



Q4 2017 Catastrophe Bond & ILS Market Report

Record 2017 issuance
takes market to record size

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INTRO

This report reviews the catastrophe bond and insurance-linked securities (ILS) market at the end of the fourth-quarter of 2017, looking at new risk capital issued and the composition of transactions completed during the quarter.

Data from the Artemis Deal Directory shows that catastrophe bond and ILS issuance during the fourth-quarter reached \$1.92 billion, which is \$146 million above the ten-year average for the quarter.

Despite the impacts of third-quarter catastrophe losses, investors and sponsors remained attracted to the insurance-linked securities (ILS) space in Q4, and combined with more than \$10.6 billion of issuance in the first nine months of the year, full-year 2017 issuance broke records, with roughly \$12.6 billion of new risk capital brought to market. As a result, the outstanding catastrophe bond and ILS market at the end of 2017 surpassed \$31 billion for the first time.

Overall, 13 transactions consisting of 22 tranches of notes came to market in the fourth-quarter, seven of which were privately placed deals, amounting to \$205 million of fourth-quarter issuance.

Artemis is the leading, freely accessible source of timely, relevant and authoritative news, analysis, insight and data on the insurance-linked securities, catastrophe bond, alternative reinsurance capital and related risk transfer markets. The Artemis Deal Directory is the leading source of information, data and analysis on issued catastrophe bond and insurance-linked securitization transactions.

Transaction Recap

The \$1.92 billion of new risk capital issued in the final quarter of the year came from 13 deals, consisting of 22 tranches of notes.

Roughly \$1.2 billion, or 63% of Q4 issuance came from repeat sponsors, while \$205 million, or 11% of deals issued were privately placed, and offered protection against property catastrophe risks, temperature risks, and California earthquake.

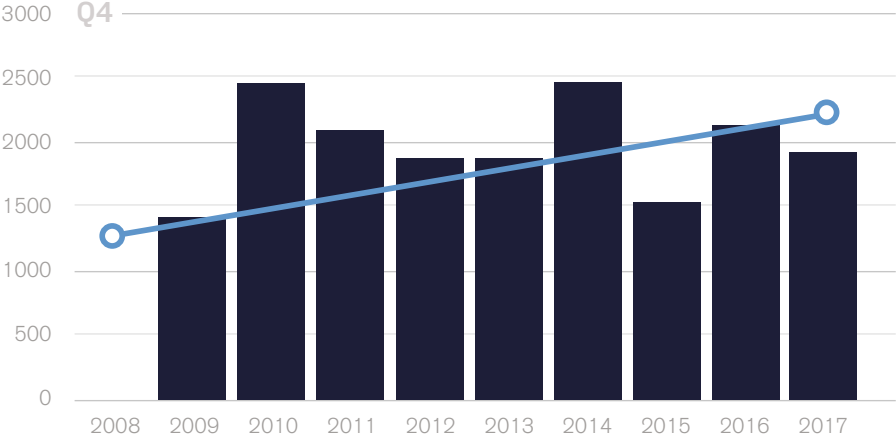
\$410 million, or 21% of Q4 issuance offered California earthquake protection and came from the California Earthquake Authority and an unknown sponsor. 15%, or \$295 million of U.S. multi-peril coverage also came to market, from prolific cat bond sponsor, USAA. XL Bermuda returned in Q4 with \$150 million of protection against a range of international perils, while Arch Capital brought more than \$368 million of mortgage insurance risks to market in the quarter.

26%, or roughly \$506 million of fourth-quarter issuance came from first time sponsors Validus Holdings and Covéa Group. The former brought \$400 million of international multi-peril risk to market, while the latter added roughly \$106 million of European windstorm protection to Q4 issuance.

ISSUER / TRANCHE	SPONSOR	PERILS	SIZE (\$M)	DATE
Artex SAC Limited - Series GX Notes	Unknown	Unknown property catastrophe risks	50.228	Dec
Dodeka XIV	Unknown	U.S. property catastrophe risks	33.583	Dec
Tailwind Re Ltd. (Series 2017-1) Class A	Validus Holdings	International multi-peril	150	Dec
Tailwind Re Ltd. (Series 2017-1) Class B	Validus Holdings	International multi-peril	150	Dec
Tailwind Re Ltd. (Series 2017-1) Class C	Validus Holdings	International multi-peril	100	Dec
LI Re (Series 2017-1)	Unknown	California earthquake	10	Dec
Seaside Re (Series 2018)	Unknown	U.S. property catastrophe risks	97	Dec
Market Re Ltd. (Series 2017-2)	Allianz Risk Transfer	Temperature risks	14.5	Dec
Hexagon Reinsurance DAC (Series 2017-1) Class A	Covéa Group	European windstorm	53.1	Dec
Hexagon Reinsurance DAC (Series 2017-1) Class B	Covéa Group	European windstorm	53.1	Dec
Ursa Re Ltd. (Series 2017-2) Class C	California Earthquake Authority	California earthquake	200	Nov
Ursa Re Ltd. (Series 2017-2) Class D	California Earthquake Authority	California earthquake	200	Nov
Residential Reinsurance 2017 Limited (Series 2017-2) Class 1	USAA	U.S. multi-peril	55	Nov
Residential Reinsurance 2017 Limited (Series 2017-2) Class 2	USAA	U.S. multi-peril	110	Nov
Residential Reinsurance 2017 Limited (Series 2017-2) Class 3	USAA	U.S. multi-peril	130	Nov
Galileo Re Ltd. (Series 2017-1) Class A	XL Bermuda Ltd.	International multi-peril	75	Nov
Galileo Re Ltd. (Series 2017-1) Class B	XL Bermuda Ltd.	International multi-peril	75	Nov
Bellemead Re 2017-1 Ltd. M-1	Arch Capital Group	Mortgage insurance risks	195.1	Oct
Bellemead Re 2017-1 Ltd. M-2	Arch Capital Group	Mortgage insurance risks	154.6	Oct
Bellemead Re 2017-1 Ltd. B-1	Arch Capital Group	Mortgage insurance risks	18.4	Oct

