Global Reinsurance Highlights 2018

S&P Global Ratings

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Head Office:
Maçka Caddesi No:35 Şişli 34367 İstanbul, TURKEY
Phone: +90 (212) 231 47 30
info@millire.com

Singapore Branch Office:
4 Battery Road #20-01, Bank of China Building SINGAPORE 049908
Phone: +65 6499 9340
singapore@millire.com

www.millire.com

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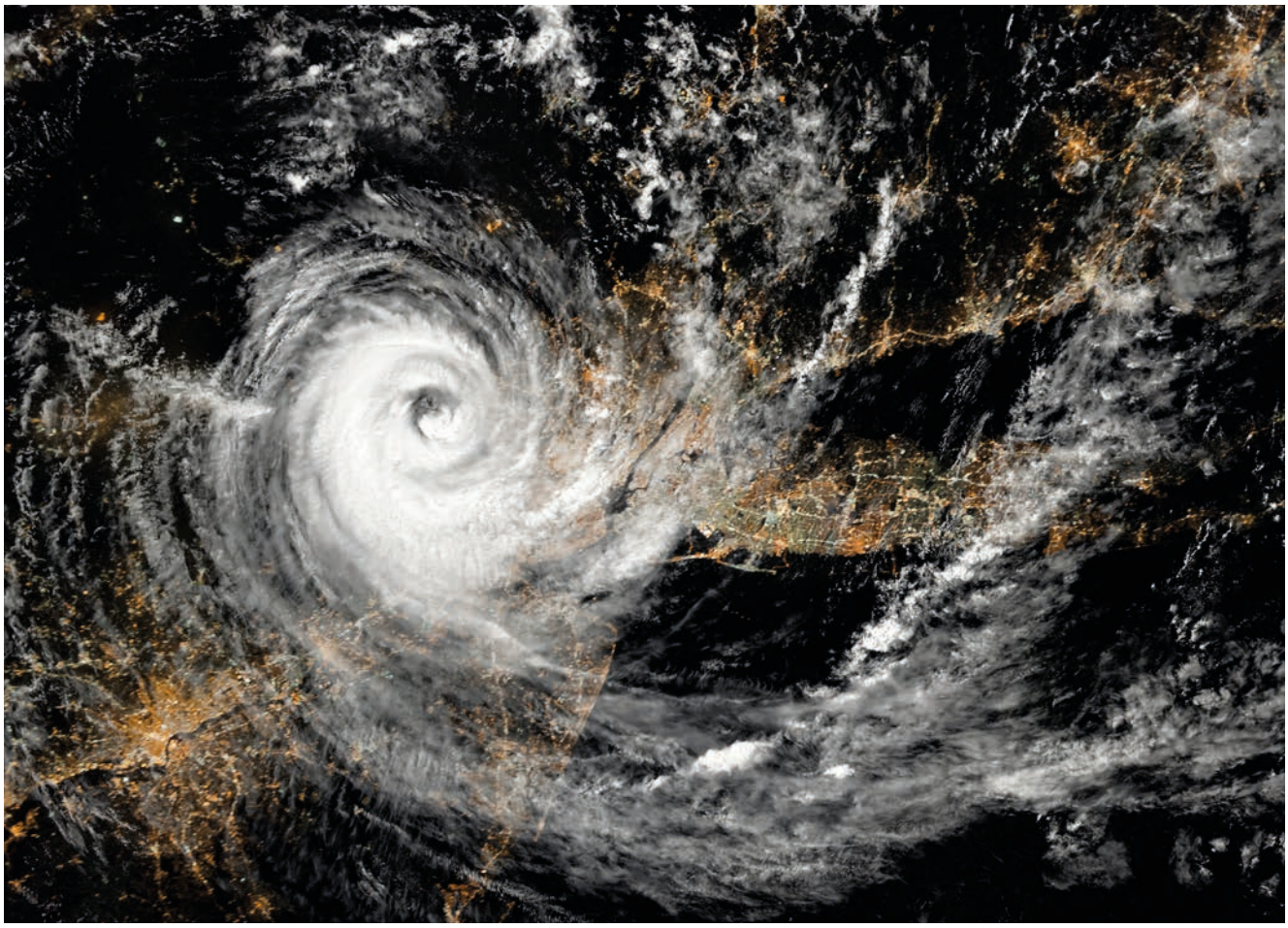

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Project leaders
Johannes Bender
Taoufik Gharib
David Masters

Contributors
Johannes Bender, Frankfurt
WenWen Chen, Hong Kong
Sebastian Dany, Frankfurt
Charles-Marie Delpuech, London
Taoufik Gharib, New York
Maren Josefs, London
Milan Kakkad, Mumbai
Ali Karakuyu, London
Saurabh Khasnis, Centennial
Hardeep Manku, Toronto
David Masters, London
Aurelie Salmon, London
Eunice Tan, Hong Kong
Simon Virmaux, Paris

Data Team
Ruchika Agrawal, Mumbai
Yevhen Deriy, New York
Patrice Mizeski, New York
Claire Latchford, London
Aurelie Salmon, London
Simon Virmaux, Paris
Antun Zvonar, New York

Editorial Project Coordinator
Fleur Hollis

Editorial Team
Heather Bayly, London
Jennie Brookman, Frankfurt
Jenny Ferguson, Paris
Cathy Holcombe, Hong Kong
Valerie Lord, Toronto
Jo Parker, Toronto
Greg Paula, Centennial
Daniela Stauble, Frankfurt

For Intelligent Insurer

Publisher
Graeme Cathie
Tel: +44 (0) 203 301 8238
gcathie@newtonmedia.co.uk

Editor
Wyn Jenkins
Tel: +44 (0)203 301 8214
wjenkins@newtonmedia.co.uk

Sub editor
Ros Bromwich

Director
Nicholas Lipinski

Design and Production
Garrett Fallon
Russell Cox
Tina Eldred

Cover image
istock photo / Pavel1964

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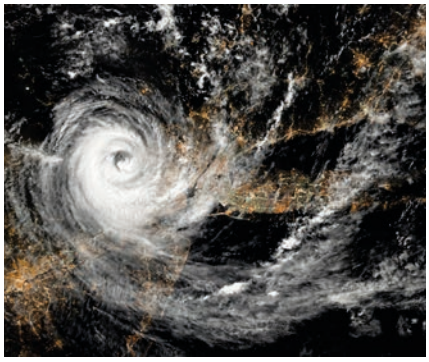


A Marathon Rather Than A Sprint: Reinsurers Take A Breather After 2017 Catastrophe Losses

By Johannes Bender, Taoufik Gharib, and David Masters

Discussions for 2019 renewals in Monte Carlo are happening after a tough natural catastrophe year in 2017, which was among the costliest years on record, reminding the sector of its tail exposure. After years of declining property/casualty rates, renewals in 2018 brought modest increases and a temporary breather for the sector. However, this effect is now fading and the sector continues to face weak business conditions.

In our lead article, **The Top Global Reinsurers Are Breaking Away From The Pack**, we discuss why we still view business conditions as weak even after modest price increases in 2018 and a slightly upward trend in earnings anticipated for 2018 and 2019. We also outline that the sector's strong enterprise risk management and robust capitalization are the main pillars for our stable outlook on the sector and for the majority of the reinsurers we rate. The article also discusses which players in our view are best placed to be winners in the market and addresses the question: What would happen to our view on the sector if its return on capital falls sustainably below its cost of capital?

The article **Global Reinsurers' Returns Will Barely Cover Capital Costs In 2018 And 2019** discusses the development of the sector's returns compared with its cost of capital. In 2017, cost of capital increased again after years of decreases, while returns were hit heavily in 2017 following large natural catastrophe losses. Although we observed moderate reinsurance rate increases, we believe reinsurers' profitability will barely exceed its cost of capital in 2018-2019 and reinsurers continue to compete with alternative capital sources that typically have a lower cost of capital.

In **Are Global Reinsurers Ready For Another Year Of Active Natural Catastrophes?** we take a closer look at the 2017 natural catastrophe losses and how they compared with reinsurers' exposure and modeling capabilities. Moreover, we discuss the sector's appetite for catastrophe risk after 2017 losses and earnings and catastrophe budget buffers for 2018.

In 2017, the top-20 global reinsurers lost their capital redundancy at the 'AAA' confidence level for the first time since the 2008 financial crisis. However, capital remained a strength for the sector. In **Capitalization Remains A Pillar Of Strength For Global Reinsurers**, we have a closer look at the development of risk profiles and capital adequacy of the sector.

Alternative capital in the form of insurance-linked securities has transformed the market, especially in the property catastrophe space, and even the natural catastrophe losses of 2017 have not dented investors' enthusiasm for the asset class. In **How Reinsurers Have Learned To Align Third-Party Capital With Their Needs**, we discuss what effect continued growth of alternative capital has on reinsurers' competitive positions.

Global reinsurers are having to review their long-term relevance in a tough market that features heightened competition, limited growth opportunities, and continued pressure on pricing. In **Bulking Up: The Global Reinsurance Sector Marches Toward Consolidation**, we discuss merger and acquisition strategies to build scale, acquire expertise, and diversify.

In **A Decade Since The Sichuan Earthquake, Catastrophe Reinsurance Is Gaining Momentum In China**, we have a closer look at how the reinsurance sector participates in the growth of the Chinese economy and insurance market as well as the risks from expanding into the Chinese nonmotor property/casualty lines of business.

While the global property/casualty reinsurance sector suffered heavy losses in 2017, the global life reinsurance sector remained solid, with stable returns and growth rates. In **Global Life Reinsurers' Strong Fundamentals Fuel Future Growth**, we explain how high barriers to entry and advanced risk management and underwriting capabilities are ensuring sound business conditions for the global life reinsurance industry, allowing it to outperform the property/casualty reinsurance sector in 2018–2019.

U.S. mortgage reinsurance has been one of the few reinsurance business lines that has performed well in recent years, providing some relief to reinsurers troubled by the difficult market environment. In **Running At A Steady Pace: U.S. Mortgage Reinsurance Continues To Grow Despite The Credit Cycle Passing Its Peak**, we discuss reinsurers' increasing appetite for this type of risk, profit opportunities, and the main risks in the U.S. mortgage reinsurance business.

This year's *Global Reinsurance Highlights* again includes a peer comparison supplement that exhibits some of the important data points and trends that we've identified from our analysis of the sector. This year's publication captures the key issues facing reinsurance management, investors, and other stakeholders. We hope that you will enjoy the 2018 edition and welcome your feedback on possible enhancements for future years. ■

Johannes Bender
Frankfurt, (49) 69-33-999196
johannes.bender@spglobal.com

Taoufik Gharib
New York, (1) 212-438-7253
taoufik.gharib@spglobal.com

David Masters
London, (44) 20-7176-7047
david.masters@spglobal.com

Reinsurance Outlook

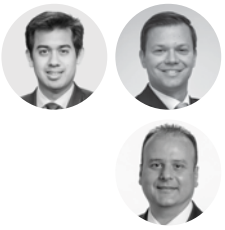
By Taoufik Gharib, Johannes Bender, David Masters, and Hardeep Manku

- Robust capitalization, strong enterprise risk management, and still-rational underwriting continue to support our stable outlook on the global reinsurance sector.
- The sector is facing weak business conditions, as the influx of alternative capital continues to challenge reinsurers' business models.
- We've revised our 2018–2019 earnings forecast slightly upward following modest reinsurance price increases, with an expected combined ratio of 96%–99% and a return on equity of 7%–9%.
- We could revise our outlook on the global reinsurance sector to negative if reinsurers' return on capital falls sustainably below their cost of capital.

The Cost Of Capital

David Masters and Taoufik Gharib

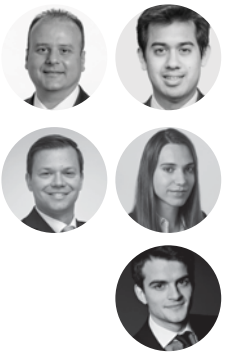
- The cost of capital has consistently fallen in recent years, but appears to have reached a floor at end-2016, rising through 2017 due to rising interest rates and the volatility caused by heavy catastrophe losses.
- We think reinsurers' profitability is likely to barely exceed their cost of capital in 2018 and 2019.
- The tide of cheaper alternative capital continues to compete with traditional players, who typically have a higher cost of capital.
- Despite these challenges to industry fundamentals, market valuations for listed reinsurers remain at decade-long highs.



Catastrophe Risk

By Charles-Marie Delpuech, Johannes Bender, and Taoufik Gharib

- Our relative natural catastrophe benchmark has performed well against 2017 experience, with losses relatively in line with our expectations.
- Events in 2017 highlighted disparities in reinsurers' exposure and modeling with return periods ranging from below 1-in-10 years to 1-in-60 years for the annual aggregate loss.
- On average, reinsurers' property catastrophe risk appetite at a 1-in-250-year return period rose only slightly, to 31% of shareholder equity, but we have seen increases or reductions by up to 10 percentage points for some reinsurers.
- The top-20 reinsurers in aggregate expect a catastrophe budget of about $11 billion or 8% of the combined ratio for 2018. If not exceeded, this should enable the sector to report pretax profits of about $21 billion in 2018, reflecting a consolidated buffer of about $32 billion before capital would be hit in a natural catastrophe stress scenario.



Capital Adequacy

By Taoufik Gharib, Charles-Marie Delpuech, Johannes Bender, Aurelie Salmon, and Simon Virmaux

- In 2017, the top-20 global reinsurers lost their capital redundancy at the 'AAA' confidence level for the first time since the 2008 financial crisis.
- Although lower than in previous years, capital adequacy remained a strength in 2017, and was redundant by 7% at the 'AA' confidence level.
- Reinsurers have gradually shifted their underwriting appetite to primary and proportional reinsurance business.
- Liability risks continue to dominate the top-20 global reinsurers' capital consumption.
- Catastrophe losses in 2017 weighed on reserve risk, while investment risk has been fairly stable.
- If 2018 ends up being an average catastrophe year, it is not implausible to assume that the top-20 global reinsurers could regain their 'AAA' capitalization.

ILS

By Maren Josefs, David Masters, Taoufik Gharib, and Johannes Bender

- Even after severe natural catastrophe events in 2017 there was more than enough inflow of alternative capital to renew coverage for cedants. This had the effect of limiting extreme price hikes. ILS funds now manage just under $100 billion of capital.
- Reinsurers have embraced third-party capital through instruments like sidecars, collateralized reinsurance, and catastrophe bonds. Increasingly, the retrocession market depends on this convergence capital.
- Overall, the use of alternative capital has helped the reinsurance industry to increase its premiums while maintaining its net exposures.
- Having demonstrated its capabilities in property catastrophe business, we continue to see alternative capital testing products in new areas, such as casualty or life reinsurance. The increased complexity and longer tail of products in these sectors have yet to strike a chord with investors, however.

M&A

By Hardeep Manku, Ali Karakuyu, Taoufik Gharib, and David Masters

- Scale, diversification, and value-added services will become increasingly important if reinsurers are to meet cedants' changing expectations and remain relevant.
- Reinsurers view mergers and acquisitions as a viable option that will keep their activity levels up, though it is no panacea for the sector's woes.
- Deals have leaned toward broadening of product suites and convergence of primary insurance and reinsurance.
- Overall, we continue to have a neutral view on M&A, with a slight negative bias because of the industry's mediocre track record.

China

By WenWen Chen and Eunice Tan

- China's property casualty reinsurers have a mission to increase catastrophe and related coverage, because of the country's geographic vulnerability to natural disasters, including major quakes.
- The ongoing expansion into nonmotor business offers new growth avenues but will expose reinsurers to potential volatility.
- We expect reinsurance cession rates to stabilize at around 9% by 2020.
- In our view, market participants will take on more investment risk, through allocations to high-risk investments, to offset pressuring on underwriting margins.

Life Re

By Sebastian Dany, Johannes Bender, Milan Kakkad, Taoufik Gharib, and WenWen Chen

- Operating performance should stay sound in the global life reinsurance sector over the next two to three years, with premium growth of about 3% and a return on equity at about 10% over 2018–2020.
- Despite some recent M&A activity and, the emergence of alternative capital in some markets, we expect the fundamental strengths of the global life re industry will remain intact.
- The industry's advanced risk-management and underwriting capabilities should continue to protect it against volatility it faces from changes in key actuarial assumptions for calculating premiums, regulatory risks, and data restrictions.

Mortgage Re

By Hardeep Manku, Saurabh Khasnis, and Taoufik Gharib

- U.S. mortgage reinsurance has been one of the few reinsurance business lines that has performed well in recent years, providing some succor to re/insurers beset with the difficult market environment.
- This business should retain its appeal despite modest rate increases on certain other reinsurance business lines following the 2017 catastrophe losses.
- The appetite for mortgage risk is expanding as new players enter the market, although the underwriting cycle is past its peak; however, some re/insurers are becoming cautious.

The Top Global Reinsurers Are Breaking Away From The Pack

By Taoufik Gharib, Johannes Bender, David Masters, and Hardeep Manku

For the past several years, the global reinsurance sector has weathered unfavorable and continuously changing business conditions. The challenges have included a prolonged soft reinsurance pricing cycle, heightened competition, limited organic growth opportunities, a record influx of alternative capital, low interest rates, mergers and acquisitions, and large catastrophe losses. Against this backdrop, reinsurers are trying to pull whatever levers they can not only to remain relevant but also to sustain profitability.

Weak market conditions have driven reinsurers to rethink their short- and long-term strategies. This has led many to pursue mergers and acquisitions (M&A), divest nonperforming businesses, diversify into less-commoditized lines of business, and embrace third-party capital. They've also adjusted risk exposures while shifting their underwriting appetite to primary and proportional reinsurance and away from nonproportional reinsurance, and they're actively managing their capital structures through share buybacks, special dividends, and refinancing their maturing securities with more cost-effective ones.

