America	Unknown	Bermuda	✓
	Aetna	VITALITY RE VI LTD 2015-1	27-Jan-15	18-Jan-18	200	Life/Health	Medical benefit ratio index	Cayman Islands	
	Unknown cedant	DODEKA I	2-Feb-15	3-Feb-16	21	North America	Unknown	Bermuda	✓
	Catlin	GALILEO RE LTD 2015-1	4-Feb-15	8-Jan-18	300	Mulli	Industry Loss Index	Bermuda	✓
	SCOR Global P&C SE	ATLAS IX CAPITAL LTD 2015-1	10-Feb-15	7-Jan-19	150	North America	Industry Loss Index	Ireland	
	Unknown cedant	KANE SAC LTD 2015-1	19-Feb-15	7-Apr-16	50	North America	Unknown	Bermuda	✓
	Chubb	EAST LANE RE VI LTD 2015-1	6-Mar-15	13-Mar-20	250	North America	Indemnity	Cayman Islands	
	Tokio Marine & Nichido Fire	KIZUNA RE II LTD 2015-1	26-Mar-15	5-Apr-19	293	Asia	Indemnity	Bermuda	✓
	Safepoint Insurance Company	MANATEE RE LTD 2015-1	27-Mar-15	22-Dec-17	100	North America	Indemnity	Bermuda	✓
	Munich Re	QUEEN STREET X RE LTD	30-Mar-15	8-Jun-18	100	Mulli	Industry Loss Index	Ireland	✓
	State Farm	MIERNA RE LTD 2015-1	31-Mar-15	9-Apr-18	300	North America	Indemnity	Bermuda	✓
	Heritage, P&C Ins. Co.	CITRUS RE 2015-1	8-Apr-15	9-Apr-18	278	North America	Indemnity	Bermuda	✓
	Louisiana Citizens	PELICAN II RE LTD	14-Apr-15	16-Apr-18	4	North America	Indemnity	Bermuda	✓
	Unknown cedant	LI RE LTD	14-Apr-15	30-Apr-16	4	North America	Unknown	Bermuda	✓
	AXA Global Life	BENU CAPITAL LTD	24-Apr-15	8-Jan-20	309	Life/Health	Mortality index	Other	
	Unknown cedant	MARKET RE LTD 2015-1	29-Apr-15	1-May-16	10	North America	Indemnity	Bermuda	✓
	Massachusetts Property	CRANBERRY RE LTD 2015-1	30-Apr-15	6-Jul-18	300	North America	Indemnity	Bermuda	✓
	Citizens Property Insurance	EVERGLADES RE II LTD 2015-1	7-May-15	3-May-18	300	North America	Indemnity	Bermuda	✓
	Hannover Re	ALAMO RE LTD	13-May-15	7-Jun-19	700	North America	Indemnity	Bermuda	✓
	Travelers	LONG POINT RE III LTD 2015-1	15-May-15	23-May-18	300	North America	Indemnity	Cayman Islands	
	Unknown cedant	DODEKA V	28-May-15	22-Dec-15	19	North America	Industry Loss Index	Bermuda	✓
	USA	RESIDENTIAL REINS LTD 2015-1	29-May-15	6-Jun-19	150	North America	Indemnity	Cayman Islands	
	AIG	COMPASS RE II LTD 2015-1	1-Jun-15	8-Dec-15	300	North America	Parametric	Bermuda	✓
	Southern Oak Insurance Company	OAK LEAF RE LTD 2015-1	4-Jun-15	4-Jun-16	53	North America	Indemnity	Bermuda	✓
	Unknown cedant	MARKET RE LTD 2015-2	10-Jun-15	7-Jun-16	71	North America	Indemnity	Bermuda	✓
	Unknown cedant	MARKET RE LTD 2015-3	10-Jun-15	7-Jun-16	31	North America	Indemnity	Bermuda	✓
	Unknown cedant	DODEKA V	12-Jun-15	20-Jan-16	19	North America	Industry Loss Index	Bermuda	✓
	UnipolSai Assicurazioni S.p.A.	AZZURRO RE I LTD	17-Jun-15	16-Jan-19	225	Europe	Indemnity	Ireland	
	China Re	PANDA RE LTD 2015-1	29-Jun-15	9-Jul-18	50	Asia	Indemnity	Bermuda	✓
	Unknown cedant	DODEKA VII	1-Jul-15	20-Jul-16	19	North America	Industry Loss Index	Bermuda	✓
	Unknown cedant	KANE SAC - TRALEE	1-Jul-15	20-Jul-17	18	Asia	Unknown	Bermuda	✓
	Tokio Millennium Re AG	HOTARU	1-Jul-15	7-Aug-17	48	Asia	Unknown	Bermuda	✓
	Hannover Re / Oak Tree Assurance Ltd.	ACORN RE LTD 2015-1	10-Jul-15	7-Jul-18	300	North America	Parametric	Bermuda	✓
	Unknown cedant	KANE SAC - SERIES AX NOTES	21-Jul-15	10-Jun-16	10	North America	Unknown	Bermuda	✓
	United Guaranty (AIG)	BELLEWADE RE LTD 2015-1	29-Jul-15	25-Jul-25	299	North America	Indemnity	Bermuda	✓
	Turkish Cat. Insurance Pool	BOSPHORUS LTD 2015-1	17-Aug-15	17-Aug-18	100	Europe	Parametric	Bermuda	✓
	Amfrak	URSA RE LTD 2015-1	15-Sep-15	21-Sep-18	250	North America	Indemnity	Bermuda	✓
	China Re	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	✓
	USA	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	✓