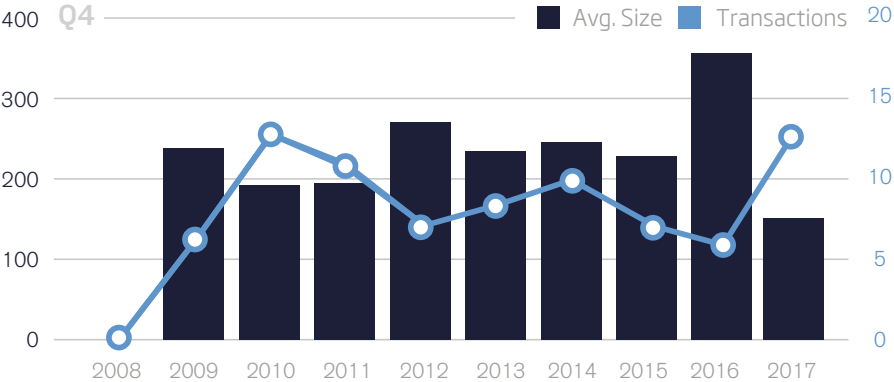
Q4 ILS issuance by year (\$M)

Fourth-quarter 2017 issuance declined by \$202 million when compared with the previous year, and at \$1.92 billion is actually above the ten-year average by \$146 million. Artemis' data shows that issuance in the fourth-quarter hasn't fallen below \$1.5 billion since 2009.



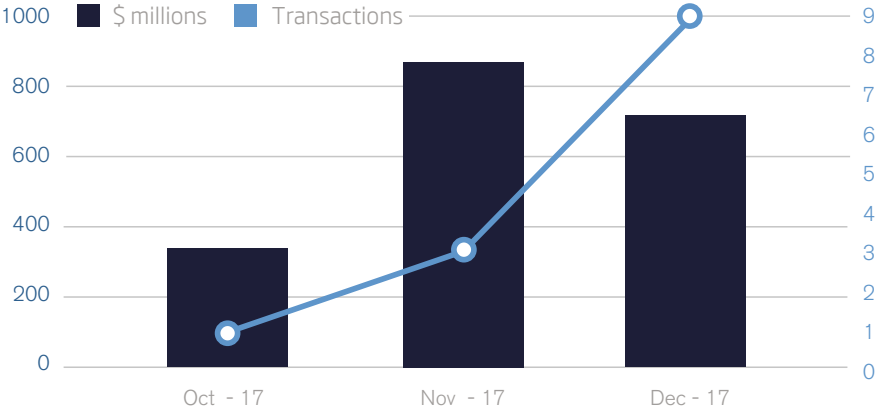
Q4 ILS average transaction size & number of transactions by year (\$M)

At \$148 million, the average transaction size in Q4 2017 is below the ten-year average of \$210 million. In terms of the number of transactions issued, the 13 deals brought to market in Q4 is actually above the ten-year average for the quarter, of 8.1 deals. When compared with Q4 2016, the number of transactions issued is higher this year, while the average transaction size has declined by \$206 million.



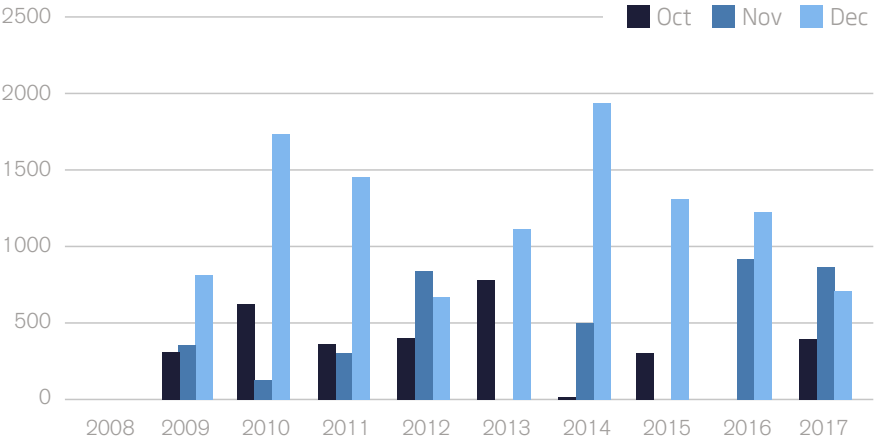
Number of transactions and volume issued by month (\$M)

Each individual month of the fourth-quarter witnessed some level of catastrophe bond and ILS issuance. The majority of Q4 issuance, in terms of risk capital issued, occurred in November, which saw \$845 million of issuance. The busiest month in terms of the number of transactions was December, which saw nine deals amounting to \$712 million of quarterly issuance. Over \$368 million of issuance came to market in October.