S&P Global Ratings is maintaining its stable outlook on the global reinsurance sector and on the majority of the reinsurers it rates (Charts 1 and 2). This is mostly because of reinsurers' still-robust capital adequacy and because underwriting has remained relatively disciplined, at least so far, supported by overall strong enterprise risk management (ERM). At the same time, we continue to believe the global reinsurance sector is facing weak business conditions because the fundamental challenges of

istock photo / Pavel1964

the sector have not abated, even after 2017's heavy natural catastrophe losses.

The cost of capital has consistently fallen in recent years but appears to have reached a floor at year-end 2016, increasing through 2017 due to rising interest rates and the volatility stemming from heavy catastrophe losses. Operating conditions for global reinsurance remain difficult despite modest 2018 renewal rate increases. We believe reinsurers' returns will be close to their cost of capital in 2018 and 2019. If the industry's return on capital declines sustainably below its costs, which causes market growth prospects to suffer, we could reassess our view of the sector.

Robust Capitalization And Strong ERM Keep Reinsurers In Good Stead

Global reinsurers continue to enjoy robust capitalization despite severe catastrophes, which racked up more than $138 billion in insured losses globally in 2017. These catastrophe losses wiped out 2017 earnings for a number of reinsurers and became a capital event for a few outliers. The sector demonstrated its resilience, managing the record catastrophe year with just a relatively small net loss, though the specific impact varied widely by reinsurer.

This reflects the sector's diversification benefits from writing other noncatastrophe-exposed lines of business—such as casualty and primary insurance—as well as life reinsurance. In addition, it reflects the sector's sound ERM capabilities, which help them maintain catastrophe losses generally in line with risk appetites and leverage the retrocession market through alternative capital while ceding some of the tail risks.

Therefore, the 2017 hit to capital was not severe enough to cause industrywide panic or major declines in risk-adjusted capitalization. But in addition, the losses were not severe enough to lead to sustained industrywide price hardening. When overall industry capitalization deteriorated, we viewed it as manageable, with most of the affected companies positioned to replenish their lost capital with a year or two of normalized earnings. As a result, the 2017 catastrophe losses resulted in only a handful of negative rating actions.

Three-quarters of our financial strength ratings on the top 40 rated global reinsurers are in the 'A' category, while the remaining quarter is in the 'AA'

Table 1: Credit Conditions For Global Reinsurers 2018–2019

	Business conditions (current)	Business outlook (12 months)	Sector outlook (12 months)
Global reinsurers	Weak	Somewhat stronger	Stable

Table 2: Drivers Of Business Conditions For Global Reinsurers

Potential driver	Trend for 2018–2019	Observations
Pricing	Neutral to positive	Reinsurance pricing declines have modestly reversed in 2018, with average price increases of 0%–5% expected for 2018 but with wide variations among lines and regions. However, momentum is fading heading into 2019.
Loosening of terms and conditions	Neutral to negative	Large reinsurers appear to have been able to push back on cedants demanding wider terms and conditions. They didn't slip further, while ceding commissions slightly improved (200 bps–300 bps) but remained high.
Organic growth	Neutral to negative	Opportunities for organic growth (outside large/tailored transactions for a select few reinsurers) are limited. There are pockets of growth, but companies pursue them quickly.
Cedant demand	Neutral to positive	There is some evidence of greater arbitrage (cheaper to front business then reinsure it on the back-end) as rates continue to remain low, together with large/tailored one-off transactions.
M&A activity	Neutral	After a brief lull following a hectic 2015, M&A within the sector has resumed in 2018. We do not expect transactions to have a material impact on industry capital. Future deals will be partially inhibited because of high market valuations.
Alternative capital	Neutral to negative	The influx of alternative capital continued in 2017 and through the first quarter of 2018 despite the temporary uncertainties caused by 2017 hurricanes, limiting reinsurance price increases.
Low investment returns	Neutral to negative	Investment returns remain low, but it seems that we have seen the bottom in 2017. As interest rates are rising—at least in the U.S.—we expect slight improvements in net investment returns as new money is invested in higher-yielding securities. However, reinsurers' total returns could be affected by unrealized capital losses.
Reserves	Neutral	Overall, the reinsurance sector's reserves have been stable, averaging 6.3% of favorable development impact on the combined ratio during the past five years. In addition, 2017 was the 12th consecutive year in which the U.S. primary property/casualty industry generated favorable reserve developments. However, in 2017, the re/insurance industry incurred unfavorable developments in U.K. motor. Furthermore, the following U.S. lines of business continue to be challenging: commercial auto liability, other liability-occurrence, excess casualty, and private passenger auto liability. Lastly, if inflation unexpectedly increases materially, reserve adequacy would be adversely affected.

Chart 1: Rating Distribution Of S&P Global Ratings' Top 40 Global Reinsurers

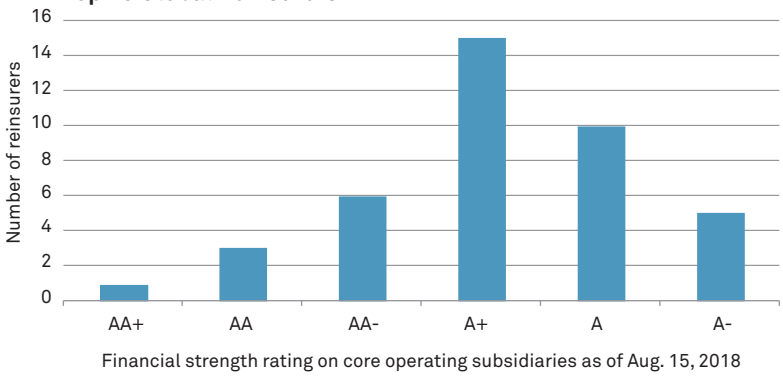
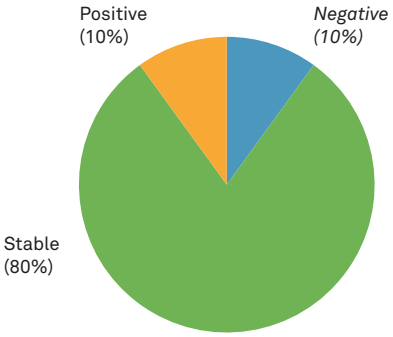


Chart 2: Outlook Distribution Of S&P Global Ratings' Top 40 Global Reinsurers*



**As Of Aug. 15, 2018.*

category. In addition, 80% of reinsurers have stable outlooks, with the rest evenly split between positive and negative outlooks (Charts 1 and 2).

Capitalization Remains A Strength, Supported By A Slight Expected Improvement In Earnings

Global reinsurers' robust capitalization remains a pillar of the industry. Indeed, S&P Global Ratings continues to view the reinsurance sector's capital adequacy as a strength. The top 20 global reinsurers' capital adequacy has remained robust and redundant: 7% at the 'AA' confidence level in 2017 relative to 15% in 2016. In 2017, this group of global reinsurers lost its capital redundancy at the 'AAA' confidence level for the first time since the 2008 financial crisis, with a deficiency of 5% compared with a redundancy of 2% in 2016. We believe if the industry experiences an average catastrophe year in 2018, it is reasonable to assume that the top 20 global reinsurers could recover their 'AAA' capitalization (see "Capitalization Remains A Pillar Of Strength For Global Reinsurers").

The global reinsurance sector's operating performance has deteriorated during the past five years, mainly reflecting the soft global P/C reinsurance pricing. As a result, the top 20 global reinsurers' ROE declined to 9.5% in 2016 from 13.9% in 2013 (Table 3). During this period, benign natural catastrophe losses hampered the combined ratio by only 2 to 5 percentage points (ppts), which is below the budgeted catastrophe load, and strong reserve releases improved it by 6 to 8 ppts. In 2017, the industry had a wake-up call, as it suffered significant catastrophe losses that hurt its combined ratio by 21.5 ppts. These losses wiped out slightly more than a full year of earnings, resulting in an ROE of negative 1%.

Equally important to the 2017 losses has been the trend in underlying underwriting performance. When we strip out the effects of catastrophe losses and reserve releases, accident-year combined ratios have worsened during the past five years, reflecting pricing pressure. The 2018 renewals brought modest reinsurance price increases, though the momentum seems to be fading into 2019. We forecast a slight improvement in profitability in 2018–2019, with an estimated combined ratio of 96%–99% and an ROE of 7%–9% (Table 3). As interest rates are rising, at least in the U.S., we expect slight improvements in net investment returns as new money is invested in higher-yielding securities. In addition, reinsurers writing life reinsurance should benefit from higher margins, as this line of business is expected to generate an ROE of just above 10% in 2018–2019.

Although we are slightly increasing our projected earnings for the sector, the increase is lower than that following similar large losses (such as in 2005). The industry benefited from the hardening market after such events, which hasn't been the case to the same extent this time, indicating that pricing cycles are becoming less pronounced. Therefore, we don't expect material price increases to persist into 2019. Similarly, we don't foresee a significant positive long-term shift in the sector's operating performance.

Reinsurers' ERM Is A Differentiating Factor

More than 80% of the top 40 global rated reinsurers carry an ERM score higher than adequate (Chart 3), highlighting the industry's increased focus on ERM. Once again, the 2017 natural catastrophe losses tested reinsurers' ERM programs. Given the strength of their ERM practices, the losses were typically contained within their risk limits, with only a few outliers. Overall, 2017 catastrophe loss reserves have been stable so far and mostly contained within the booked reserves.

However, Everest Re Group Ltd. experienced unfavorable reserve developments in the first and second quarters of 2018 from the 2017 catastrophe events, which could call into question

Table 3: Top 20 Global Reinsurers' Combined Ratio And ROE Performance

	2013	2014	2015	2016	2017	2018f	2019f
Combined ratio %	84.6	84.6	87.5	91.9	111.8	96-99	96-99
(Favorable)/unfavorable reserve development %	(5.7)	(6.8)	(7.5)	(7.1)	(4.4)	(5.0)	(5.0)
Natural catastrophe losses %	4.4	2.5	2.3	5.2	21.5	8.0	8.0
Accident-year combined ratio excluding catastrophe losses and reserve releases %	86.0	88.8	92.7	93.9	94.7	93-96	93-96
ROE %	13.9	13.4	11.0	9.5	(1.0)	7-9	7-9

The Top 20 global reinsurers are Allied World, Arch, Aspen, AXIS, Everest Re, Hannover Re, Hiscox, Lancashire, Lloyd's, MS Amlin, Munich Re, PartnerRe, Qatar, RenRe, SCOR, Sirius, Swiss Re, TransRe, Validus, and XL. f: Forecast.

the conservatism built into its original loss estimate. So far, these adverse developments have been largely unique to Everest, but we will continue to monitor how losses play out for the rest of the industry.

The Leaders In The Reinsurance Race Are Looking To Separate Themselves From The Pack

The top 10 global reinsurers (Table 4) based on net reinsurance premiums written (NRPW) continued to write the lion's share of business. Their market share increased by 140 basis points (bps) to 73.7% of NRPW in 2017 from 72.3% in 2008. However, within the same timeframe their NRPW jumped a whopping 60% to $171.1 billion from $106.8 billion.

The top five global reinsurers continue to lead the reinsurance sector and have defended their competitive positons well in the past decade. In our view, their client relationship management differentiates them from the rest of the pack. Cedants' expectations have evolved: They now look for not only capacity providers but also for risk partners. Reinsurers that can provide a plethora of value-added services, assist in evaluating risk, provide customized solutions, and implement risk and capital management solutions are reaping the benefits.

Moreover, cedants—especially large multinational insurers—have been consolidating their reinsurance panels. Multinational insurers prefer dealing with fewer reinsurers that are well-capitalized with strong financial strength, good product expertise, and broad product offerings. These cedants want to trade with global reinsurers in all lines of business—at both the subsidiary and the corporate levels. As a result, we assume the leaders are well-placed to defend their positions and will continue to gain market share in a consolidating market.

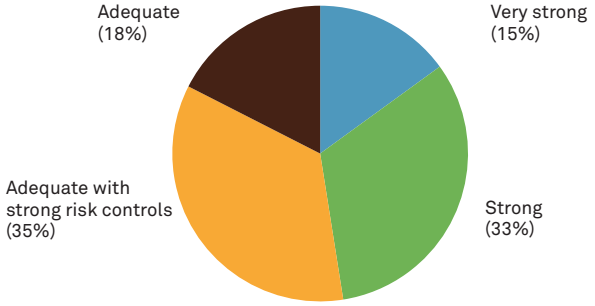
"Cedants' expectations have evolved: They now look for not only capacity providers but also for risk partners."

In 2017, two new entrants— China Re (seventh) and India-based GIC Re (10th)—joined the top 10 relative to 2008, reflecting the growing demand for reinsurance in Asia. China Re continues to be predominately focused on its domestic market, generating less than 10% of its 2017 gross premiums written overseas. On the other hand, although GIC Re wrote less than 25% of its gross premiums internationally in 2017, it plans to increase its overseas business significantly.

We expect both China Re and GIC Re to grow at healthy rates given their domestic markets' forecast strong GDP growth and increasing insurance penetration (Table 5). Furthermore, many global reinsurers have recently established their presence in China and India to capitalize on the growth. However, these markets' risk profiles are volatile due to increasing catastrophe exposures, dwindling underwriting margins, soft pricing, aggressive competition, insufficient underwriting expertise and experience, and rising regulatory costs.

We believe that the top five global reinsurers will likely continue defending their dominant market position given their strong relationships with cedants and access to business. However, we believe the rest of the pack can also score some wins and narrow the gap by focusing on cedants' needs, becoming more like risk partners, and proposing innovative solutions rather than just providing reinsurance capacity that can easily and less expensively be replicated through the capital markets.

Chart 3: ERM Assessment Distribution Of S&P Global Ratings' Top 40 Global Reinsurers*



**As Of Aug. 15, 2018.*

Table 4: Top 10 Global Reinsurers—2017 Versus 2008

2017				2008			
Rank	Rating*	Reinsurer	Net reinsurance premiums written (Bil. $)	Rank	Rating**	Reinsurer	Net reinsurance premiums written (Bil. $)
1	AA-	Munich Re	36.45	1	AA-	Munich Re	29.08
2	AA-	Swiss Re	32.32	2	A+	Swiss Re	24.30
3	AA+	Berkshire Hathaway Re	24.21	3	AAA	Berkshire Hathaway Re	12.12
4	AA-	Hannover Re	19.32	4	AA-	Hannover Re	10.20
5	AA-	SCOR	16.16	5	A	SCOR	7.50
6	A+	Lloyd's	10.75	6	A+	Lloyd's	6.70
7	A	China Re	9.97	7	AA-	Reinsurance Group of America	5.35
8	AA-	Reinsurance Group of America	9.84	8	A+	TransRe	4.11
9	A+	Everest Re	6.24	9	AA-	PartnerRe	3.99
10	Not rated	General Ins. Corp. of India (GIC Re)	5.80	10	A+	Everest Re	3.51
Top 10			171.07	Top 10			106.85
Top 40			231.98	Top 40			147.71

** Financial strength rating on core operating subsidiaries as of Aug. 15, 2018. ** As of Aug. 15, 2009*

The Cost Of Capital—A Marathon Not A Sprint

When it comes to analyzing the reinsurance sector's profitability, we consider this to be more akin to an endurance race than a 100-metre sprint. We focus on the longer-term view of profitability relative to cost of capital rather than a snapshot at a single point in time. This is consistent with our view last year, when we stated that "if reinsurers' profitability falls sustainably below their cost of capital, we will likely revise our outlook on the sector to negative". The key word there is "sustainably." In this context, we believe the weighted average cost of capital (WACC) will remain at 7% to 8% for the foreseeable future (2018 and 2019).

While reinsurers clearly tripped up in 2017 when thinking about their profitability relative to their cost of capital, the longer-term track record has been stronger. The sector's profitability has, on average, exceeded its cost of capital by approximately 100 bps annually over the past five years, despite the negative spread in 2017. However, the performance gap has been narrowing. We expect the sector's profitability to be about the same as the cost of capital over the next two years. For this reason, we are not revising our outlook on the sector to negative. However, we would likely do so if the sector's profitability remains below its cost of capital.

Alternative Capital Is Still An Achilles Heel, But Reinsurers Are Learning To Live With The Pain

Alternative capital continues to erode traditional reinsurers' margins and is constituting a growing portion of global reinsurance capacity. Indeed, it accounted for about 16% of the $610 billion global reinsurance capital as of the end of first-quarter 2018, according to Aon (Chart 4). Nevertheless, reinsurers have embraced third-party capital through instruments like sidecars, collateralized reinsurance, and catastrophe bonds. Increasingly, the retrocession market depends on this convergence capital.

The convergence markets' response to the 2017 events should dispel any remaining questions over the permanence of its capital. Some had argued that because investors had yet to see major losses on their investments, their reaction to a loss from a peak peril that affected numerous investments simultaneously could lead to unexpected flight of capital. However, the 2017 hurricanes demonstrated that despite the reported negative investment returns, investors stood firm.

For many years, alternative capital has been viewed as something of an Achilles heel for the reinsurance sector—a source of vulnerability for reinsurers given the near-constant supply of new capital into the sector. This has exacerbated the softening market conditions, particularly within property catastrophe lines. More recently, however, reinsurers have been dealing with alternative capital in much the same way athletes train at altitude. For an athlete, altitude training hurts, but come race day, all those oxygen-deprived training sessions lead to better performance. Similarly, while reinsurers have suffered from the presence of alternative capital in terms of pricing, by increasingly using alternative capital for retrocession purposes (and competing against it on the inwards

Table 5: Real GDP Growth Of Select Countries And The Eurozone

Country or region	Sovereign foreign-currency rating as of Aug. 15, 2018	2016 %	2017 %	2018f %	2019f %	2020f %	2021f %
U.S.	AA+/Stable/A-1+	1.5	2.3	3.0	2.5	1.8	2.3
China	A+/Stable/A-1	6.7	6.9	6.5	6.3	6.1	6.0
India	BBB-/Stable/A-3	7.1	6.6	7.5	7.8	7.9	8.1
Eurozone	N.A.	1.8	2.6	2.1	1.7	1.6	1.4
Germany	AAA/Stable/A-1+	1.9	2.5	2.0	1.8	1.5	1.3
France	AA/Stable/A-1+	1.1	2.3	1.7	1.6	1.7	1.6
U.K.	AA/Negative/A-1+	1.9	1.8	1.2	1.4	1.6	1.3

f: Forecast. N/A: Not applicable. Source: S&P Global Ratings.