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, 2012 to Q4-2015

	Short Name	Issue Date	Maturity Date	Amount Issued (\$ mln)	Region/Peril Covered	Trigger Type	Country of Issuance (SPI)
2012	EURUS III LTD	13-Sep-12	7-Apr-16	129	Europe	Industry Loss Index	Bermuda
	QUEEN STREET VII LTD	31-Oct-12	8-Apr-16	75	Multi	Industry Loss Index	Bermuda
	LAKESIDE RE III	28-Dec-12	8-Jan-16	270	North America	Indemnity	Bermuda
2013	EVERGLADES RE LTD	28-Mar-13	28-Mar-16	250	North America	Indemnity	Bermuda
	MERNA RE IV	1-Apr-13	8-Apr-16	300	North America	Indemnity	Bermuda
	TAR HEEL RE LTD	9-Apr-13	9-May-16	500	North America	Indemnity	Bermuda
	BOSPHORUS I RE LTD	25-Apr-13	3-May-16	400	Europe	Parametric	Bermuda
	SANDERS RE LTD 2013	3-May-13	5-May-17	350	North America	Industry Loss Index	Bermuda
	BLUE DANUBE II LTD	22-May-13	23-May-16	175	North America	Modelled Loss	Bermuda
	QUEEN STREET VIII RE LTD	26-Jun-13	8-Jun-16	75	Multi	Industry Loss Index	Bermuda
	TRAMLIN 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
	METROCAT RE LTD	30-Jul-13	5-Aug-16	200	North America	Parametric	Bermuda
	NORTHSHORE RE LTD	5-Aug-13	5-Jul-16	200	North America	Industry Loss Index	Bermuda
	NAKAMA RE LTD	6-Sep-13	29-Sep-16	300	Asia	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	
2014	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
	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
	ARMOR RE LTD 2014-1	7-May-14	15-Dec-16	200	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
	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
	LI RE 2014-1	16-Oct-14	15-Jun-16	10	North America	Unknown	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
TRAMLIN RE II LTD 2014-1	22-Dec-14	4-Jan-19	200	Multi	Industry Loss Index	Bermuda	
LEINE RE	24-Dec-14	15-Jan-16	71	Europe	Indemnity	Bermuda	
LI RE 2014-2	29-Dec-14	10-Feb-16	5	North America	Unknown	Bermuda	
2015	KANE SAC - HEREFIELD	2-Jan-15	12-Jan-16	17	North America	Industry Loss Index	Bermuda
	KANE SAC - MUIRFIELD	2-Jan-15	12-Jan-16	27	North America	Industry Loss Index	Bermuda
	KANE SAC - TROON	2-Jan-15	12-Jan-16	28	North America	Industry Loss Index	Bermuda
	KANE SAC - EXETER	5-Jan-15	15-Jan-16	55	North America	Industry Loss Index	Bermuda
	DODEKA I	2-Feb-15	3-Feb-16	21	North America	Unknown	Bermuda
	GALILEO RE LTD 2015-1	4-Feb-15	8-Jan-18	300	Multi	Industry Loss Index	Bermuda
	KANE SAC LTD 2015-1	19-Feb-15	7-Apr-16	50	North America	Unknown	Bermuda
	KIZUNA RE III 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
	LI RE LTD	14-Apr-15	30-Apr-16	4	North America	Unknown	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
	DODEKA VI	12-Jun-15	20-Jan-16	19	North America	Industry Loss Index	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
	DODEKA VII	1-Jul-15	20-Jul-16	19	North America	Industry Loss Index	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
	KANE SAC - SERIES AX NOTES	21-Jul-15	10-Jun-16	10	North America	Unknown	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