Q4 issuance by month & year (\$M)

The \$845 million of new risk capital brought to market in November is actually the second highest level of issuance ever witnessed in the month, according to the Artemis Deal Directory. Issuance in October was actually \$60 million above the ten-year average, while December issuance failed to reach \$1 billion for the first time since 2012.





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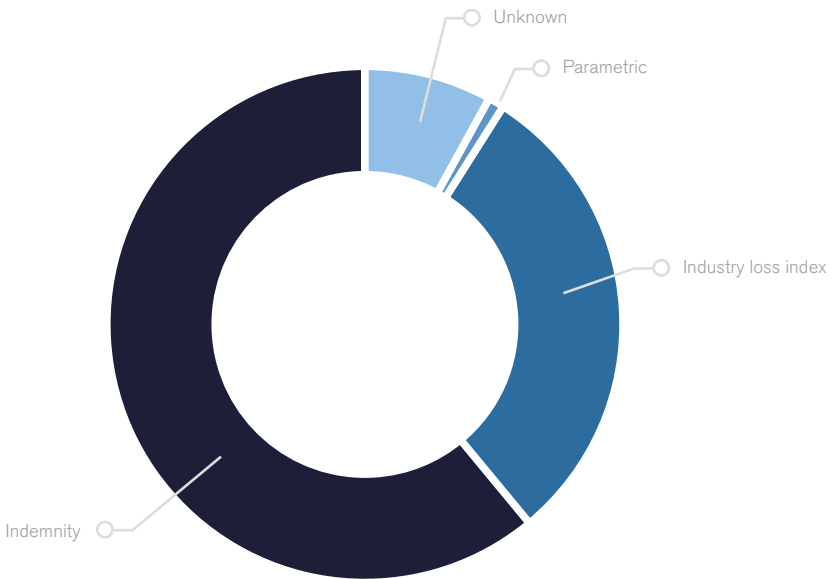
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Q4 2017 ILS issuance by trigger type

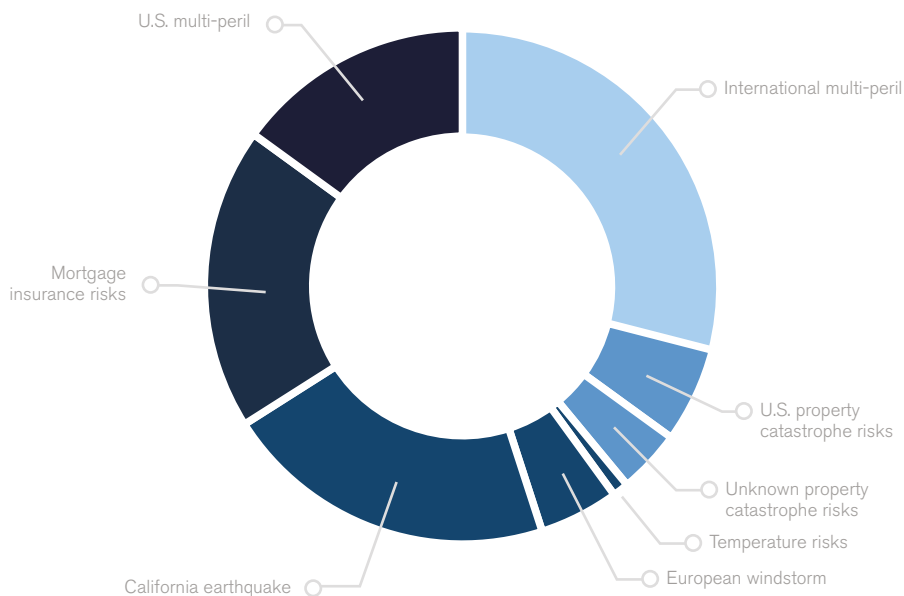
The trend continued of indemnity protection dominating issuance during the fourth-quarter of 2017. Sponsors secured approximately \$1.17 billion of indemnity coverage, which accounts for 61% of total risk capital issued.



\$584 million, or 30% of Q4 issuance utilised an industry loss index trigger, while \$14.5 million of parametric cover offered investors some trigger diversification in the quarter. \$157 million, or just over 8% of Q4 issuance failed to disclose trigger information.

Q4 2017 ILS issuance by peril

Investors were able to take advantage of both geographical and risk diversification in the fourth-quarter, with no one peril dominating catastrophe bond and ILS issuance.