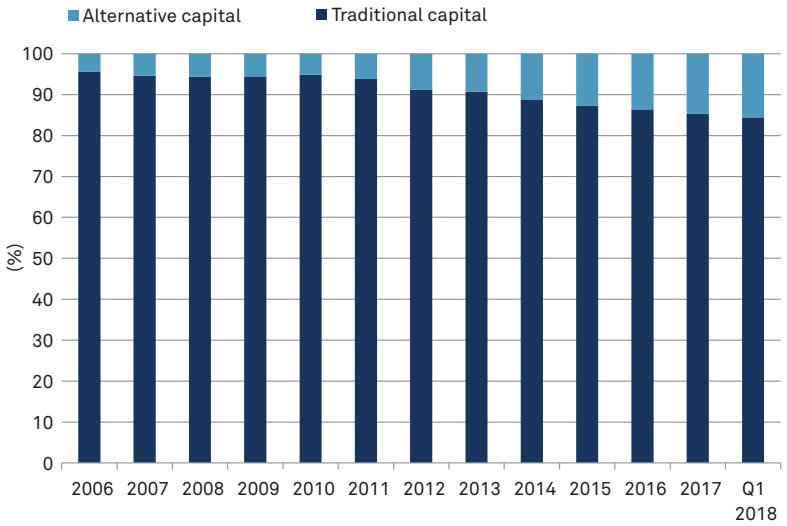
reinsurance side), sophisticated traditional reinsurers' business models are becoming more efficient.

Reinsurance Pricing Momentum Is Running Out Of Steam

What are a few large natural catastrophes to a sector beset with pricing malaise? Not much, apparently, as the rate of price increases, which peaked earlier this year during Jan. 1 renewals, is fading. With that, any hope for a permanent reset of rates has largely vanished. Reinsurers are particularly chafing from the experience during mid-year renewals, which is dominated by Florida renewals. Reinsurers had already tempered their expectations, but considering the hit from Hurricane Irma in September 2017, there was still an expectation for reasonable price hikes that would sufficiently compensate for the loss. That wasn't the case, and pricing at mid-year renewals was nothing to write home about.

Global reinsurance pricing was up slightly (0%–5%, in aggregate) during the year-to-date renewals. Specific increases varied by line of business, region, and whether reinsurance contracts had experienced any losses.

Chart 4: Global Reinsurance Capital—Breakdown Between Traditional And Alternative Capital



Sources: Company financial statements, Aon Benfield Analytics, and Aon Securities Inc.

Caribbean business—including Puerto Rico—had double-digit rate increases (10%–40%). During the Florida June 1 renewals, the largest property catastrophe market in the world, reinsurance rates increased by low single digits on average but were below industry expectations. Loss-affected layers had risk-adjusted rate increases in the mid to high single digits, and nonloss-affected layers of loss-affected accounts had flat to low-single-digit increases. Pricing in nonloss-affected accounts was largely flat. If this was the experience in a region that just suffered heavy catastrophe losses, it seems likely that the next rate cycle won't be any better.

Reinsurance pricing pressures—while varying—exist across business lines a result of abundant reinsurance capacity and U.S. property catastrophe business subsidizing other lines and other regions to a certain extent in recent benign years. Nevertheless, the sector has had a bit of relief. Property catastrophe pricing is up, if only slightly. And with the margins from property catastrophe business under constant pressure, reinsurers have been reluctant to give much ground on other lines of business.

Casualty reinsurance achieved some modest rate increases, and pricing is somewhat more stable than in recent years. More importantly, terms and conditions didn't slip further, while ceding commissions slightly improved. In addition, reinsurers will get a pick-up in rates from proportional business, as they have shifted their underwriting appetite to this type of business. As a result, they're benefiting from some of the rate increases on the primary insurance side in reaction to the 2017 catastrophe losses and the recent heightened loss experience in certain lines. Furthermore, there could be some gains in renewing portions of multi-year deals for loss-affected accounts.

The situation, though not ideal, is providing opportunities for reinsurers to optimize their portfolio and increase their participation on better-performing deals. Nevertheless, underlying market forces remain at work and competition is high, which could result in pricing momentum losing its steam heading into 2019.

M&A Could Position Some Reinsurers To Be More Competitive In The Longer Term

Growth opportunities are somewhat limited, and returns are barely meeting cost of capital. Some players that might have been patiently waiting for a better market environment and improved pricing conditions are probably questioning their ability to continue as independent reinsurers and compete effectively. Furthermore, cedants' expectations have changed as they look for risk partners rather than just capacity providers. Evolving market expectations and tough operating conditions are increasingly challenging current business models and forcing reinsurers to review their relevance in the long run. Reinsurers are looking to bulk-up, as those that have scale, a broad product suite, and strong underwriting capabilities and that can add value to the reinsurer/cedant relationship are the ones that will thrive.

Therefore, we anticipate M&A activity to continue over next few years, leading to sector consolidation that will increasingly differentiate larger, more diversified, stronger players from others. We also expect a continuation of trends of attaining economies of scale, broadening of product suites, and convergence of primary insurance and reinsurance. There is some potential for large deals, but we foresee more activity in small bolt-on transactions, especially considering the current valuations. Small-to-midsize specialty carriers that have good underwriting track record and profitable books of business remain appealing targets.

We maintain an overall neutral view on M&A, with a slight negative bias because of the industry's mediocre track record. While M&A is not a panacea for weak market conditions, a well-executed strategic deal that has a sound rationale can improve prospects for the combined entity through a stronger competitive position. This could help maintain—or potentially even strengthen—the consolidated entity's creditworthiness.

Sector Issues Are At The Top Of Reinsurers' Minds

In a recent survey on the sector's key opportunities and challenges over next two to three years, unsurprisingly the more than 20 global reinsurers that responded identified the same key issues facing the sector that we did (Chart 5).

From reinsurers' perspective, reinsurance pricing adequacy and the longer-term impact of alternative capital

Chart 5: Top Challenges And Opportunities

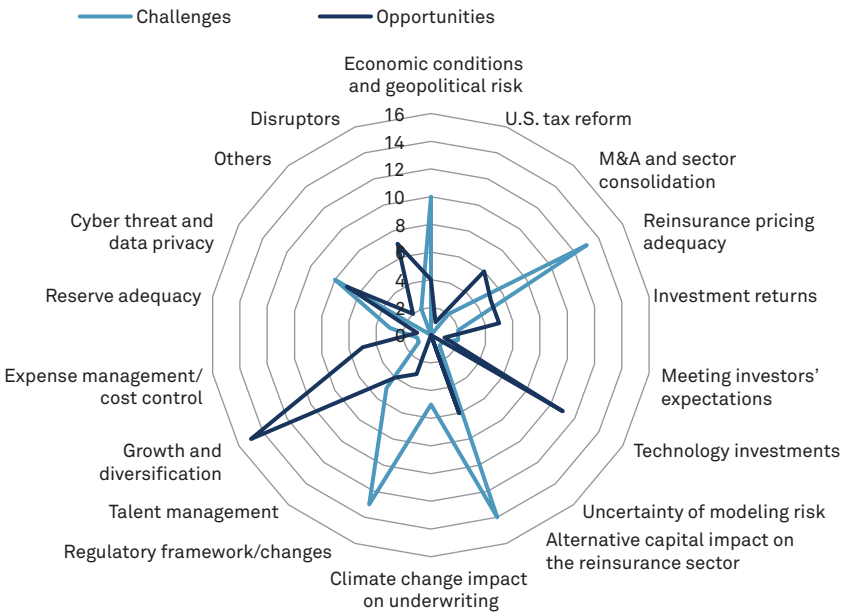


Chart is based on reinsurers' responses to S&P Global Ratings' survey.

continue to dominate the agenda. These two topics go hand in hand. With the pricing sentiment changing, reinsurers are trying not to let the recent gains slip. Although excess reinsurance capacity will continue to make life difficult, the sector is actively looking at ways to adjust to the new normal of a heightened presence of alternative capital. Discussions aren't just centered around the property catastrophe business but also on how alternative capital can find its way into other business lines and how best to leverage it.

In addition, reinsurers are keeping a close watch on the economic environment, which has gained steam in recent years but is facing increased risk of higher trade tariffs and geopolitical concerns. Depending on how far these risks escalate, it can start to put drag on the global economy, give rise to inflation, and perhaps even disrupt business—all with potential negative implications for global reinsurers. Furthermore, the regulatory compliance burden from managing multiple regulatory regimes and evolving requirements remains a key concern.

In response to key challenges, reinsurers have been pursuing strategies to address both top and bottom lines, which was evident from the top two opportunities identified: growth/diversification and technology investments. To help find growth and offset the margin pressures, reinsurers are pursuing various initiatives to diversify into new products and markets. For example, reinsurers have growing interest in finding protection gaps in business lines such as cyber, flood, mortgage, and life reinsurance, though those lines come with their own risks. Moreover, investments in technology to update legacy systems can help achieve expense efficiencies, which will be key in today's pricing environment, but that is just one aspect.

Reinsurers are increasingly investing in opportunities that are afforded by Big Data and machine learning, and they're looking for ways to tap into technologies like blockchain, which—if achieved—can provide a competitive advantage. Reinsurers are also optimistic about interest yields and the resultant gains that would come through as the portfolio turns. With that, at least one driver of operating income will move up and offset to a certain extent the pressure on underwriting income. Furthermore, it seems there is a greater optimism about gains from M&A—both for reinsurers that are involved in one and for the broader sector—hoping for less competition and greater underwriting discipline as the sector consolidates.

Overall, the survey response highlights a sector hard at work to shape up and find its stride for a long road ahead.

Crossing The Finish Line

Reinsurers are not oblivious to a market that is fundamentally changing in terms of the permanence of alternative capital, increasing commoditization of business lines, and evolving cedant expectations along with the increasing specter of new technologies driving market disruption. With business models under stress, reinsurers are in various phases of self-discovery, trying to adapt their strategies to remain relevant. Short-term tactical moves might help but are not a lasting solution. Rather, we believe most reinsurers will need transformational changes to survive over time. Similar to long-distance marathoners, sound strategy, discipline, preparation, and grit are necessary ingredients if reinsurers are to succeed. Indeed, the competitive landscape could look very different a couple of years from now. We are already observing greater differentiation among players, and this will only expand over time. The market has shifted slightly, boosting the power of brokers, the capital markets, and large cedants. If the sector can coalesce around some large players, it could regain its balance. ■

Taoufik Gharib
New York, (1) 212-438-7253
taoufik.gharib@spglobal.com

Johannes Bender
Frankfurt, (49) 69-33-999-196
johannes.bender@spglobal.com

David Masters
London, (44) 20-7176-7047
david.masters@spglobal.com

Hardeep S Manku
Toronto, (1) 416-507-2547
hardeep.manku@spglobal.com

Global Reinsurers' Returns Will Barely Cover Capital Costs In 2018 And 2019

By David Masters and Taoufik Gharib

In 2017, the reinsurance sector generated returns on capital of only 1.2%. At 6.3% below its cost of capital, this represents the worst level in more than 13 years.

The impact of the 2017 U.S. hurricane season was a significant factor, but even during the benign first half of 2017, returns were only 1.0 percentage points higher than the cost of capital. S&P Global Ratings expects the sector's return on capital to increase to around 6%–8% by year-end 2018. Despite modest price rises the 2017 catastrophes, this remains close to reinsurers' cost of capital, which we anticipate will increase modestly through the rest of 2018 and in 2019, remaining within the 7%–8% range.

Despite the optimism reinsurers showed when heading into the 1/1 2018 renewal season, overall reinsurance renewal rates have only modestly increased and the momentum is weakening, as witnessed through the latest renewals. While reinsurers welcome rate increases, their profitability continues to be hampered by persistent competitive pressures within the property/casualty (P/C) underwriting cycle and low investment returns, which will initially lag the increase in benchmark

istock photo / 35007

rates as reinsurers' investment portfolio average duration is around 3.4 years.

We are also seeing signs that prior-year reserve releases could decline, which will add to the earnings pressure. Some reinsurers have already demonstrated this during 2016 and 2017, following the U.K.'s Ogden discount rate reform, and, in some cases, individual reserve strengthening has even taken place in selected lines like U.S. casualty and Australian disability.

Our return on capital forecast is on a consolidated group basis (i.e., including any life reinsurance and/or primary business), and it incorporates benefit from recent reinsurance rate increases, normalized catastrophe loss expectations, and continued benefit from favorable reserve releases, albeit at lower levels. Our assumption also normalizes for the earnings volatility created by new U.S. GAAP accounting guidance on the recognition and measurement of equity investments, effective Jan 1, 2018, which adversely affected income statements during first-quarter 2018 for some U.S. GAAP reporting reinsurers.

These trends indicate that reinsurers are likely to barely cover their cost of capital in 2018 and 2019. This is entirely different from the situation witnessed in the aftermath of the 2005 and 2011 catastrophe losses, where excess returns were generated off the back of significant rate increases following the heavy catastrophe losses.

Returns Are Unlikely To Materially Exceed The Cost Of Capital

Despite dwindling returns since 2005, reinsurers have retained sufficient profitability to satisfy investors because their cost of capital has fallen along with their profitability levels. The returns investors required in 2005 were significantly higher than those they require today. Today's investors are operating in an environment in which yields have remained at historical lows for an entire decade.

The cost of capital among our rated peer group of global reinsurers peaked in 2005 at 10.0% (source: Bloomberg). Risk-free rates were then significantly higher than currently, which contributed to the high cost of capital in 2005. The pricing of property catastrophe risk also soared following the 2005 hurricane season in North America, causing the opportunity cost of reinsurance risk to spike.

Global property catastrophe pricing has softened since 2008 (except for temporary regional rate increases in Japan, Thailand, and New Zealand, where the major catastrophes of 2011 caused record losses). This lowered the returns that investors expected. However, except for 2011 and 2017, there have been relatively few major catastrophes since 2005, which has helped reinsurers realize returns that have exceeded their cost of capital. (For further details, see "Are Global Reinsurers Ready For Another Year Of Active Natural Catastrophes?")

For 2018, we assume modest price increases of 0%–5% across the board, with property catastrophe reinsurance pricing still an estimated 30% below 2013 levels (Source: JLT Re).

As of Dec. 31, 2017, the cost of capital for our peer group had declined by around 250 basis points since 2005, to about 7.5%, including an increase of around 90 basis points during 2017. This overall decline since 2005 is due to a combination of:

- A reduction in the cost of equity, caused by the reduction in risk-free rates, combined with the declining return from competing asset classes such as bank equity investments.
- A reduction in the cost of debt, again caused by lower risk-free rates, combined with overall improvements in the sector's capitalization, and thus creditworthiness. We estimate capital redundancy at the 'A' level of $31.5 billion at the end of 2017 for our peer group.
- A modest increase in the proportion of debt funding on reinsurers' balance sheets today versus (more expensive) equity funding. At the end of 2006, approximately 13.5% of our rated reinsurers' capital stack comprised debt, rising to 18.0% by Dec. 31, 2017.
- An increase in supply of capital into the reinsurance market as hedge fund investors, pension funds, sovereign wealth funds, and high-net-worth investors look to diversify their portfolios by adding catastrophe risk.

During 2017, our cohort of global reinsurers delivered an average return on capital of 1.2% compared with a cost of capital of 7.5% as at end-December 2017 (Chart 1). This negative 'spread' of 6.3% represents the worst level in more than 13 years, including 2005 and 2011, which were both affected by heavy natural catastrophe losses. At end-2015, the spread stood at 2.1%, and in 2016 it was 1.9%, dropping to 1.0% in first-half 2017.

Alternative Capital Remains A Threat To Profitability

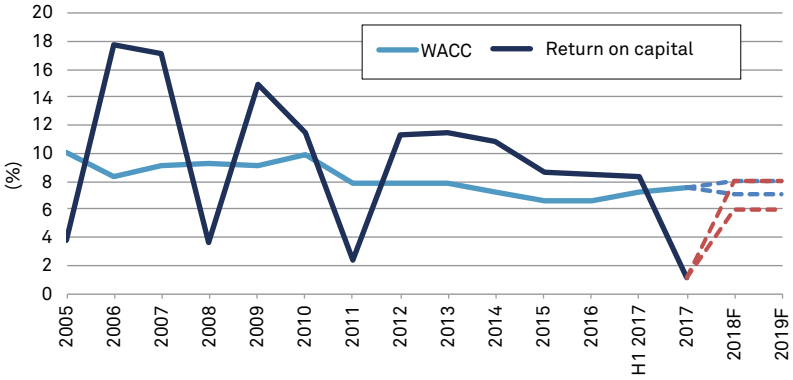
The increase in alternative capital has been one of the biggest emerging risks to reinsurers' business models and profitability over the past decade. Competing capital from pensions, endowments, and other large institutional investors has entered the space in search of yield and the diversification benefits of adding a theoretically noncorrelated asset class to their portfolios. These investors also have a competitive advantage over traditional reinsurers in that their cost of capital (long-term return) targets tend to be lower than reinsurers' weighted-average cost of capital (WACC), allowing them to profitably assume risks at prices that would be uneconomical for the traditional players.

Market participants appear to demand less for investing in alternative capital versus the publicly listed securities of a reinsurer, as demonstrated by catastrophe bond/insurance-linked securities issuances in 2017, which were launched at an average coupon of 6.51% (with an expected loss of 3.50%) (Chart 2). The diversification benefits of adding pure natural catastrophe risk to a portfolio may help to explain this.