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

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

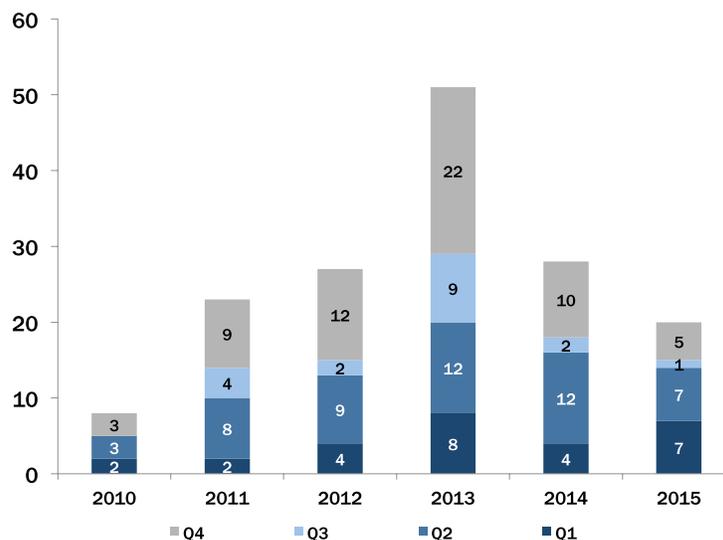
The number of SPI registrations during the quarter declined year-over-year. The Authority licensed five SPIs during Q4-2015 compared to 10 registrations during the same period last year (Figure 12).

Table VIII. SPI Registrations and ILS issuance in Bermuda, 2010 to Q4-2015

		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
Total		157	119

Source: Authority

Figure 12. Bermuda SPI Registrations by Quarter, 2010 to Q4-2015



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 some 1,400 firms and total assets of more than \$500 billion at end-2012.

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, and which are managed by, a sponsoring (re)insurance company.⁷ The regulatory focus during the licensing process of SPIs is on the assessment of the quality of the sponsoring entity and the complete collateralisation of the policy limits of insurance risk ceded to the SPI. Moreover, investments in SPIs are restricted to sophisticated participants.

The characteristics of collateralisation and investor eligibility are defined in the *BMA Guidance Note No. 20 – Special Purpose Insurers*.⁸

Collateralisation — To be fully collateralised, an SPI will be expected to: (i) confirm full disclosure to the cedant or insured of the fact that the maximum reinsurance recovery from the SPI is limited to the lower of the stated contract limit or the available assets of the SPI; (ii) ensure that, under the terms of any debt issue or other financing mechanism used to fund its (re)insurance liabilities, the rights of providers of that debt or other financing are fully subordinated to the claims of creditors under its contracts of (re)insurance; (iii) enter into contracts or otherwise assume obligations which are solely necessary for it to give effect to the (re)insurance special purpose for which it has been established; and (iv) ensure that, to the extent that more than one (re)insurance contract is in place within the SPI, each of the (re)insurance contracts is structured so that the SPI meets the fully collateralised requirements individually for each contract.