USAA's 29th Residential Re cat bond issuance provided investors with \$295 million of U.S. multi-peril risks, including a range of common and more exotic perils, such as volcanic eruption and meteorite impact. Arch Capital returned in Q4 with over \$368 million of mortgage insurance risks, and the California Earthquake Authority also returned in Q4, with \$400 million of California earthquake risks.

XL Bermuda added \$150 million of international multi-peril risks, which included multiple U.S., Canadian and Australian perils, as well as some European windstorm protection. First time sponsor Validus added \$400 million to the international multi-peril class, with a deal covering named storms and earthquakes in the U.S., Canada, Puerto Rico, and the U.S. Virgin Islands. First time sponsor Covéa offered investors over \$106 million of European windstorm risk diversification, and a \$14.5 million private deal brought some temperature risk to market. \$181 million of Q4 issuance offered property catastrophe risk protection.

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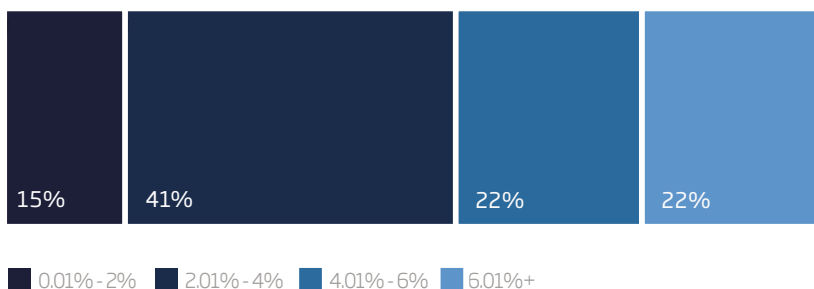
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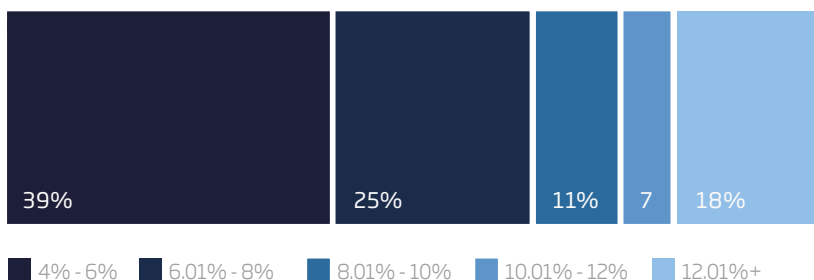
Q4 2017 ILS issuance by expected loss

For the \$1.35 billion of risk capital issued that we have expected loss data for, 56%, or \$755 million had an expected loss of 4% or less, with \$555 million of this having an expected loss of between 2.01% and 4%. Just over \$596 million, or 44% of issuance had an expected loss above 4.01%, with roughly \$293 million of issuance having an expected loss higher than 6.01%. The highest expected loss on offer during the quarter came from the Class 1 tranche of Residential Re notes, at 15.75%. The Class C tranche of Ursa Re notes were the lowest risk notes on offer in Q4, at 1.32%.



Q4 2017 ILS issuance by coupon pricing

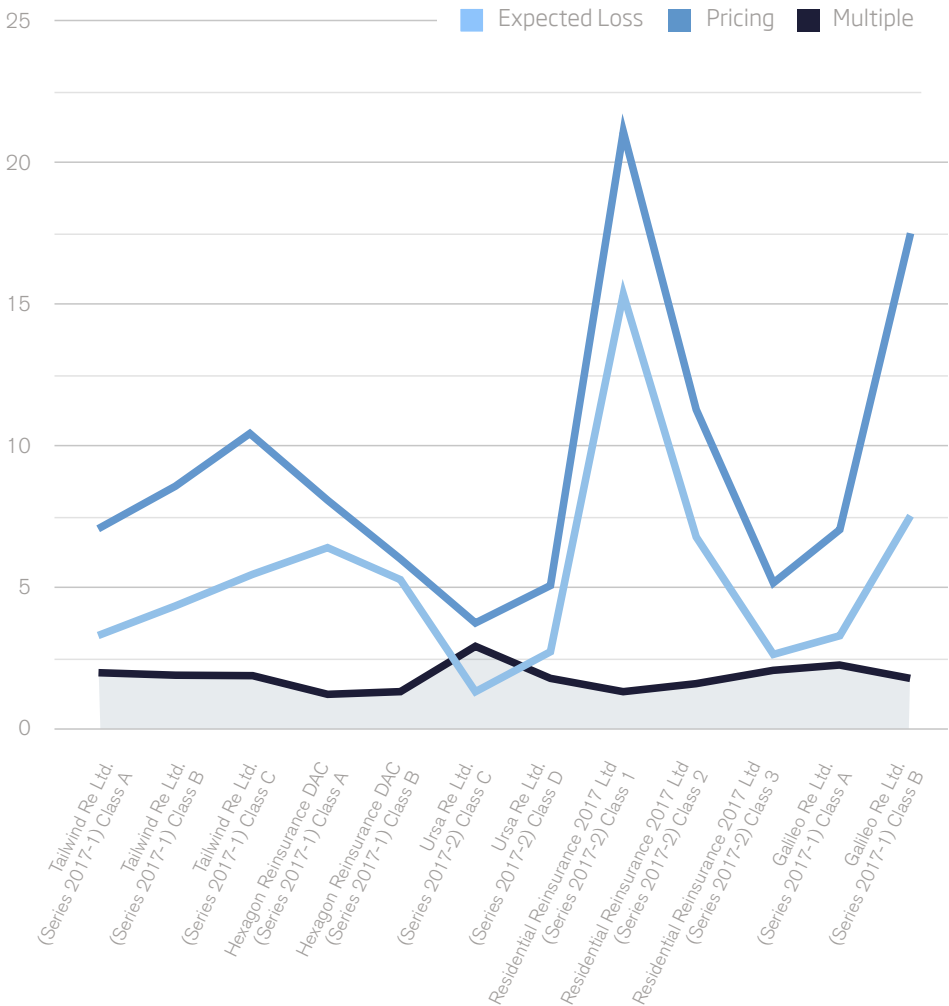
For the \$1.35 billion of Q4 issuance where we have pricing data, 39%, or \$530 million offered investors a coupon of between 4% and 6%. Just over \$331 million of issuance had a coupon of between 6.01% and 8%, and \$250 million, or 19% of issuance had an expected loss of between 8.01% and 12%. \$240 million, or 18% of issuance had a coupon of above 12%. The Class 1 tranche of Residential Re notes offered investors the highest coupon, of 21%. The lowest risk notes on offer in Q4, the Class C tranche of Ursa Re notes, offered the lowest coupon, of 4%.