Market Valuations Are Near Historical Highs

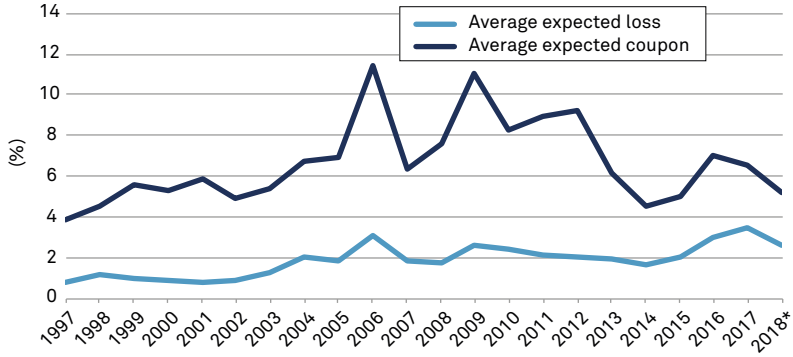
All valuations are flawed because they reflect expectations about a future that is inherently uncertain. However, the market's valuation of reinsurers gives valuable information about how investors view the industry's prospects. Premiums

Chart 1: Reinsurers' Weighted-Average Cost Of Capital And Return On Capital (2005–2019F)



F: Forecasts. Source: S&P Global Ratings, Bloomberg

Chart 2: Average Expected Loss And Coupon For Catastrophe Bonds And Insurance-Linked Securities



*As of July 18. Source: S&P Global Ratings, Artemis' deal directory.

(or discounts) to book value typically reflect investors' view of a reinsurer's future ability to generate returns above (or below) its cost of capital. An investor that expects a reinsurer to sustainably earn above its cost of capital should be willing to pay a premium to book value, reflecting the value created, and vice versa.

It may therefore seem surprising that the market values the industry at a premium to book value today (on average at 1.24x at year-end 2017), and at near historical highs, given the challenges mentioned above and the fact that the industry failed to cover its cost of capital in 2017 (Chart 3). We believe the market optimism implied by these valuations has four main causes:

- Following the 2017 catastrophe losses, reinsurers have managed to push through some rate increases, which should improve profitability in the near term. If these rate increases fail to deliver improved profitability, reinsurers may seek to return more capital to investors.
- Because they are positively correlated with the broader stock market average, reinsurers' stocks have traded up, in tandem with the many consecutive years of increases in the S&P 500 index.
- Market consensus has continued to build now that the era of low interest rates may be coming to an end—we suspect investors may be factoring in the prospect of higher interest rates and higher investment income for reinsurers, whose asset duration remains slightly short on average.
- Most importantly, we suspect that an embedded takeover premium exists for many groups, following the recent wave of consolidation in the industry, particularly among smaller players (see "Bulking Up: The Global Reinsurance Sector Marches Toward Consolidation" for further details). for further details). Recent M&A examples include AXA's acquisition of XL Group and the January 2018 announcement that AIG was acquiring Validus Holdings at an implied multiple of 1.53x book value.

Capital Adequacy Strength Is A Buffer Against Earnings Pressure

Our forecast regarding the interplay between profitability and cost of capital may appear negative for the sector, but we do not expect swathes of negative rating actions. On July 18, 2018, the outlook on 16 of our 20 nonlife reinsurance groups was stable. Of the remaining four groups, the outlook on three (Aspen, Axis, and Lloyd's of London) was negative and the outlook on Allied World was positive. We base our ratings on the capital adequacy strength and the overall strong enterprise risk management within the sector, which buffers the industry against the continued pressure on earnings.

At the 'A' level, we estimate that capital redundancies at the end of 2017 stood at about $31.5 billion. Even if the return on capital were to drop to 1 percentage point below the cost of capital for a full 12 months, we estimate that surplus capital would deteriorate by only about $2.3 billion. Although this trend would not have a material sector-wide impact in isolation in the near term, certain reinsurers might see a more pronounced effect. In particular, where a reinsurer has a capital adequacy assessment close to a border between different outcomes, the impact would be greater, as it would if repeated over successive years.

Similarly, should a reinsurer's return on capital drop below its cost of capital for a prolonged period, it will have implications for our view of its competitive position and financial flexibility. Holistically, if we see that investors no longer view value in a sector—for example, because of falling returns on equity—and this causes market growth prospects to suffer, we could revise our industry and country risk assessment for reinsurers.

Since our ratings are forward-

looking, we consider prospective views of pricing, the market, and reinsurer-specific circumstances. On the asset side, we incorporate both unrealized losses on fixed-income securities (should interest rates rise) and the reinsurer's asset duration. At the end of 2017, reinsurers' average asset duration was approximately 3.4 years, implying that around 30% of assets will roll off the balance sheet each year and be reinvested at possibly higher rates.

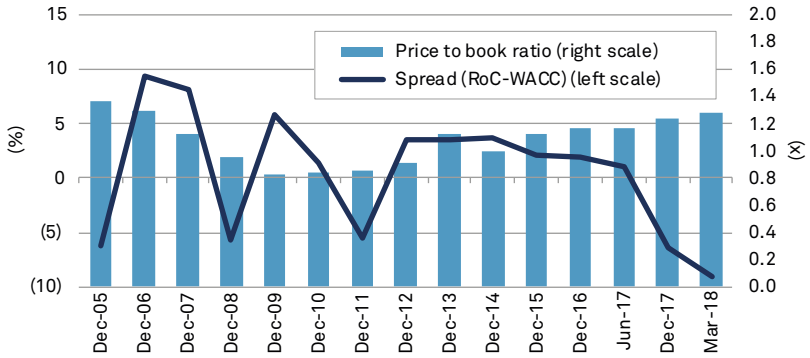
Our ratings are designed to look through the cycle. Therefore, if we expect a reinsurer's earnings to pick up as it reinvests assets at higher rates, a short-term profitability decline wouldn't necessarily lead to a negative rating action. However, weaker profitability because of structural underperformance would be a different story.

Investors Are Likely To Stick With Reinsurance

As we have consistently said, our base-case assumption is that most reinsurance equity investors will reluctantly accept lower returns on their reinsurance holdings, rather than exit the sector. Given prevailing low (albeit rising) interest rates, investors remain hungry, even desperate, for yield. Therefore, as returns on reinsurance securities have declined, investors will likely reassess their reinsurance investments, relative to potential returns available in other sectors. Should investors withdraw their capital, one consequence would be that reinsurance rates could increase as the excess capital in the reinsurance sector reduces.

Reinsurance returns underperformed many other assets classes in 2017, given the catastrophe losses that year. However, on a more normalized basis, the 6%–8% forecast return on capital in 2018–2019 still compares relatively favorably with other industries. Investors have limited options elsewhere that offer more favorable or even comparable returns. For example, in 2017, the average return on capital for major banks was 3.2% (source: KBW Bank Index). Even the global industrials sector, which is on average lower rated than reinsurance, generated a return on capital of only 6.1% in 2017 (source: Dow Jones Global Industrials Total Stock Market Index). Returns on five-year risk-free assets (as measured by U.S. Treasuries) stood at a meagre 2.21% at year-end 2017, increasing to 2.77% by July 18, 2018.

Chart 3: Reinsurers' Price-To-Book Ratio And Spread



RoC: Return on capital. Source: S&P Global Ratings, Bloomberg.

> **"The luck previously enjoyed by reinsurers clearly ran out in the 2017 U.S. hurricane season."**

Reinsurers' Luck Finally Ran Out In 2017

Reinsurers' earnings have been heavily supported in the past by benign catastrophe experience and significant prior-year reserve releases. We noted last year that these trends were, at least in part, due to luck and that eventually that luck would run out. The luck previously enjoyed by reinsurers clearly ran out in the 2017 U.S. hurricane season.

Even incorporating the benefits of modest rate increases in 2018, reinsurers' profitability is likely to barely exceed their cost of capital in 2018 and 2019, assuming a normalized catastrophe year, continued prior-year reserve releases, and normalizing for the U.S. GAAP accounting changes. However, reinsurance still offers expected returns that exceed those of most competing asset classes, limiting the likelihood of a mass investor exodus from the sector in the short-to-medium term.

While welcome, the modest rate increases so far seen in 2018 will do little to restore the sector's profitability significantly above its cost of capital. However, we continue to believe that the reinsurance sector can stand the strain on its capital base in the near term, with issuer-specific rating actions more likely than sector-wide downgrades. ■

David Masters
London, (44) 20-7176-7047
david.masters@spglobal.com

Taoufik Gharib
New York, (1) 212-438-7253
taoufik.gharib@spglobal.com

Calculating The Cost Of Capital

Investors have many options for investing their capital; the cost of capital represents an investor's opportunity cost of investing in one security versus another. A company's weighted-average cost of capital (WACC) represents the return demanded by all of its capital providers (debt and equity). For management, WACC represents the benchmark by which investors can judge if they are creating or destroying value.

In our analysis, we continue to use Bloomberg's cost of capital figures for our universe of 20 global reinsurers. Our primary comparison point here remains return on capital versus WACC.

Are Global Reinsurers Ready For Another Year Of Active Natural Catastrophes?

By Charles-Marie Delpuech, Johannes Bender, and Taoufik Gharib

Insured natural catastrophe (nat cat) losses hit a record high in 2017, at $138 billion globally according to Swiss Re Sigma. The loss magnitude was roughly 3x what reinsurers would expect in an average nat cat year. Although it hit the industry's earnings, and a few players' capital adequacy, it failed to materially push up global reinsurance prices.

The top-20 global reinsurers picked up about 20% of the $138 billion total insured nat cat losses in 2017, which we estimate at close to a 1-in-25-year aggregate loss for the peer group (Charts 1 and 2). Three major hurricanes in the Caribbean Islands, Texas, and Florida resulted in $92 billion of insured losses. Despite the high loss magnitude, global reinsurance prices were not materially affected. As a result, a number of reinsurers have taken defensive actions to reduce their exposure to catastrophe risk. For players who decided to maintain or increase their exposure, we expect higher sensitivity of earnings and capital toward catastrophe risk.

Half of the top-20 reinsurers are more exposed to nat cat risk in 2018 than in 2017. Last year, the sector proved to be resilient and the majority of our

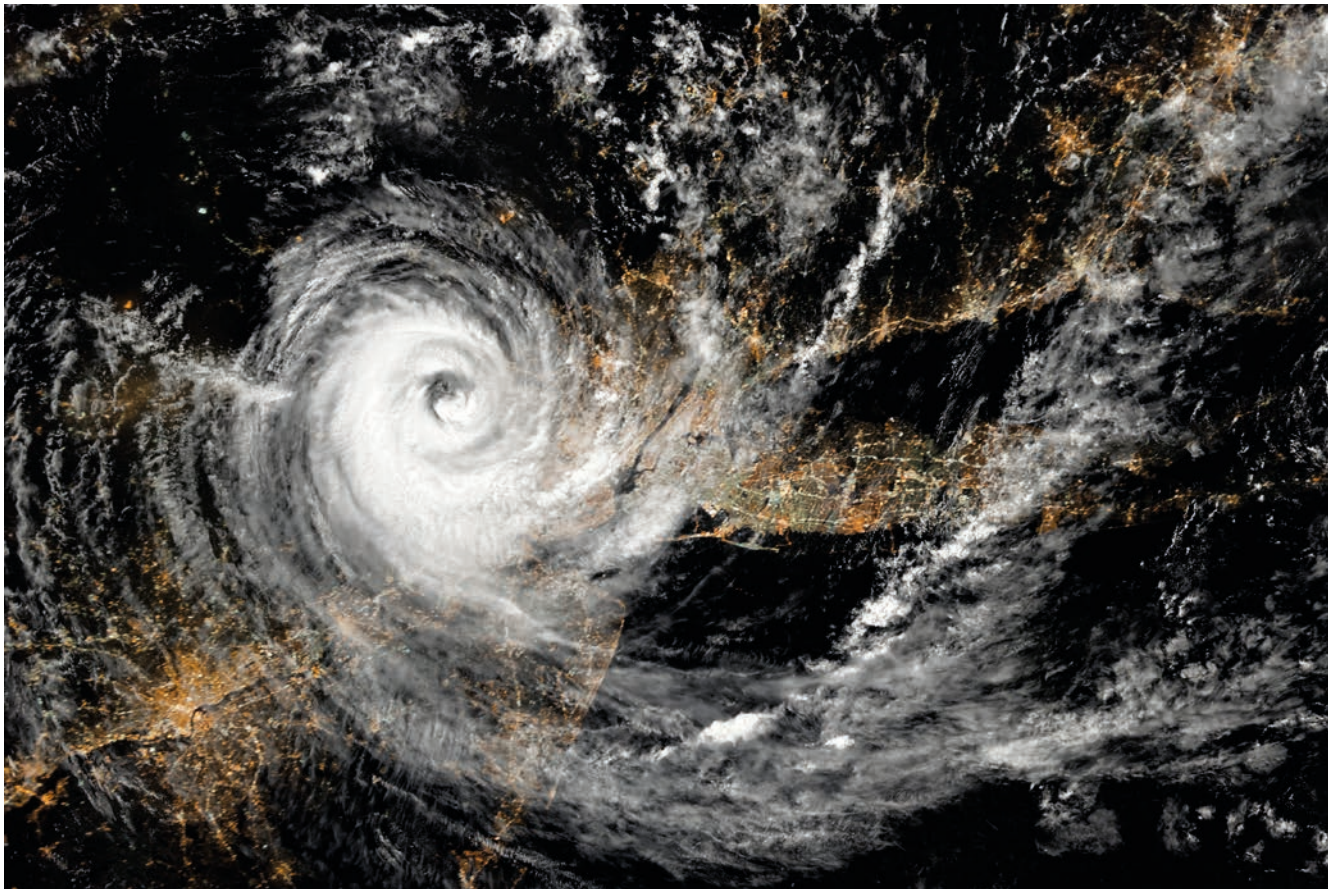


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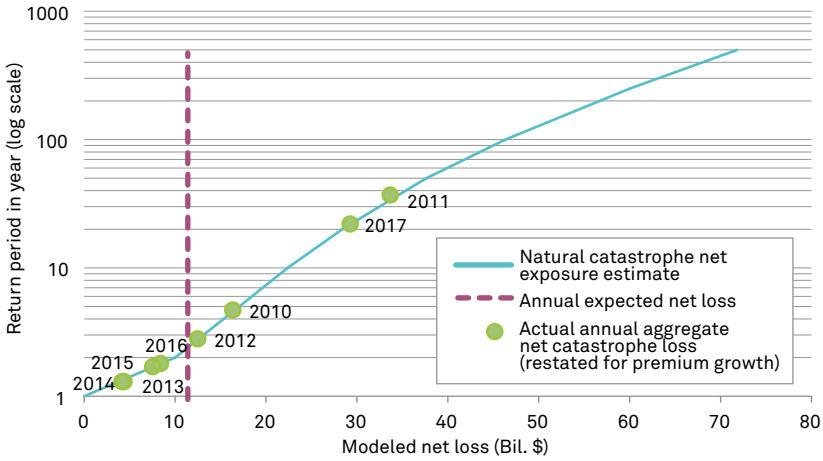
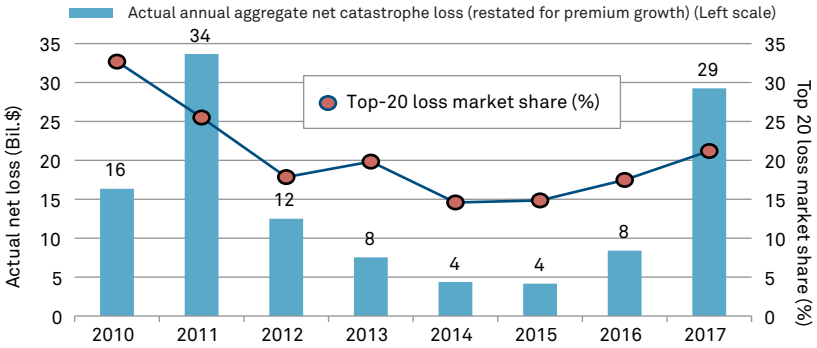
Chart 1: Net Aggregate Catastrophe Loss In 2017 Is A 1-In-25-Year Loss For The Top-20 Global Reinsurers



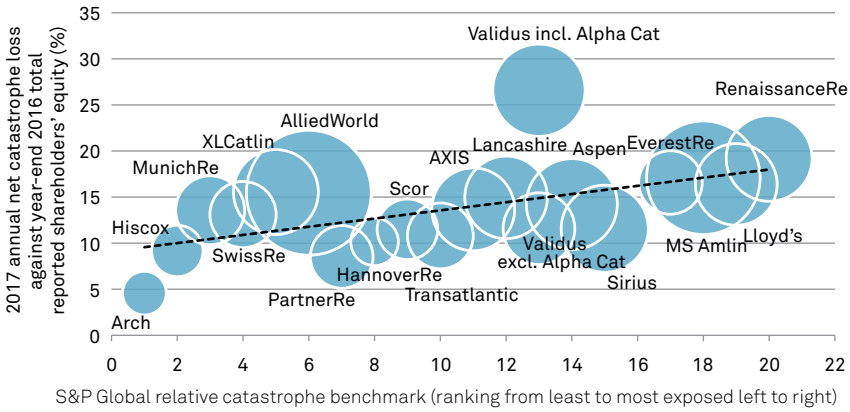
Source: S&P Global Ratings' estimates.

Chart 2: Historical Annual Catastrophe Losses Show An Average Loss Market Share Of 20% For The Top-20 Global Reinsurers



Sources: S&P Global Ratings, Swiss Re Sigma.

Chart 3: S&P Global Ratings' Relative Catastrophe Benchmark Performed Well In 2017



Bubble size shows 2017 annual net catastrophe loss against two-year average profit before tax (excluding cat). Source: S&P Global Ratings.

"Following a 1-in-10-year aggregate loss (global insured losses of roughly $100 billion), reinsurers are still likely to show profitable results, on average."

ratings remained unchanged. Although we assume reinsurers have entered the 2018 North Atlantic hurricane season with robust earnings and capital buffers, a repeat of 2017 nat cat losses could test earnings and capital adequacy levels. In such a scenario, negative rating actions could result for overexposed reinsurers.