Sophisticated Investors — Sufficiently sophisticated participants [for the purposes of SPI licensing] satisfy one or more of the criterion below: (i) high income private investors; (ii) high net worth private investors; (iii) sophisticated private investors; (iv) investment funds approved by the Authority under the Investment Funds Act (IFA); (v) bodies corporate, each of which has total assets of not less than \$5 million, where such assets are held solely by the body corporate or held partly by the body corporate and partly by one or more members of a group of which it is a member; (vi) unincorporated associations, partnerships or trusts, each of which has total assets of not less than five million dollars, where such assets are held solely by such association, partnership or trust or held partly by it and partly by one or more members of a group of which it is a member; (vii) corporate bodies, all of whose shareholders fall within categories (i)-(iii); (viii) partnerships, all of whose members fall within categories (i)-(iii); (ix) trusts, all of whose beneficiaries fall within categories (i)-(iii); (x) any company quoted on a recognised stock exchange; and (xi) any party deemed to have sufficient knowledge and experience in financial and business matters to make them capable of evaluating the merits and risks of the prospective investment.

Incorporation and Registration Process — The process of establishing an SPI is substantially similar to that for “conventional” commercial and captive insurers. Key elements of the “Licensing Application” include: (i) a business plan, which provides the fundamental elements of the proposed transaction and, importantly, evidences the fully collateralised and sophisticated nature of the business; (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 acceptance letters.

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

⁷ Prior to the SPI legislation, ILS were not listed in Bermuda.

⁸ Full details of the relevant legislative provisions and supervisory guidance for SPIs may be found at <http://www.bermulaweb.com/Laws/Consolidated%20Laws/Insurance%20Act%201978.pdf> and <http://www.bma.bm/document-centre/policy-and-guidance/INSURANCE%20II/Guidance%20Note%20No.%2020%20-%20Special%20Purpose%20Insurers.pdf>.

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 and may be used in addition, or as an alternative to the purchase of reinsurance. More specifically, ILS structures represent Alternative Risk Transfer (ART) instruments that 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 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.⁹

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.¹⁰ 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 billion.¹¹ However, as with the life-related securitisation transactions, issuance dropped in early 2008 due to a surplus of traditional (re)insurance capacity, and dried up completely after the collapse of Lehman Brothers whose credit derivative contracts backed low-quality collateral underlying some of the transactions.¹² When these bonds were sharply downgraded, investors stepped back on fears that 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 billion at end-2007 (Goldman Sachs, 2011). In comparison, global-insured CAT losses were about \$40 billion in 2010, and ranged from \$10 billion to \$30 billion between 1990 and 2009 (indexed to 2010 US dollars), except for 2006, which spiked to over \$100 billion (Swiss Re, 2011).

In 2012, the global ILS market continued to expand and amounted to more than \$16 billion (up from \$13.8 billion in 2011), with an overall market capitalisation of almost \$6 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 of the recent issuance of ILS was motivated by the 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.

⁹ 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).

¹⁰ 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.

¹¹ 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).