Pricing multiples of Q4 2017 issuance

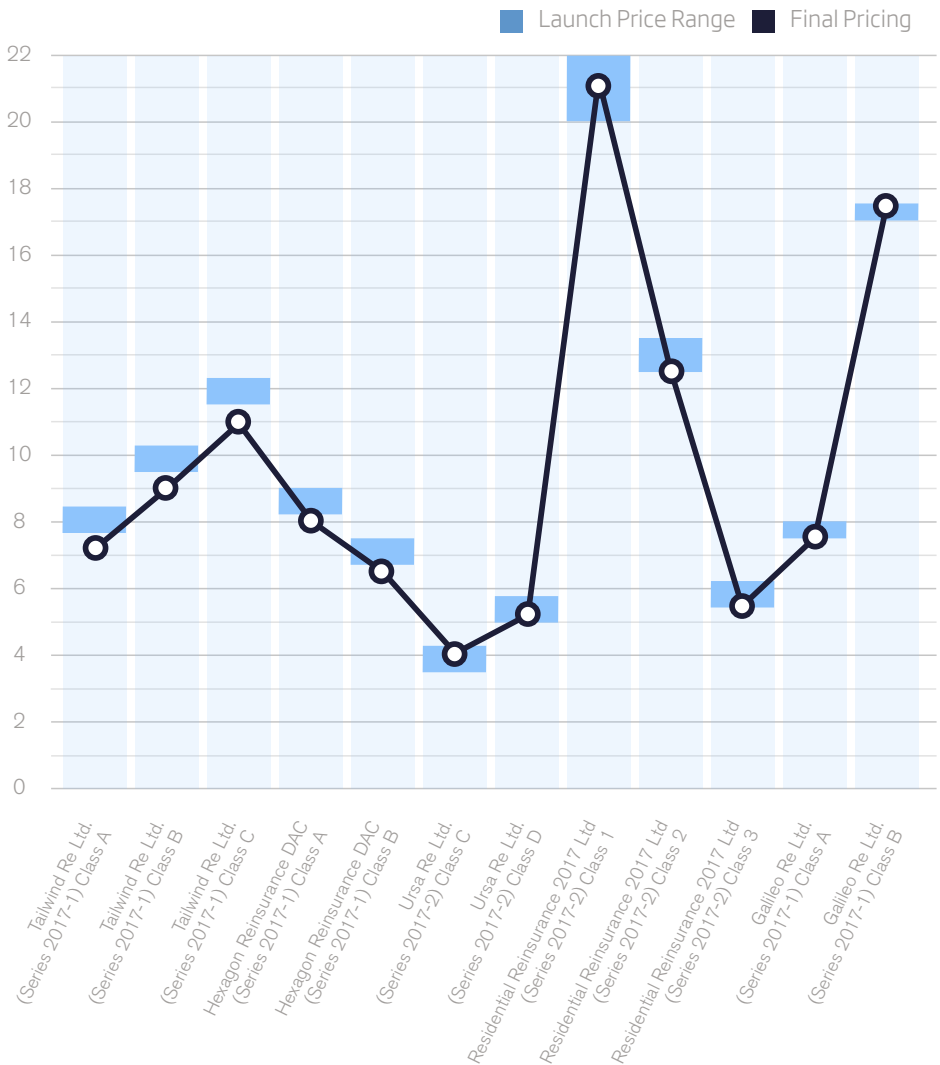
Where we have both the expected loss and pricing data, the average multiple (price coupon divided by expected loss) during Q4 2017 was 1.67, which is a very slight improvement from the 1.65 recorded at the end of Q3. As in 2016, the average multiple had declined throughout 2017, as the softness of reinsurance pricing continues to push investors to take on more risk at a lower return.