2017 Nat Cat Losses Were In Line With The Sector's Expected Volatility

Nat cat losses in 2017 wiped out earnings for nine of the top 20 reinsurers (see Table 1 for the companies that comprise our top 20). Losses averaged about 1.3x their annual "normalized" earnings and affected about 12% of their shareholders' equity at year end 2016. In general, in our credit analysis, we capture the volatility of earnings and capital stemming from catastrophe risk through our "high risk" assessment of the reinsurance sector's risk profile.

We update annually our set of catastrophe exposure metrics in order to inform our view of the relative risk position of global reinsurers. We think that our relative catastrophe benchmark performed well in 2017. Actual nat cat losses in 2017 broadly correlate with our relative riskiness ranking (Chart 3). Reinsurers whose earnings and capital were most exposed are more likely to be positioned on the right hand of our scale.

But 2017 Highlights Modeling And Exposure Disparities

The nat cat losses in 2017 highlight material disparities in reinsurers' exposures. Estimated return periods ranged from below 1-in-10 year to up to 1-in-60 year for the 2017 annual aggregate

loss among our peer group (Chart 4). (We estimate hurricanes Harvey, Irma, Maria [HIM] to be close to a 1-in-40 year North Atlantic wind annual aggregate loss.) We believe that differences in return periods arise depending on portfolio specificities, for example location, type of exposure, concentration/diversification, reinsurance/retrocession, gross/net limits, and attachment points.

Nevertheless, the wide range of estimated return periods comes as a surprise. Indeed, as highlighted by the low level of correlation between U.S. wind exposure and experienced return periods (Chart 4), our view is that the distribution dispersion is not only explained by exposure variations.

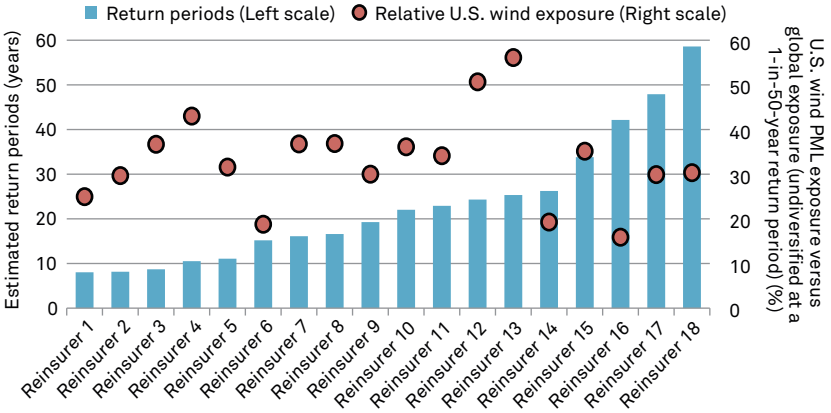
As most reinsurers rely on third-party vendors or internally developed catastrophe models to form their own view of risk, we see significant uncertainty and disparities in modeling assumptions and adjustments in the industry. To an extent, return period estimates reflect the level of conservatism embedded in the probabilistic modeling of a reinsurer's exposure.

In our rating analysis, we would typically assess the extent a reinsurer has the capacity to adequately model these complex risks as part of our enterprise risk management (ERM) assessment (see "How We Capture Catastrophe Modeling Uncertainty In (Re)insurance Ratings," published April 26, 2016, on RatingsDirect). We will use the experience from events as those suffered in 2017 to review the effectiveness of reinsurers' risk modeling and processes

Definitions Used

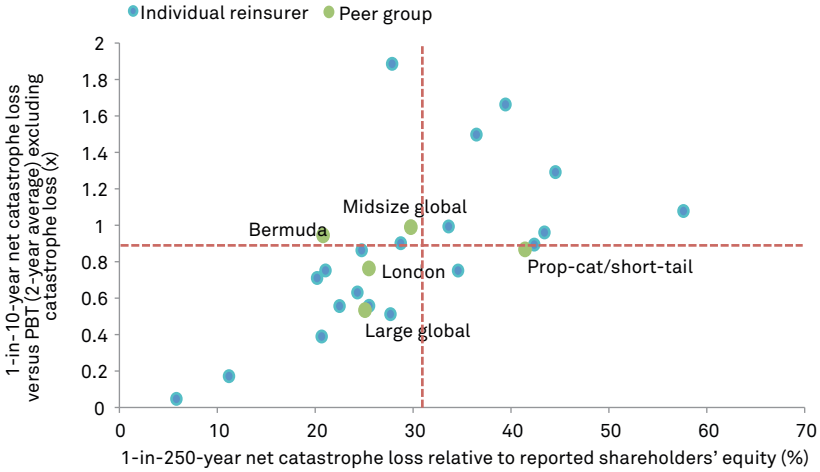
- Earnings-at-risk exposure is defined as a 1-in-10-year modeled annual aggregate net loss versus the last two years' average profits before taxes and catastrophe claims.
- Capital-at-risk exposure is defined as a 1-in-250-year modeled annual aggregate net loss against shareholders' equity as reported (including preference shares).

Chart 4: Distribution Of 2017 Actual Losses' Return Periods Shows Disparity



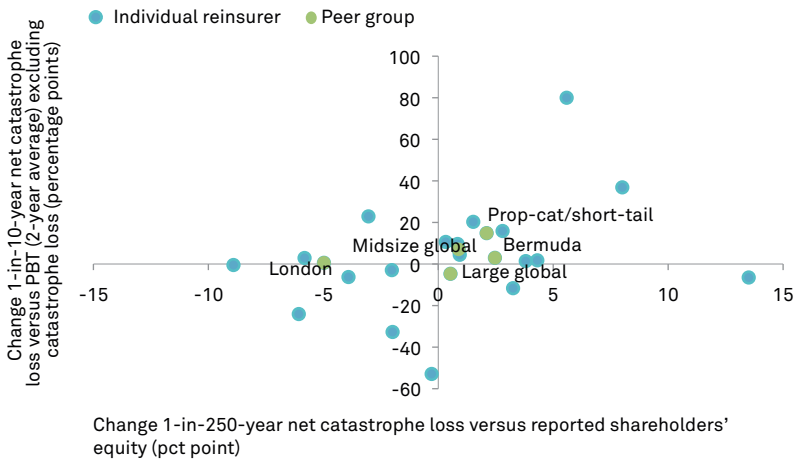
PML: Probable maximum loss. Source: S&P Global Ratings.

Chart 5: Earnings At Risk Versus Capital At Risk Positions As Of Jan. 1, 2018



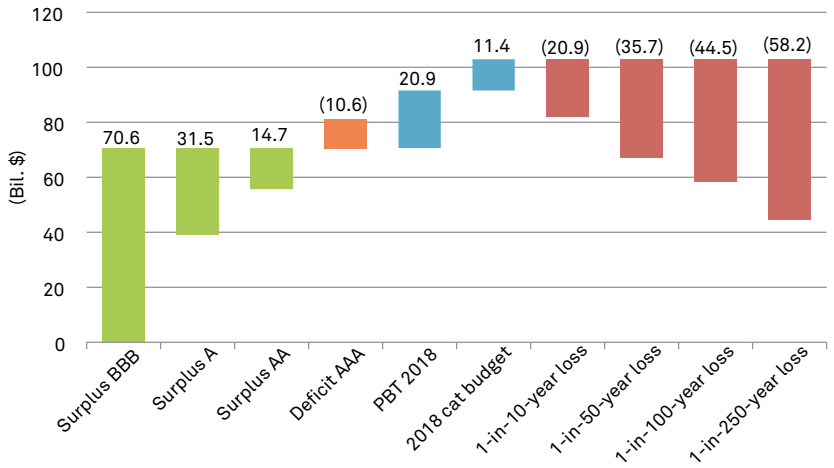
PBT: Profit before tax. Source: S&P Global Ratings.

Chart 6: Earnings At Risk Versus Capital At Risk Positions Evolution From Jan. 1, 2017



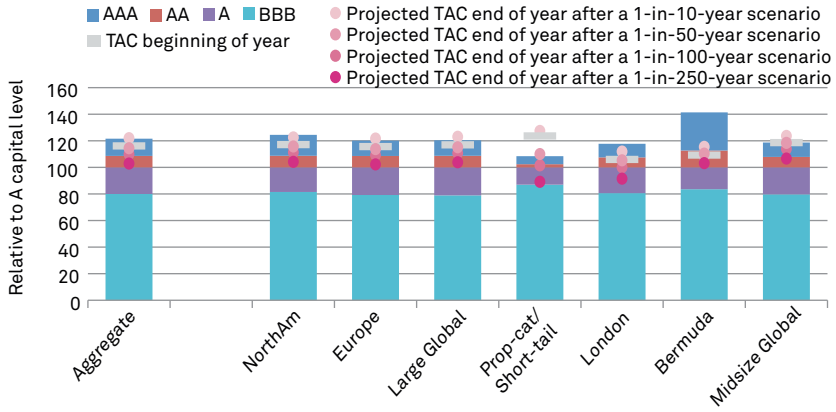
PBT: Profit before tax. Source: S&P Global Ratings.

Chart 7: Top-20 Reinsurers' Aggregate Capital Surplus Resilience To Stress At Year-End 2017



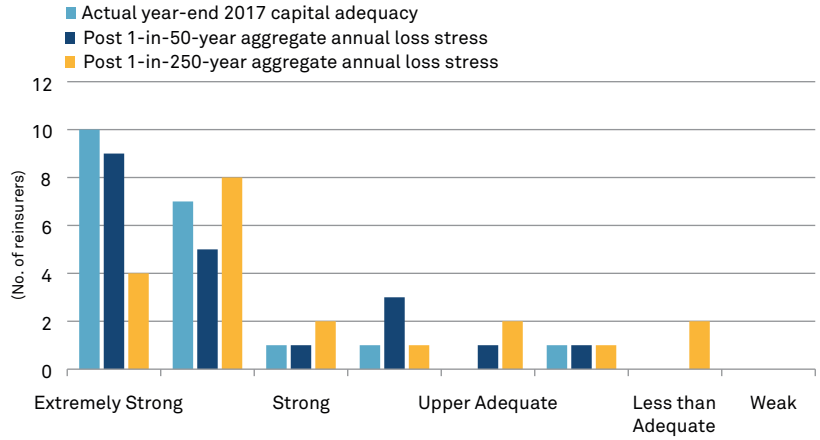
PBT: Profit before tax. Source: S&P Global Ratings' estimates.

Chart 8: S&P Global Ratings' Total Adjusted Capital Projected At Different Return Periods



Data as of Jan. 1, 2018. Source: S&P Global Ratings.

Chart 9: Global Reinsurance Sector Capitalization After A 1-In-250-Year Aggregate Loss (Including One Year's Profit Before Tax)



Source: S&P Global Ratings.

"The Bermuda property catastrophe specialists and London reinsurers are likely to be the least resilient as a result of their higher-than-average appetite for catastrophe risk."

as well as ERM scores and risk position assessments.

Secondly, the level of prudency in loss estimates affects the estimate of return periods that might be revised as loss reserves develop and claims are paid. The actual loss estimates might vary across reinsurers because the uncertainty is high on losses incurred but not yet reported (IBNR) that are being provisioned on HIM events. On average we assess that IBNR represent 50% of loss estimates based on information provided by reinsurers at year-end 2017.

As an example, the loss estimate from Hurricane Maria that hit Puerto Rico is believed to be relatively uncertain as we understand that the claims are being reported slowly and information is lacking on the island. Including first-quarter 2018 results, so far we have not monitored any significant negative development on claims reported in particular on the HIM losses. We will monitor how claims develop over time to inform our view on the relative strengths of reinsurers' reserving practices.

To Increase, Or Decrease Nat Cat Exposures: That Is The Question

Based on the January 1, 2018, property catastrophe in-force book of business, we assess that the top-20 global reinsurers are only marginally more exposed relative to the same period in 2017. We estimate that capital at risk rose slightly to 31% of total shareholders' equity exposed in January 2018 renewals, compared with 30% in the same period in 2017. But on an individual basis we found material exposure changes.

Half of the reinsurers are more exposed than last year, through a combination of exposure growth and

capital deterioration (Charts 5 and 6). Earnings at risk also rose to 0.89x profit before tax in 2018 versus 0.85x in 2017. Following a 1-in-10-year aggregate loss (global insured losses of roughly $100 billion), reinsurers are still likely to show profitable results, on average. Nevertheless, an aggregate loss of this magnitude could become a capital event for a third of global reinsurers.

We have seen a number of reinsurers taking defensive actions to reduce their exposure to extreme events. For more than a third of reinsurers, absolute net exposure to a 1-in-250-year aggregate loss has reduced by more than 10%. Exposure shift would typically be informed by internal risk tolerances and could be acted upon relatively rapidly by increasing retrocession purchases for instance, as some primary insurers did by buying reinsurance cover in the middle of the 2017 catastrophe season.

However, as reinsurers balance the need to improve their risk return profile against the need to protect their balance sheet, it is not surprising that some reinsurers increased their risk exposure this year as a result of price increases (after the January 2018 renewals for the U.S. property catastrophe business, rates on loss-affected lines were up 10% to 25%, non-loss-affected layers of loss-affected lines were flat to up 10%, and non-loss-affected lines were flat to up 5%).

We also note that for some European players, the weakening of the U.S. dollar against the euro and British pound sterling over the course of 2017 noticeably reduced their relative exposure. This is because most surplus capital tends to be held in local currency while aggregate exposure at a high return period is largely U.S. driven (we assess that, on undiversified basis, more than 50% of the risk from nat cat would come from North America).

How Resilient Is The Reinsurance Sector?

In 2017, the top-20 reinsurers' share of insured losses was sizable, at 20% (Chart 2). When assessing the sector's earnings and capital resilience, we take into account the nat cat budget the sector incorporates in a normalized year, the projected earnings that may be achieved in a normalized year, potential dividend and other shareholder returns, and the capital buffer the sector carries according to our risk-adjusted capital model.

Based on data we received from the top-20 reinsurers, we estimate a nat cat budget of about $11 billion or 8% of the combined ratio in 2018, which if not exceeded should enable the sector to post profits before tax of about $21 billion in 2018. This results in a consolidated buffer of about $32 billion ($21 billion plus $11 billion) before capital would be depleted in a severe stress scenario, assuming no dividends or other shareholder returns.

For reference, dividends and share buybacks paid out by the top-20 companies in 2017 was about $9 billion. That means that an aggregated 1-in-10-year loss experience, which we assume to be about $21 billion, would exceed the annual nat cat budget and hit the sector's earnings, but would not hit its capital on aggregate.

In the case of a 1-in-50-year aggregate catastrophe loss event, the sector would take losses beyond $35 billion, which would exceed the annual catastrophe budget and the assumed earnings for 2018 (Chart 7). However, an earnings or capital event at an individual company could be triggered earlier, depending on its exposures.

Our analysis highlights that the Bermuda property catastrophe specialists and London reinsurers are likely to be the least resilient as a result of their higher-than-average appetite for catastrophe risk (Chart 8). We found that eight of the top-20 global reinsurers are unlikely to maintain capital adequacy of at least 'AA' confidence level following a 1-in-250-year aggregate loss, including normalized earnings and the annual nat cat budget (Chart 9).

In the first half of 2018, worldwide nat cat losses were lower than in the same period of 2017. Insured catastrophe losses according to Munich Re's statistics declined to about $17 billion from about $25.5 billion in first-half 2017, but remained at the average of the last 30 years. However, in general, the first quarter is not the most representative part of the year since the North Atlantic hurricane season starts June 1 and finishes November 30.

In the course of our surveillance process, we monitor a reinsurer's performance against our base-case scenario. In a severe nat cat event, we may take negative rating actions depending on the impact on nat cat budgets for the remainder of the year, as well as the impact on earnings and capital, and the potential to restore capital within the following 12 to 24 months.

Table 1: Top-20 Global Reinsurers

Large global reinsurers
Hannover Rück SE
Lloyd's
Munich Reinsurance Co.
SCOR SE
Swiss Reinsurance Co. Ltd.
Midsize global reinsurers
Everest Re Group Ltd.
PartnerRe Ltd.
Transatlantic Holdings Inc.
XL Group Ltd.
London Market
MS Amlin PLC
Aspen Insurance Holdings Ltd.
Hiscox Insurance Co. Ltd.
Qatar Insurance Co.
Bermuda
Allied World Assurance Company Holdings GmbH
Arch Capital Group Ltd.
AXIS Capital Holdings Ltd.
Sirius International Group Ltd.
Property-catastrophe/short-tail specialists
Lancashire Holdings Ltd.
RenaissanceRe Holdings Ltd.
Validus Holdings Ltd.

Is The Sector Ready For Another Active Nat Cat Year?

In 2017, the reinsurance industry recorded an aggregate loss that was assessed as likely to be incurred less than once in 20 years. After 2005 and 2011, this was the third time this had happened in less than 20 years. Based on this recent history, it is not unlikely that we could experience insured losses in excess of $100 billion more often than the industry currently expects.

Nevertheless, last year's experience demonstrated global reinsurers' ability to adjust their exposure relatively quickly after large events. We generally observed disciplined management of catastrophe risk appetites because of only modest price increases. In this environment, reinsurers weren't tempted to excessively expand their exposures.