¹² 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

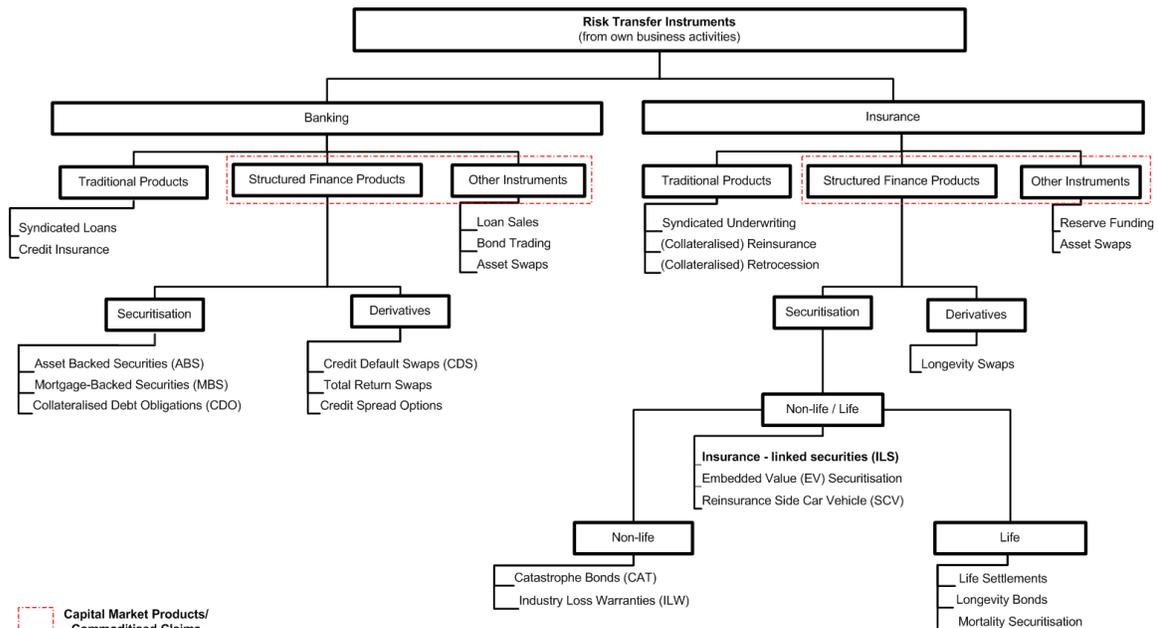
BACKGROUND: RISK TRANSFER IN STRUCTURED FINANCE AND INSURANCE SECURITISATION

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 12). 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 synthetic 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).¹³ 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).¹⁴

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.

¹³ 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.

¹⁴ 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

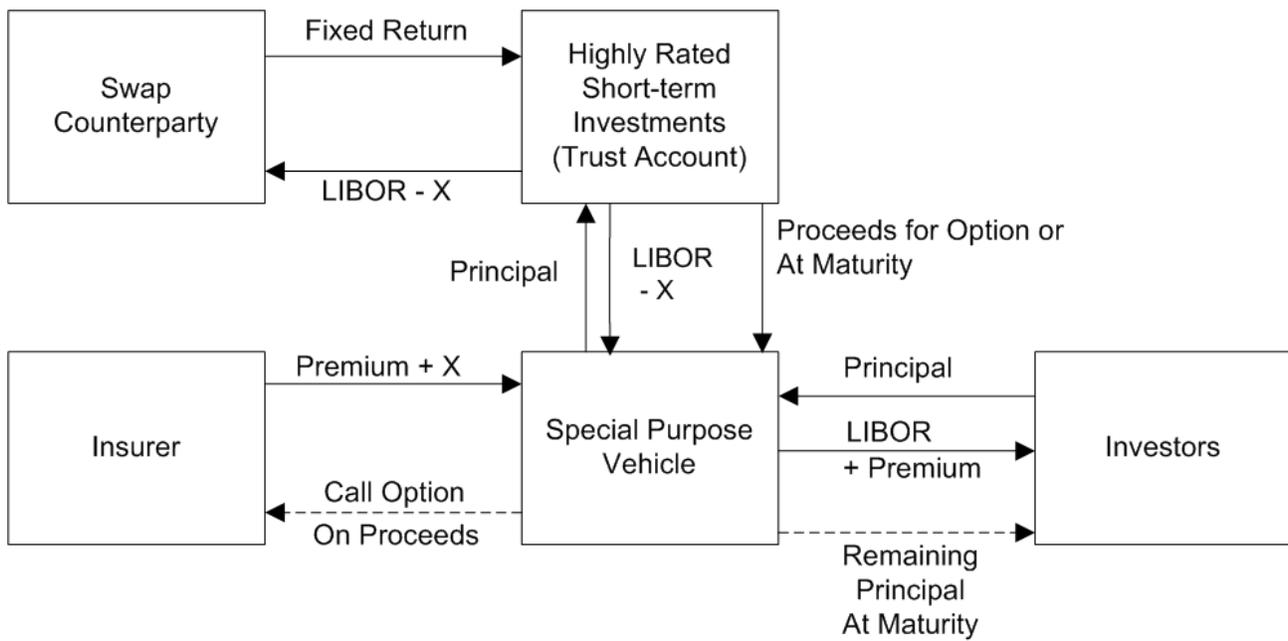
BACKGROUND: ILS STRUCTURE AND SECURITY DESIGN

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 13). 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).¹⁵ 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.

15 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 million excess of \$500 million, and the total claims add up to more than \$500 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.

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