Year-on-year, the average multiple in the fourth-quarter of 2017 has declined by 0.3 from the 1.97 recorded at the end of the fourth-quarter in 2016, as shown by the Artemis Deal Directory.



Cat bond and ILS price changes during Q4 2017 issuance

For the \$1.35 billion of total risk capital issued that we have full pricing data for, the average price change during the fourth-quarter was -4.58%. Two deals issued in the quarter priced above the mid-point of initial price guidance, while one tranche of notes witnessed no price change while marketing. The largest price increase came from the Class C tranche of Urso Re notes, which increased by 3.22% while marketing. The Class A tranche of Tailwind Re notes witnessed the steepest price decrease of the quarter, declining by 10.7% while marketing.

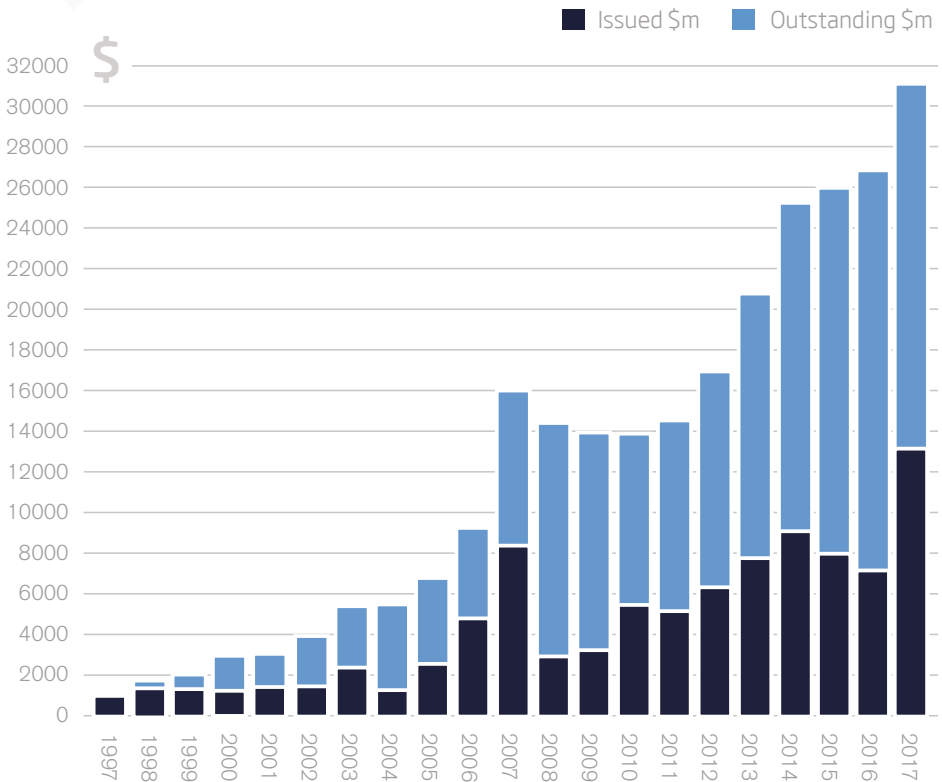


Issued / Outstanding

The catastrophe bond and ILS market has witnessed an impressive and unprecedented level of growth in 2017, driven primarily by the extremely active first half of the year, and supported by continued investor and sponsor appetite throughout the third and fourth quarters. Despite Q4 2017 issuance being relatively average, the market once again recorded outright growth, increasing by over \$1 billion from the end of Q3.

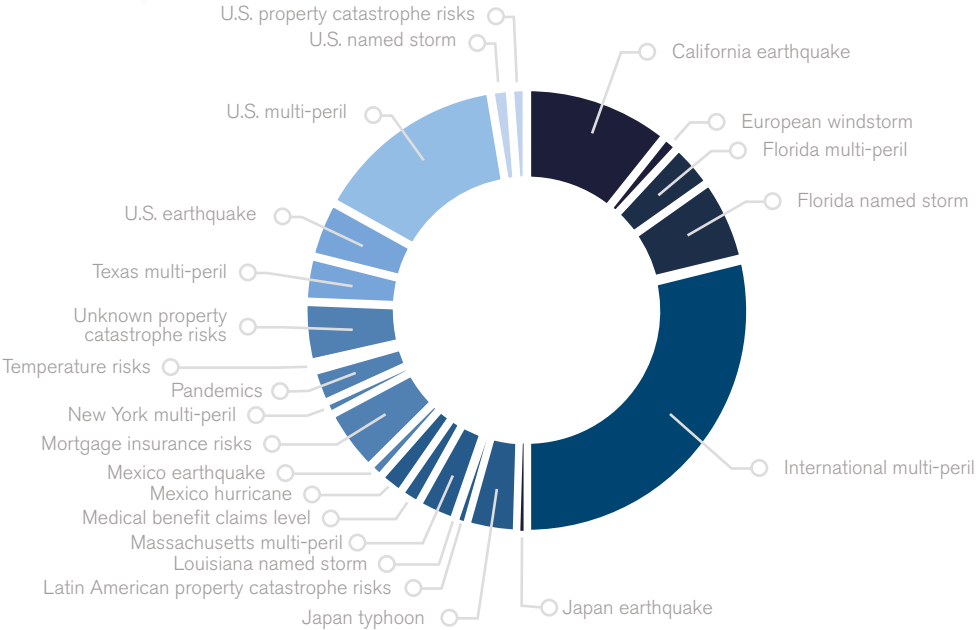
At the end of 2017, the outstanding catastrophe bond and ILS market volume reached a new high of \$31 billion, which, according to the Artemis Deal Directory, is over \$4.2 billion larger than at the end of 2016.