Although the sector is entering the 2018 cat season with robust capital and earnings, a repeat of 2017 nat cat losses would likely wash away full-year earnings and cat budgets and further test reinsurers' capital resilience. In such a scenario, the picture might be quite different from what we have observed so far in 2018, since we think price hikes would be likely after the events and more players could take more risk on balance sheet, leaving the sector more exposed. ■

Charles-Marie Delpuech
London, (44) 20-7176-7967
charles-marie.delpuech@spglobal.com

Johannes Bender
Frankfurt, (49) 69-33-999-196
johannes.bender@spglobal.com

Taoufik Gharib
New York, (1) 212-438-7253
taoufik.gharib@spglobal.com

Capitalization Remains A Pillar Of Strength For Global Reinsurers

By Taoufik Gharib, Charles-Marie Delpuech, Johannes Bender, Aurelie Salmon, and Simon Virmaux

The global reinsurers' robust capitalization has provided a rock of stability in an otherwise tumultuous environment. Indeed, S&P Global Ratings continues to view the reinsurance sector's capital adequacy favorably and as a strength. Combined with the industry's sophisticated enterprise risk management practices, it underscores S&P Global Ratings' stable outlook on the global reinsurance sector and on the majority of the reinsurers it rates.

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Capitalization Underpins The Strength Of The Top-20 Global Reinsurers, Despite A Decline In Cushion

The top-20 global reinsurers' capital adequacy remains very strong and redundant by 7% at the 'AA' confidence level in 2017, relative to 15% in 2016, and 23% in 2015 (Chart 1). In 2017, this group of global reinsurers lost its capital redundancy at the 'AAA' confidence level for the first time since the 2008 financial crisis. As a result, the group was deficient 5% at the 'AAA' confidence level in 2017, compared with redundancies of 2% and 12% in 2016 and 2015, respectively.

The property-catastrophe/short-tail specialists subgroup was the only one that continued to enjoy a 14% redundancy at the 'AAA' confidence level in 2017, despite the fact that the 2017 catastrophe losses were a capital event for most in this cohort.

Table 1: Top-20 Global Reinsurers

Large global reinsurers
Hannover Rück SE
Lloyd's
Munich Reinsurance Co.
SCOR SE
Swiss Reinsurance Co. Ltd.
Midsize global reinsurers
Everest Re Group Ltd.
PartnerRe Ltd.
Transatlantic Holdings Inc.
XL Group Ltd.
London Market
MS Amlin PLC
Aspen Insurance Holdings Ltd.
Hiscox Insurance Co. Ltd.
Qatar Insurance Co.
Bermuda
Allied World Assurance Company Holdings GmbH
Arch Capital Group Ltd.
AXIS Capital Holdings Ltd.
Sirius International Group Ltd.
Property-catastrophe/short-tail specialists
Lancashire Holdings Ltd.
RenaissanceRe Holdings Ltd.
Validus Holdings Ltd.

"In 2017, the top 20 global reinsurers lost their capital redundancy at the 'AAA' confidence level for the first time since the 2008 financial crisis."

The drop in capital adequacy from 2015 to 2016 was mostly due to adjustments to the large global reinsurers' asset-liability management (ALM), longevity risk capital charges, share buybacks and special dividends, and to a lesser extent, to the mergers and acquisitions (M&A) activity in 2016. In addition, the 2017 catastrophe losses have exacerbated the decline, in combination with M&A transactions among the Bermudians (e.g., Arch Capital Group Ltd., AXIS Capital Holdings Ltd.). However, many reinsurers slowed or halted share repurchases in the second half of last year because of the catastrophe events.

Furthermore, the buybacks have not significantly picked up through the first half of 2018—some players are still building their capital strength back up after last year's events.

We believe if the industry experiences an average catastrophe year in 2018, it is reasonable to assume that the top-20 global reinsurers could recover their 'AAA' capitalization. Assuming a normal catastrophe year, we estimate for the top-20 global reinsurers a natural catastrophe budget of about $11 billion, implying an 8% impact to the combined ratio. If not exceeded, this should enable them to post profits before tax of about $21 billion in 2018, giving them a buffer of about $32 billion ($21 billion plus $11 billion) before capital which would be depleted in a severe stress scenario, assuming no dividends or other shareholder returns (for reference, in 2017 the top-20 global reinsurers paid out about $9 billion in dividends and share buybacks).

That means that a 1-in-10-year aggregate loss experience, which we estimate to be about $21 billion, would exceed the annual natural catastrophe budget and hit the top-20 global reinsurers' earnings, but would not become a capital event for them as a cohort.

On the other hand, were 1-in-50-year aggregate catastrophe loss events to occur, the top-20 global reinsurers would suffer losses of about $36 billion, which would exceed their annual catastrophe budget and the forecast earnings for 2018 and would become a capital event. The difference between the potential natural catastrophe losses for 2018 becoming an earnings versus a capital event for a

Chart 1: Top-20 Global Reinsurers' Capital Adequacy By Confidence Level (2013–2017)

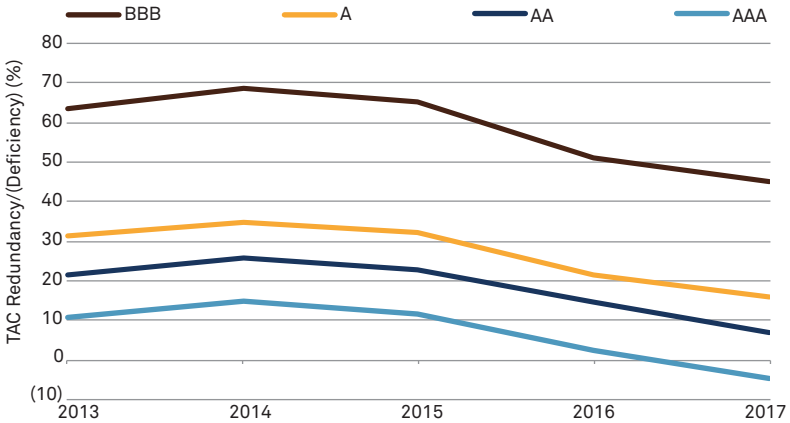


Chart 2: Top-20 Global Reinsurers' 2017 Capital Adequacy By Confidence Level And By Peer Group

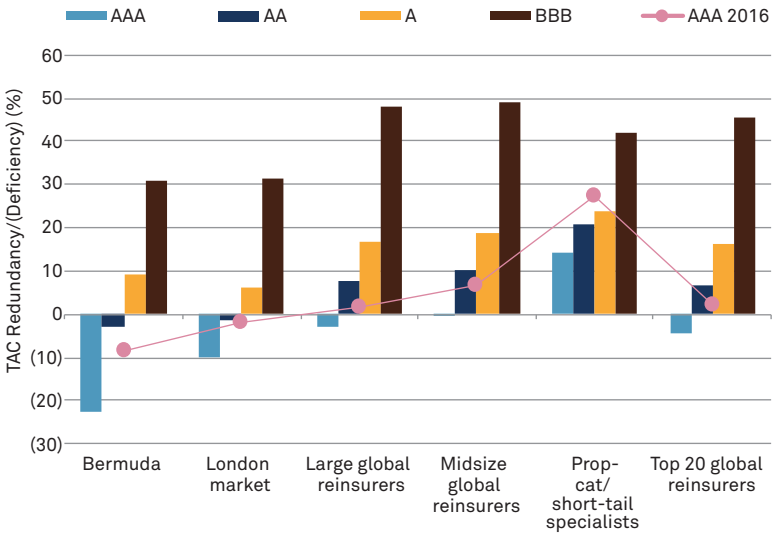
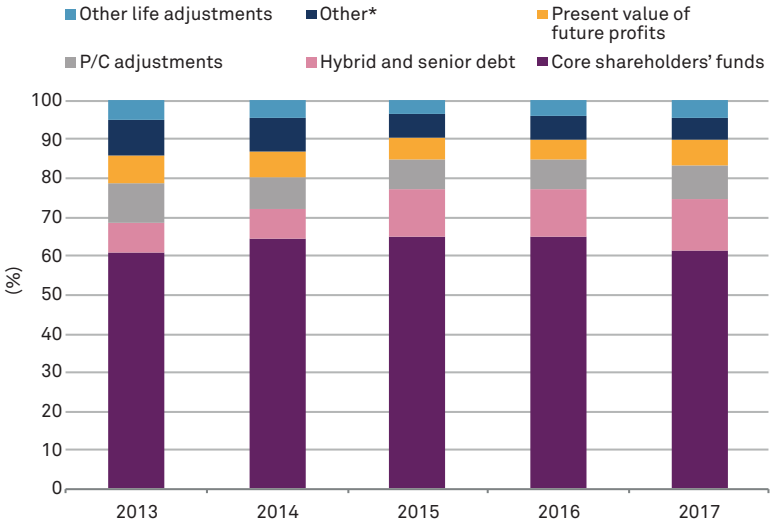


Chart 3: Top-20 Global Reinsurers' TAC Composition 2013–2017



TAC: Total adjusted capital
**Other includes: equity minority interests, other equity-like reserves, and analyst adjustments*

given reinsurer would depend on its own exposure. (See "Are Global Reinsurers Ready For Another Year Of Active Natural Catastrophes?").

Total Adjusted Capital Increasingly Relies On Senior Debt And Hybrid Securities

Since 2013, the top-20 global reinsurers' aggregate total adjusted capital (TAC) has been fairly stable, with only 2.1% growth to $227 billion in 2017 from $222 billion in 2013 (Chart 3). Given the soft pricing environment, reinsurers have returned the majority of their operating earnings to shareholders through ordinary and special dividends, and share buybacks. In addition, the natural catastrophe losses of 2017 wiped out most of the top-20 global reinsurers' earnings and became a capital event for some, which further limited TAC's growth. However, we note a change in the composition of TAC—the contribution from hybrid securities and senior debt grew to represent about 13% of TAC in 2017, from 8% in 2013.

For North American (that is, the U.S. and Bermuda) players, we tend to see higher credit for hybrids and senior debt, about 25% of TAC in 2017, as we would generally allow for debt-funded double leverage (senior debt raised at a reinsurance holding company that is injected as equity into its subsidiaries) in our assessment of TAC. On the other hand, the European reinsurers don't benefit from senior debt inclusion in their capital structure as it is not viewed as capital under Solvency II.

Because of the short-term nature of their liabilities, the property-catastrophe/short-tail specialists benefited much less from discounting on their reserves. This only represented about 2.7% of their TAC in 2017, compared with an average of 6.6% for the non-property-catastrophe/short-tail specialists. With interest rates rising in the U.S., we would expect the benefits to grow, especially for those with significant reserves denominated in U.S. dollars, but this adjustment will remain contained due to potential unrealized losses on the fixed-income securities.

Because of their life reinsurance business, the large global reinsurers' consolidated TAC in 2017 benefited from about 9.3% credit due to the present value of future profits embedded in their in-force life policies (Chart 4).

TAC is the measure S&P Global Ratings uses to define the capital available to meet a re/insurer's capital requirements in S&P Global Ratings' risk-adjusted capital adequacy model. For example, TAC includes the ability to partially realize the off-balance-sheet value of the in-force life re/insurance business and includes nonowner capital that can absorb losses, such as senior debt (in North America) and hybrid capital.

Capital Consumption Is Dominated By Liability Risks

For the top-20 global reinsurers, in aggregate, P/C (property/casualty) risks (reserves, premiums, and natural catastrophes affecting property) continue to consume the majority of capital, based on S&P Global Ratings' risk-adjusted capital model (Chart 5). Over the past five years, P/C risks have represented about 60% of total required capital.

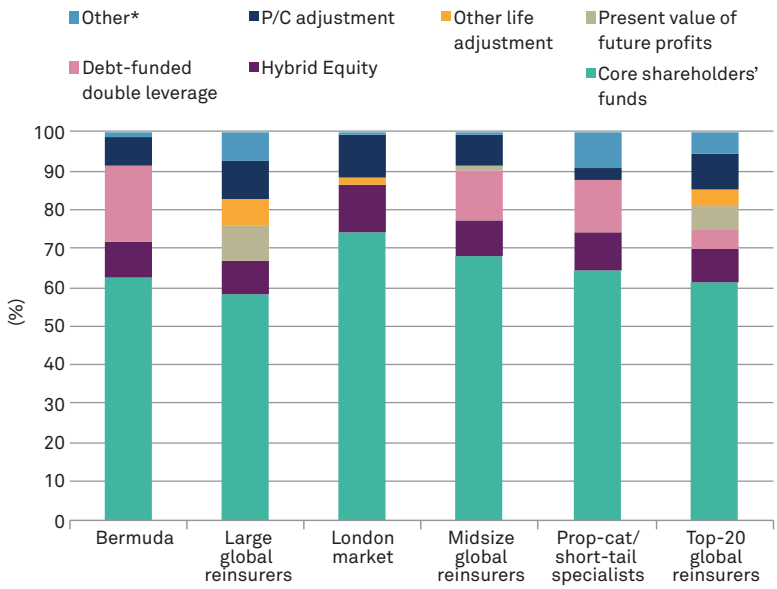
When adding life reinsurance risks, which have been growing for a handful of players, liability risks totaled more than 70%, indicating the continued strong appetite for reinsurers to take on liability risks. On the other hand, asset risks represented about one-third of total capital required. This differentiates reinsurers from primary insurers, which usually take on more asset risk. For example, global multiline insurers' asset risks usually account for about 50% of total required capital.

Some of the key changes we saw were the increase by 170 basis points of the P/C net reserve risk in 2017 relative to 2016 because of 2017's additional catastrophe loss reserves. More important, we saw a decline by 230 basis points in the net property catastrophe risk capital charge in 2017 (based on the Jan. 1, 2018, in-force property catastrophe business) relative to 2016 (based on the Jan. 1, 2017, in-force property catastrophe business) for the top-20 global reinsurers, in total, despite a marginal increase in their exposures net of reinsurance/retrocession.

We measure the net exposure by the 1-in-250-year annual aggregate net probable maximum loss (PML). As a result, we estimated that capital at risk rose slightly, to 31% of total shareholders' equity exposed in January 2018 renewals, compared with 30% in the same period in 2017. However, we reduced the net PML by net property catastrophe premiums written, which benefited from rate increases during the January 2018 renewals in a reaction to the losses suffered in 2017. This caused our capital model charge to decline.

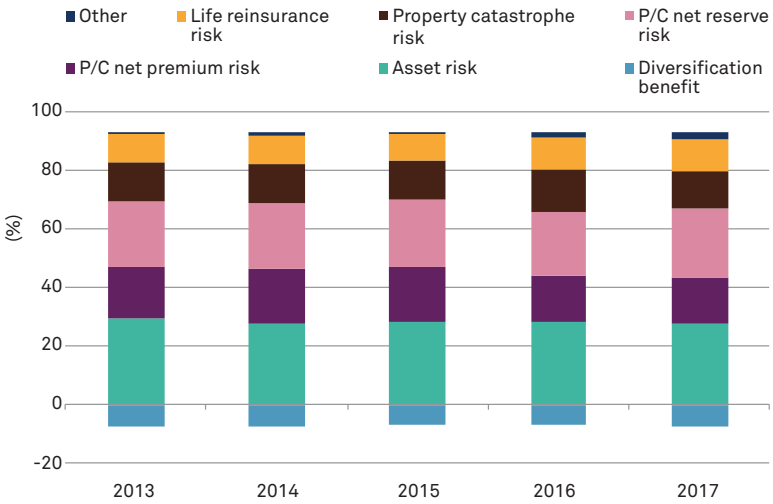
Furthermore, diversification benefits have accounted for about 8% in the past five years, mostly driven by the large global reinsurers because they have increased the size of their life reinsurance businesses, and we expect them to expand further, given the presumably strong returns with low double-digit return on equity.

Chart 4: 2017 TAC Breakdown By Peer Group



**Other includes equity minority interests, other equity-like reserves, and analyst adjustments.*

Chart 5: Top-20 Global Reinsurers' Capital Charges Allocation Per S&P Global Ratings' Capital Model At The 'A' Confidence Level



Asset Risk: Steady As You Go, But Hungry For Yield

Overall, asset risk has represented about one-third of the top-20 global reinsurers' capital requirements in the past five years and has been quite stable (Chart 6). Total asset risk is composed of approximately two-thirds market risk and one-third credit risk. Market risk encompasses equities, but also interest risk volatility, whereas credit risk represents the capital requirements for potential bond defaults. As reinsurers are holding slightly more cash at year-end 2017, likely to facilitate timely payments on last year's catastrophe losses and ahead

Chart 6: 2017 Capital Charges For Asset Risk Per S&P Global Ratings' Capital Model At The 'A' Confidence Level

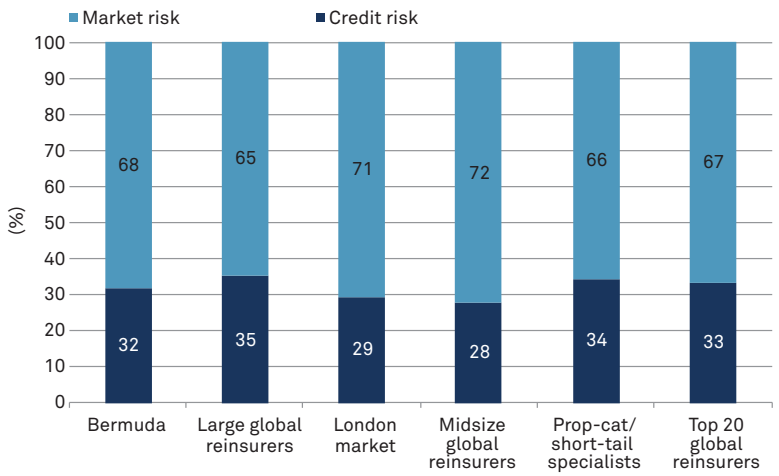
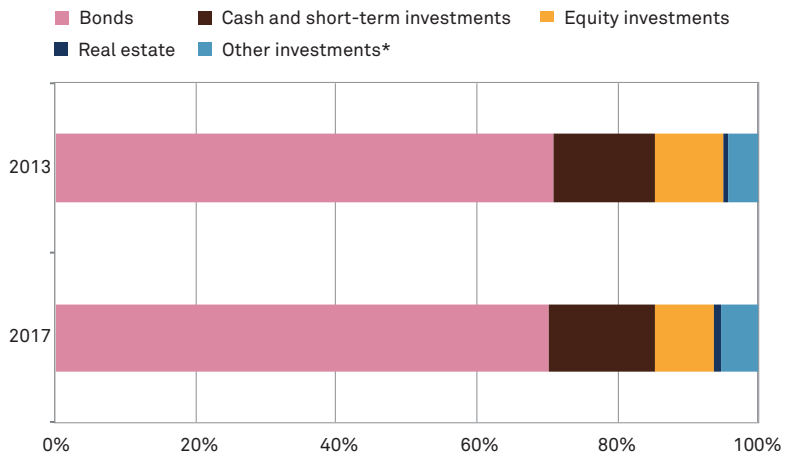


Chart 7: Top-20 Global Reinsurers' Investment Portfolio Allocation



**Other investments include: loans, underwritten mortgages, investments in affiliates, joint ventures, and alternative investments.*

of rising interest rates in several markets, market risk charges have reduced from 70% in 2016 to two-thirds of total asset risk in 2017.

Supporting their liquidity, the top-20 global reinsurers held about 15% of their investments in cash and short-term investments (Chart 7). Appetite for market volatility risk remains low. Investment in equities continues to represent about 9% of invested assets and real estate holdings remain modest. Having said that, we observed a slight increase in other investment allocation, to 5.4% in 2017 from 4.2% in 2013, which include loans, underwritten mortgages, joint ventures, and alternative investments.

In their search for higher yield, the top-20 global reinsurers have invested in longer maturity assets with asset duration increasing by almost half a year in the past five years (Chart 8). We observe that, compared with last year, reinsurers have anticipated the upward movement of interest rates by slightly reducing their duration to 3.4 in 2017, from 3.7 years in 2016. This reduction in asset duration reflects not just the expected claims settlements for the 2017 catastrophe losses and the prospect of rising interest rates, but also specific investment duration changes at a small number of reinsurers within our peer group.

The top-20 reinsurers' asset durations have reached an average of two to four years for the pure P/C reinsurers, while the large global reinsurers show higher asset duration of six years, reflecting both their sizable life reinsurance books of business as well as their typically higher exposure to casualty/liability lines than the other subgroups. Property-catastrophe/short-tail specialists have the lowest asset duration, while midsize global reinsurers have longer asset duration and more focus on casualty lines. Overall, asset duration is consistent with what we would expect, considering the business mix of specific subgroups.

The peer group has retained a negative ALM mismatch position, where the asset duration is lower than the liability duration, of below one year—it stands at 0.6 years for our reinsurers' cohort (excluding large global reinsurers that hold material life reinsurance exposures) (Chart 9). We believe the negative ALM mismatch is benefiting reinsurers on an economic basis because interest rates are picking up and we expect them to rise further. Therefore, duration will likely extend out over the next couple of years as reinsurers shift portfolio allocations to longer-dated bonds to take advantage of increasing interest rates.

Asset quality remains relatively high—the proportion of fixed-income securities invested in speculative-grade and unrated bonds remained below 6%. The top-20 global reinsurers held about 78.7% of their bonds in securities rated 'A' or above. Nevertheless, we have observed a small deterioration in the average credit quality of the bond portfolios over the past five years, because reinsurers are looking for higher yield (Chart 10).

Credit risk shifted by one category, remaining mostly in the 'AA/A' range, with a noticeable increase in 'BBB' rated bonds, which represented 15.6% of bond portfolios in 2017 compared with 12.5% in 2013. In addition, although the unrated bond category remains somewhat marginal, it accounted for about 2% of

the bond allocation in 2017, compared with less than 1% in 2013. This reflects growing investments in alternative assets.

Seeking Better Pricing And Less Volatility, Reinsurers' Appetite Shifted To Quota Share

The shift toward primary and proportional reinsurance business ticked up in 2017 to 68% of the top-20 global reinsurers' net premiums written, compared with 64% in 2013 (Chart 11). Because reinsurance pricing has been soft in the past five years (2013 to 2017), reinsurers—especially property-catastrophe/short-tail specialists and London market players—shifted their underwriting appetite to the primary and quota-share business that still had better pricing than excess-of-loss reinsurance.

Given the less volatile nature of the proportional business, it carries lower risk capital charges in S&P Global Ratings' capital model. The risk intensity (that is, the risk capital charge relative to a unit of premium), as measured by S&P Global Ratings' capital model, declined by almost four percentage points for the top-20 global reinsurers, thus demonstrating the capital benefit during this period.

The shift to primary and quota share business has been similar, but less dramatic, for the midsize global reinsurers and the Bermuda companies over the past five years, but the global large reinsurers have not changed their underwriting preferences during this time. We expect these trends to carry forward as reinsurers seek better pricing and less volatile proportional business while further diversifying through their primary insurance units.

Chart 8: Asset Duration

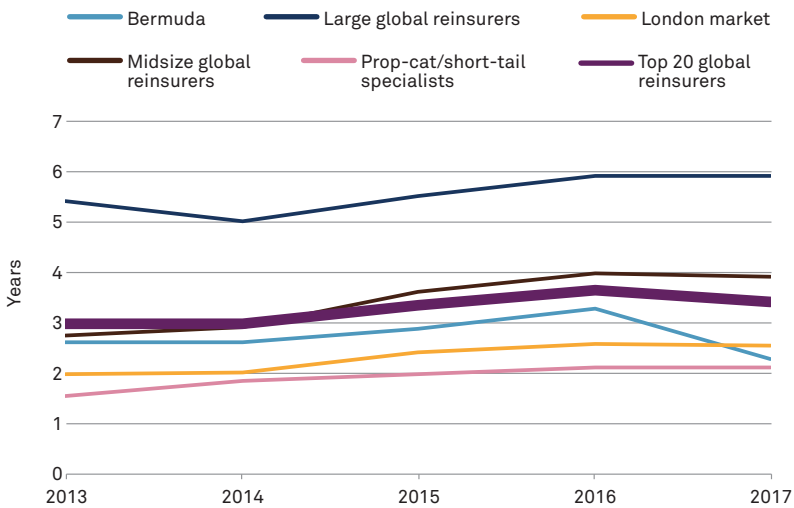
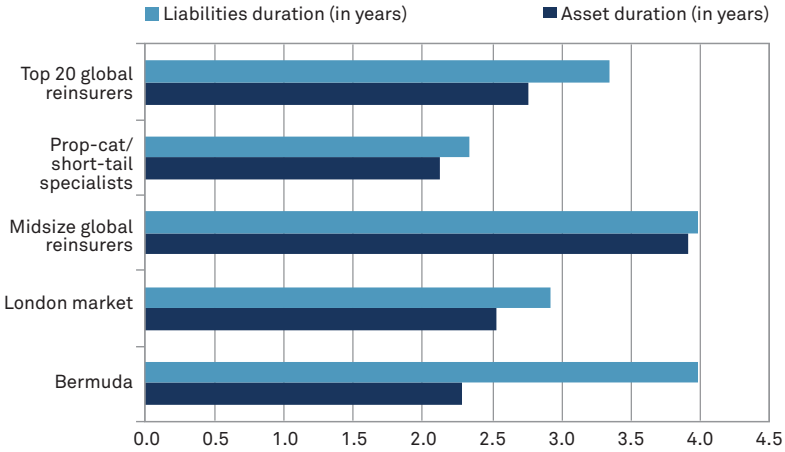


Chart 9: 2017 ALM Mismatch



Note: The top 20 global reinsurers exclude the large global reinsurers; we exclude large global reinsurers as they carry significant life reinsurance risk

Catastrophe Losses Weighed On Reserve Risk In 2017

Reserve risk has the largest capital requirement on the liability side of the balance sheet, as per our capital model, as it represented 38% of total liability risk for the top-20 global reinsurers in 2017 (Chart 12). Reserve risk has increased by 16% in 2017 compared with 2016 because of the severe catastrophe losses incurred in 2017, which have increased the overall reinsurers' P/C reserves. The risk should reduce rapidly because natural catastrophe losses generally tend to be settled in just a couple of years, a relatively short period of time compared to casualty/liability style risks.

Prior-year reserve releases have significantly reduced in 2017, with the benefit on the combined ratio declining to 4.4 percentage points compared with 7.1 percentage points in 2016. In the past, we have seen reinsurers releasing reserves a bit more quickly in an active natural catastrophe year to offset some of the losses, as observed in 2011. We did not see the same phenomenon in 2017, as we have been in a soft underwriting cycle.

Nevertheless, considering the pricing cycle trend, we think it is unlikely that the level of release will revert back to 2015/2016 levels during 2018. Most of the releases in future years would likely come from the longest-tail casualty lines, which have seen declining prices in recent years. Therefore, we expect contributions from these lines to slow down, especially if the frequency/severity trends were to pick up.

In the future, we might see releases from the 2017 large catastrophe reserves,

depending on how claims develop and the level of prudence in the initial loss estimates. For instance, Everest Re Group Ltd. experienced unfavorable reserve developments in the first and second quarters of 2018 for 2017 catastrophe events, which could call into question the conservatism built into its original loss estimate. So far, these developments have been unique to Everest, but we will continue to monitor how losses play out for the rest of the industry.

Will Capitalization Remain An Anchor For Global Reinsurers?

If 2018 is a normal catastrophe year with an average annual net property catastrophe loss of $11 billion (that is, annual catastrophe budget) or less for the top-20 global reinsurers, it is fair to assume that this group of reinsurers could reclaim their 'AAA' capital adequacy. We believe the sector needs to preserve and solidify its capital strength so that it can weather any potential threats from any unexpected rise in inflation, inadequate reinsurance pricing, unfavorable reserve developments, major market correction, and unforeseen 'black swan' events. ■

Taoufik Gharib
New York, (1) 212-438-7253
taoufik.gharib@spglobal.com

Charles-Marie Delpuech
London, (44) 20-7176-7967
charles-marie.delpuech@spglobal.com

Johannes Bender
Frankfurt, (49) 69-33-999-196
johannes.bender@spglobal.com

Aurelie Salmon
London, (44) 20-7176-8598
aurelie.salmon@spglobal.com

Simon Virmaux
Paris, (33) 14-075-2519
simon.virmaux@spglobal.com

Chart 10: Top-20 Global Reinsurers' Fixed Income Credit Quality

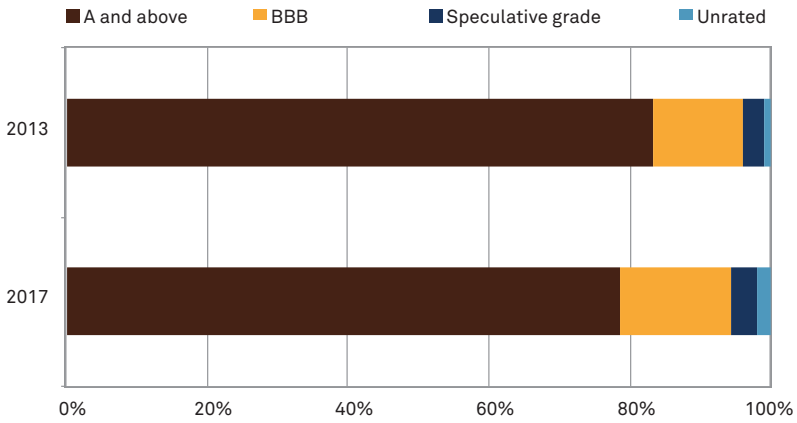


Chart 11: P/C Primary And Proportional Versus Non-Proportional Reinsurance Premiums

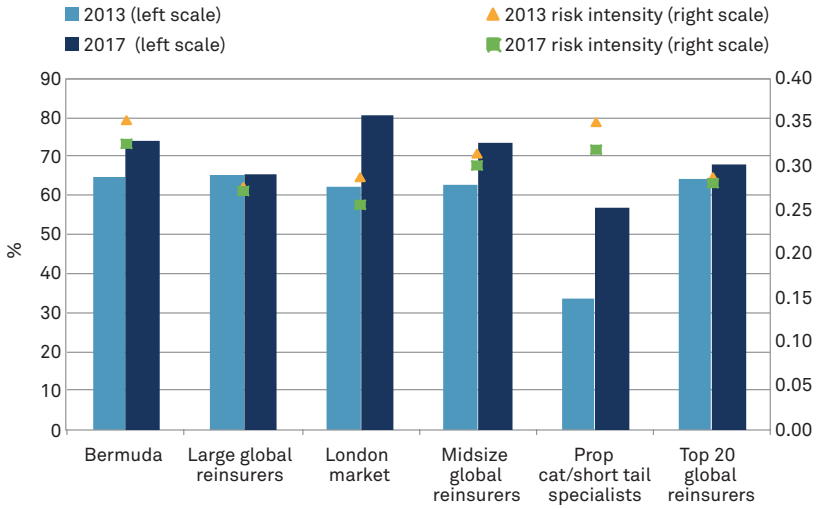
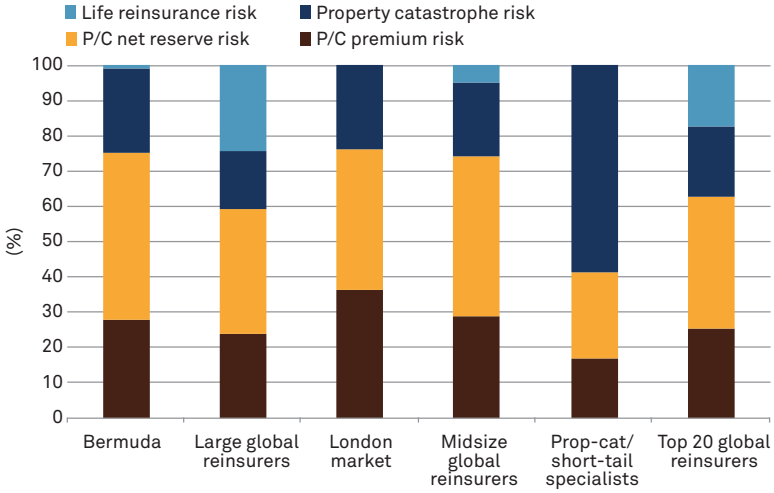


Chart 12: Top-20 Global Reinsurers' Insurance Risk Profile At Year-End 2017 At The 'A' Confidence Level



How Reinsurers Have Learned To Align Third-Party Capital With Their Needs

By Maren Josefs, David Masters, Taoufik Gharib, and Johannes Bender

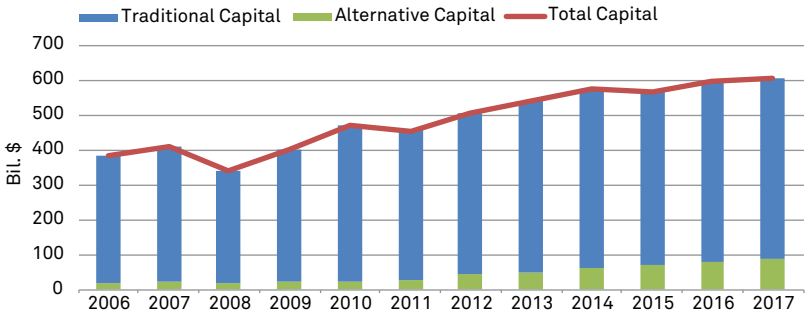
Insurance-linked securitization (ILS), which brings third-party capital into the reinsurance sector, has transformed the market, especially in the property catastrophe space. Even the natural catastrophe losses of 2017 have not dented investors' enthusiasm for the various instruments that come under the banner of alternative or convergence capital. What effect will the continued growth of ILS have on reinsurers' competitive positions?

istock photo / sharply_done

The latest figures by Artemis, a news provider specializing in alternative capital, show that ILS funds had combined assets under management of nearly $100 billion by July 2018. Even as the reinsurance industry digested the effects of 2017's three major hurricanes—Harvey, Irma, and Maria, which affected the Caribbean Islands, Texas, and Florida—alternative capital continued to grow, contrary to the expectations of some market observers. Investors, scenting the chance of increased returns, replaced capital that had been put aside as collateral to cover insured losses, enabling them to participate in the Jan. 1, 2018, round of renewals. As a result, the price hikes the industry has typically seen after previous catastrophe events were limited.

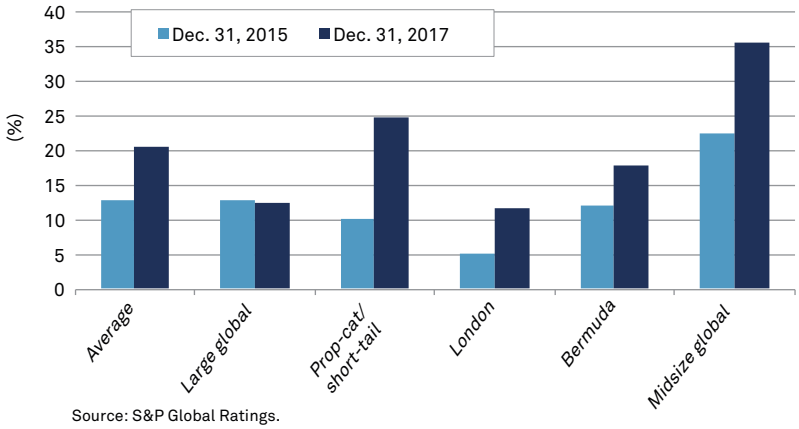
Many observers had assumed that investors who entered the ILS market during the recent string of benign catastrophe years might take fright when investment returns turned negative. However, we saw no capital flight following the negative investment returns that followed the 2017 hurricanes as losses were within investors' expectations. Indeed, the market was able to more than restore the collateral trapped following the 2017 events. Before the events of 2017 unfolded, the top 10 ILS funds had $56.5 billion of assets under management (source: *Trading Risk*, a news provider specializing in ILS); this had risen to $68 billion by July 2018 according to Artemis.

Chart 1: Global Reinsurance Capital



Source: Aon Securities Inc.

Chart 2: Average Collateralized Tail Protection Purchased By Top-20 Global Reinsurers
Percentage of collateralized recoveries at 1-in-250 year return period



Source: S&P Global Ratings.