In spite of insurance and reinsurance industry headwinds, investors and sponsors showed unprecedented interest in catastrophe bond and ILS business in the first six months of 2017. Furthermore, the high level of catastrophe losses experienced in the third-quarter, combined with the impacts of the California wildfires in the fourth-quarter, doesn't appear to have dampened capital markets' investors attraction to the space. With prices across the re/insurance sector expected to increase at 1/1 2018, it could be a very interesting year ahead for the catastrophe bond and ILS marketplace.

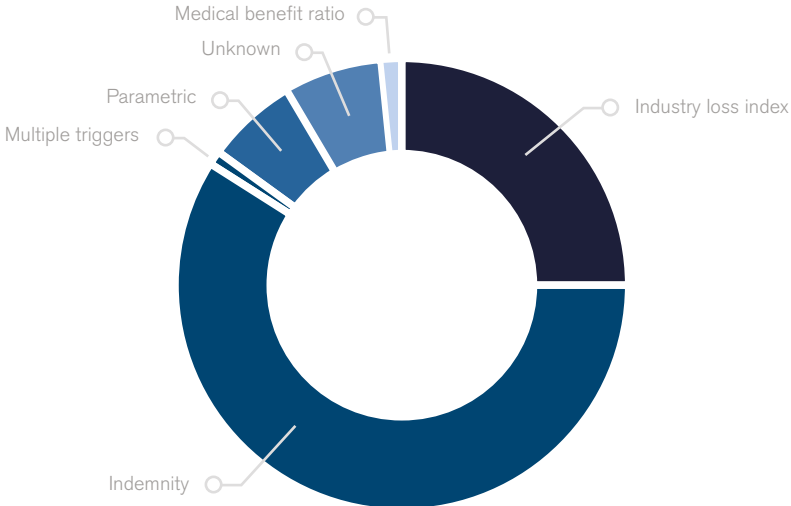


If you want to see full details of every catastrophe bond and ILS transaction included in the data in this report please visit www.artemis.bm/deal_directory/

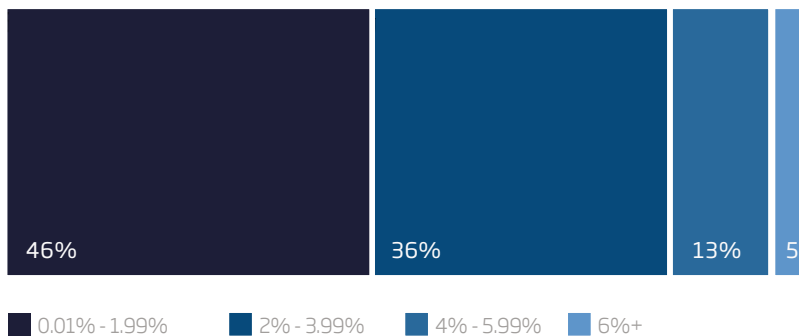
Full-year 2017 ILS issuance by peril



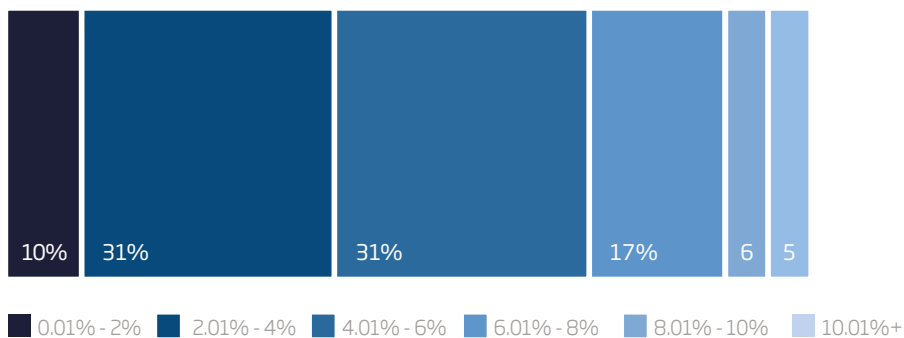
Full-year 2017 ILS issuance by trigger



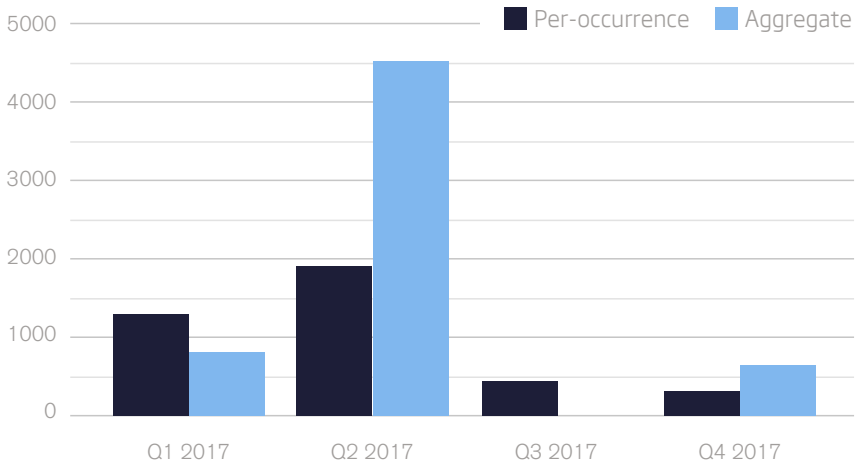
Full-year 2017 ILS issuance by expected loss



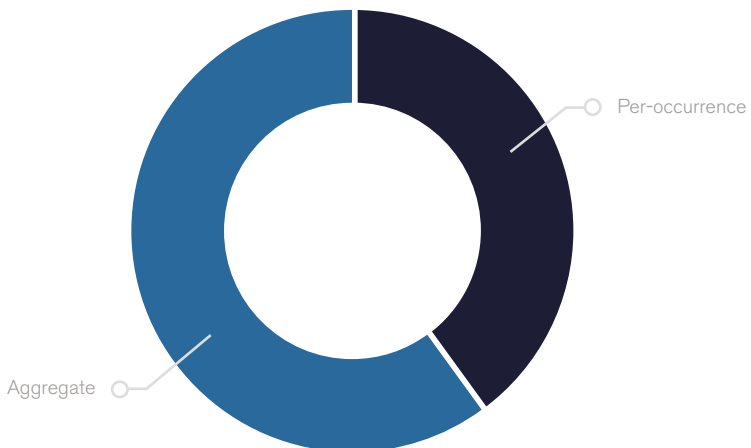
Full-year 2017 ILS issuance by coupon pricing



2017 ILS issuance per-occurrence vs aggregate split by quarter



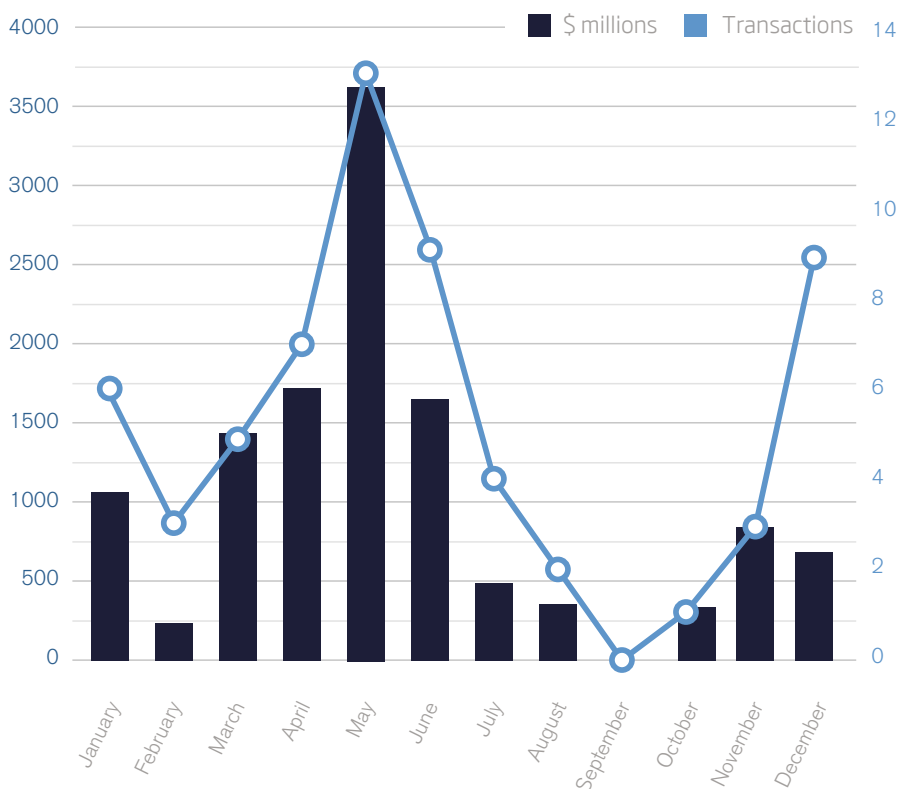
Full-year 2017 ILS issuance per-occurrence vs aggregate split



Full-year 2017 number of ILS transactions and volume issued by month (\$M)

For the fourth consecutive year market issuance was dominated by the first-half, both in terms of the number of deals and the size of transactions. Once again issuance in May was particularly strong and surpassed \$3.6 billion, making it the busiest month of the year in terms of risk capital issued.

No deals came to market in the month of September, however, strong investor appetite throughout the year and a strong and consistent stream of issuance helped the outstanding catastrophe bond and ILS market reach its largest ever size, of \$31 billion.





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