Third-Party Capital Has Much To Offer Traditional Reinsurers

Although this influx of third-party capital (Chart 1) raises further questions about reinsurers' competitive positions, the industry has had time to adapt (see "Third-Party Capital; A Disruptor or A Catalyst in the U.S. Property Catastrophe Reinsurance Market," published on Nov. 7, 2016).

Traditional reinsurers' margins certainly suffer from increased competition and the limited price increases following major events. That said, reinsurers have also harnessed the new capital inflows to channel this capacity and optimize their in-house portfolios. The various options, such as sidecars, catastrophe bonds, and collateralized reinsurance, allow reinsurers to create more-comprehensive offerings—more coverage or different products—to their clients.

As a result, the retrocession market is increasingly dependent on third-party capital. We are also seeing regulatory changes, such as the introduction of new ILS legislation in the U.K. this year, that will support further growth in the sector. As Chart 2 shows, at the 1-in-250 year return period, the top 20-reinsurers' expected recoveries from the collateralized retrocession market on its in-force book of business as of Dec. 31, 2017 rose to 21%, up from 14% as of Dec. 31, 2015.

No Signs Of A Slowdown In The Collateralized Reinsurance Market

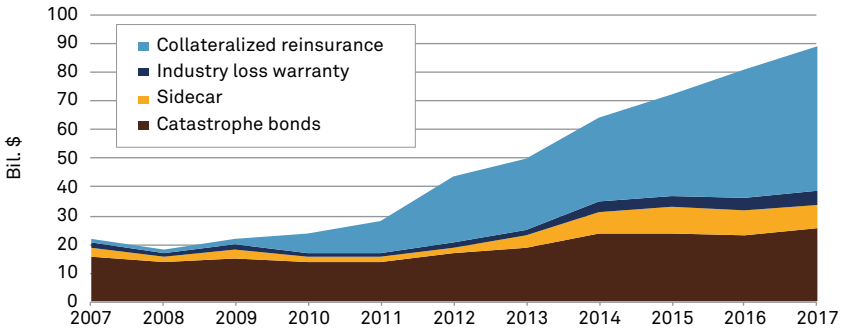
This form of third-party capital has continued to show exceptional growth (Chart 3). It is popular among ceding companies because collateralized reinsurance contracts operate similarly to traditional reinsurance contracts. Instead of cedants buying protection from rated counterparties, they buy from ILS funds, which do not typically offer an independent assessment of their ability to pay claims. ILS funds therefore pledge cash-equivalent collateral, or pay a rated reinsurer a fee to front the business for them. Collateralized reinsurance now represents about 60% of all convergence capital (over $50 billion in 2017, according to Aon Securities Inc.)

For internal risk management purposes, ceding companies typically limit how much protection they can purchase from one counterparty. Because this can limit the underwriting opportunities for third-party capital, we have started to see ILS funds such as Credit Suisse Asset Management or LGT setting up their own rated reinsurers so they can offer more capacity. This puts

further pressure on traditional reinsurers' competitive position, especially given that the vehicles usually have a lower expense ratio than the traditional players as the latter provide various ancillary services to their clients.

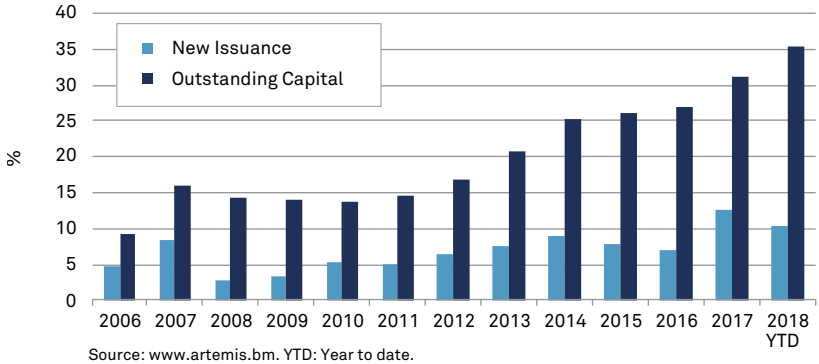
We assume collateralized reinsurance will remain the dominant means of incorporating third-party capital into the reinsurance market, despite being the source of a significant proportion of the 2017 investment losses. It is an effective means of connecting cedants' counterparty credit risk considerations with the investors' appetite for insurance risks.

Chart 3: Alternative Capital Is Increasingly Dominated By Collateralized Reinsurance



Source: Aon Securities Inc.

Chart 4: Catastrophe Bond Market Developments
New issuance and total outstanding by year



Source: www.artemis.bm. YTD: Year to date.

Sidecars Enable Reinsurers To Manage Their Net Exposures More Tightly

Sidecars are a form of reinsurance/retrocession cover managed by the sponsor, but largely funded by outside investors. By sponsoring sidecars, reinsurers try to cede some of their assumed tail risk into the broader capital markets, thus creating further diversification for the industry and reducing their reliance on the industry's own capital. Taking equity in a sidecar vehicle allows an investor to directly take on reinsurance risk underwritten by the sponsor for a limited time period.

Initially, reinsurers used them to support capital recovery after large loss events; they have since become an ongoing part of reinsurers' retrocession strategy. Despite the 2017 losses, in aggregate, the top-20 reinsurers successfully expanded the use of sidecars or formed new vehicles, enabling them to expand their business while managing their net exposures. Some individual players decided to increase their exposure (see "Are Global Reinsurers Ready For Another Year Of Active Natural Catastrophes?" published on July 25, 2018).

Investors in sidecars may include pension funds, endowment funds, hedge funds, private equity, and family offices; investors that generally have little or no exposure to catastrophe risk. As a result, investors' risk/return thresholds typically differ from those of sponsors. Sidecars enable reinsurers that already have catastrophe exposure to take advantage of third-party capital to underwrite more risk at the front end. They can allocate capital according to the differing risk preferences while earning a fee income and receiving capital benefits for the retrocession purchased.

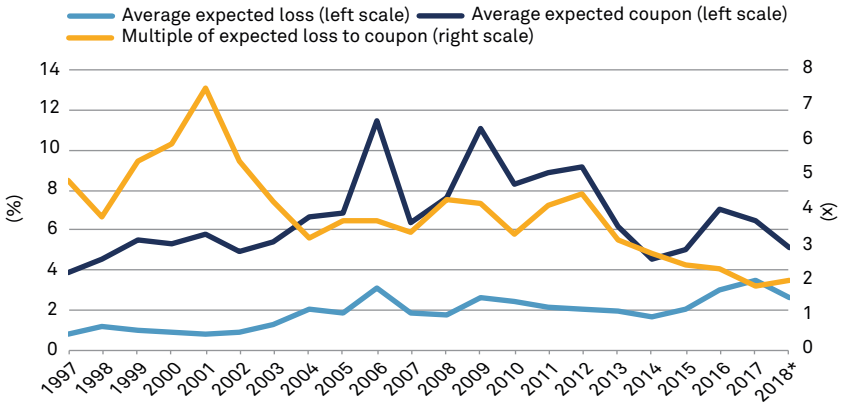
Sidecars are mostly used to cover high-severity, low-frequency loss events. These catastrophe layers have a small chance of losses. They may also be used to cover frequency exposures (the risk of accumulating losses from multiple events over a certain time period). Given the hurricanes and wildfires of 2017, sidecar investors also experienced losses from their investments.

Catastrophe Bonds Set New Records

Catastrophe bonds (cat bonds) are the most visible part of the convergence market and are valued by both cedants and investors as a more-liquid option than sidecars and collateral reinsurance. Issuance in the first half of 2018 has been so high that in just six months, it has already outpaced annual issuance for every previous year except 2017. As of July 30, 2018, new issuance stood at $10.3 billion, according to Artemis. Given that new issuance far exceeds maturing amounts, the outstanding issuance in the market also reached a new high, at $35 billion in July 2018 (Chart 4).

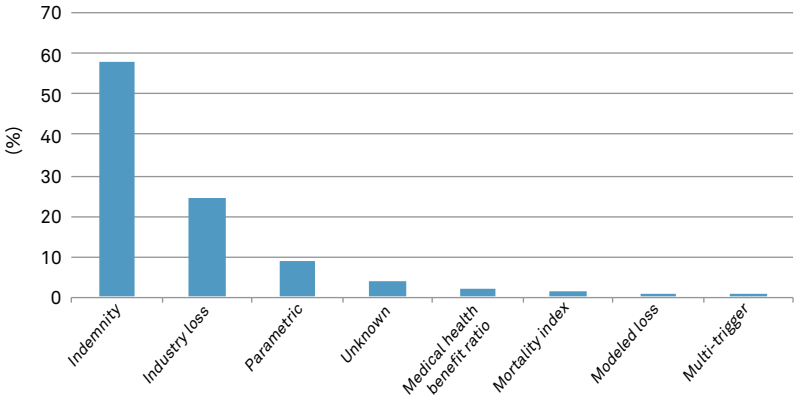
According to the Artemis Catastrophe Bond Default Directory, 18 cat bonds are at risk of default after the 2017 events, of which at least five are expected to incur a 100% loss of principal for investors. None of the bonds at risk were issued by any of the top-20 reinsurers. We downgraded one of Everest Re Group Ltd.'s cat bonds, before upgrading it again a few months later (see "Kilimanjaro Re Ltd. Series 2014-B Notes Downgraded To 'B-(sf)', Placed On CreditWatch Developing," published on Sept. 29, 2017 and "Kilimanjaro Re Ltd. Series 2014-B Notes Upgraded To 'BB-(sf)'," published on Feb.

Chart 5: Average Expected Loss, Coupon, And Multiple For Catastrophe Bonds And Insurance-Linked Securities



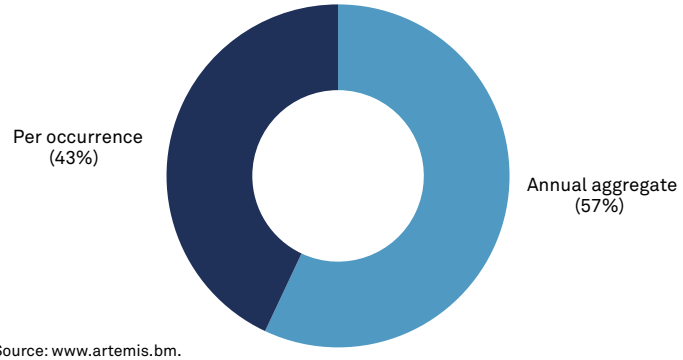
*As of July 18. Source: Artemis' deal directory.

Chart 6: Catastrophe Bonds And Insurance-Linked Securitization By Trigger Type % of outstanding catastrophe bonds' principal amounts



Source: www.artemis.bm.

Chart 7: Catastrophe Bonds And Insurance-Linked Securitization ByType Of Coverage (% of outstanding catastrophe bonds' principal amounts)



Source: www.artemis.bm.

14, 2018). The cat bond did not incur a loss in the event, and has since matured at par.

Cat Bonds Are Evolving

We are seeing a trend toward using cat bonds for higher layers, as demonstrated by a fall in the average expected loss for cat bonds issued in 2018 compared with those issued in 2017 (Chart 5). Average expected loss indicates the average loss that investors can expect to incur and is an indication of the level of risk which is being transferred. Before 2017, the level of risk assumed by investors was increasing while the average coupon was decreasing. For the first time in six years (Chart 5), in 2018 the coupon over expected loss, known as the multiple, has started slowly trending up again. We expect the multiple to stabilize just below the 2x mark. However, it is not anywhere as near the 4x mark, where it was before.

Primary insurers and reinsurers both issue cat bonds. While ceding companies increasingly prefer an indemnity trigger that covers their exact losses, reinsurers that use cat bonds to transfer risk to the capital market typically use weighted industry loss indices (Chart 6). By applying weighted factors to various regions of the covered area, a reinsurer can obtain protection that aligns better with its own portfolio of risks, thus reducing basis risk without disclosing proprietary information to competitors. Using weighted industry loss indices also makes the deal more transparent to investors, who may have concerns about adverse selection, potential moral hazards, or exposure to unsound underwriting practices.

In addition, time to payment should be slightly quicker using the industry index approach. An independent party, such as Property Claims Services or PERILS, reports the industry loss figures used to determine any loss payments. Although these figures are not available immediately, as it takes time for the industry loss numbers to develop, the loss calculation can be performed more-quickly because an indemnity trigger also requires an independent loss reserve and claims analysis.

The majority of the cat bonds outstanding which were issued by the top 20 reinsurers provide protection against annual aggregate losses (Chart 7). This means the ceding companies were able to obtain protection against a frequency of events occurring during a certain time period, usually one year.

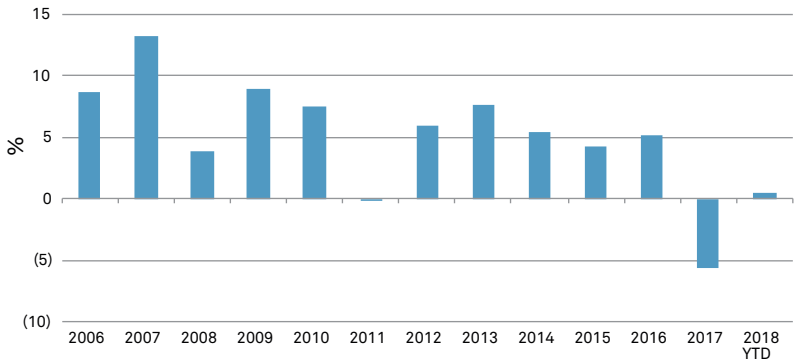
Third-Party Capital Has Passed The First Test

The convergence markets' response to

the 2017 events should dispel existing concerns over the permanence of its capital. There have been numerous defaults (see "Catastrophe Bonds Have A Short, But Strong Track Record On Claims Payments," published on Aug. 31, 2016) during the market's relatively short existence. However, some had argued that because investors had yet to see losses from their investments (Chart 8), investors' reactions to a loss from a peak peril which affected numerous investments simultaneously could be more pronounced and lead to unexpected high volatility. After the 2017 hurricanes, we have finally seen how investors reacted to the reported negative investment returns for 2017, and they have stood firm.

That said, there has only been one year of events leading to considerable investment losses. We still don't know if convergence capital will stay the course if severe losses like those seen in 2017 are repeated and investors accumulate losses over a number of years. For now, we are assuming that the alternative market has proven its resilience and we won't see a major capital flight out of convergence capital unless investors react to unattractive reinsurance returns, large unexpected losses relative to modeled losses, or a significant change in interest rates, which could make other investments more attractive.

Chart 8: Eurekahedge ILS Advisers Index Annual Performance



Source: Eurekahedge. YTD: Year to date.

What's Next For Convergence Capital?

The convergence market has had a significant impact on the property catastrophe market, especially in the U.S. ILS funds, which manage the majority of the third-party capital, are aiming to diversify away from natural catastrophe risk and into new regions or perils. The maturity and sophistication of the approach used to analyze the risk being transferred to investors will play a crucial part in this development. The benefits and limits of models for peak perils such as U.S. hurricane or earthquake, or pandemic risk in developed countries, are well understood.

As we see catastrophe models develop further (for example, flood models) and a growth in demand for insurance globally, we expect the ILS market to continue to provide protection against losses from natural catastrophes and pandemics.

Modeling long-tail liability or cyber risks is more challenging and thus it is more difficult to transfer the risk into the capital markets. Recently, a bond was issued to protect against a significant deterioration in the third-party liability loss ratios from a book of motor policies over a three-year period.

On the life side, Langhorne Re LLC entered the market earlier this year. This vehicle is sponsored by two major reinsurers—Reinsurance Group of America Inc. (RGA) and RenaissanceRe Holdings Ltd. (RenRe). It has about $780 million of equity capital commitments, including investments from RGA, RenRe, and third-party capital. Langhorne Re will be targeting large in-force life and annuity blocks, allowing cedants to reduce risk and optimize their capital management. At present, we do not consider that Langhorne Re's entry will change the competitive landscape of the life reinsurance sector. Underwriting capabilities remain key to success in the life reinsurance sector, making pure pricing and capacity less important.

Regulatory changes may also affect the growth potential of the market. After years of hard work, the industry welcomed the introduction of new ILS legislation in the U.K. this year. The country's first sidecar and first cat bond have been successfully placed.

Although convergence capital is testing the waters in new areas such as casualty or life reinsurance, it has yet to find a winning formula like the one that propelled its expansion in property catastrophe business. Success will depend on investor demand for longer-tail and more-complex products. Nevertheless, as reinsurers embrace third-party capital and work in partnership with ILS funds, we expect to see more innovation in the space, and the development of new products and new markets. ■

Maren Josefs
London, (44) 20-7176-7050
maren.josefs@spglobal.com

David Masters
London, (44) 20-7176-7047
david.masters@spglobal.com

Taoufik Gharib
New York, (1) 212-438-7253
taoufik.gharib@spglobal.com

Johannes Bender
Frankfurt, (49) 69-33-999-196
johannes.bender@spglobal.com

Bulking Up: The Global Reinsurance Sector Marches Toward Consolidation

By Hardeep Manku, Ali Karakuyu, Taoufik Gharib, and David Masters

Global reinsurers are having to review their long-term relevance in a tough market that features heightened competition, limited growth opportunities, and continued pressure on pricing. Many are resorting to mergers and acquisitions to build scale, acquire expertise, and diversify.

istock photo / Cheryl Ramalho

S&P Global Ratings does not anticipate any let-up in the key factors underlying the sector's structural headwinds, which include excess reinsurance capacity, ongoing growth in alternative capital, the commoditization of property risk, and cedants' changing behavior. To prepare for the task of rebalancing the reinsurer/broker/cedant relationships and further adapting to the convergence of reinsurance and the capital markets, reinsurers are using a multitude of strategies, of which mergers and acquisitions (M&A) are just one.

Following an active 2017 in which the approximate total global insurance deal value of $125 billion covered a mix of bolt-on and transformative acquisitions, 2018 started with a bang (Table 1). For first-half 2018, the total announced global insurance estimated transaction volume was $48 billion, of which two sizable deals (American International Group Inc. acquiring Validus Holdings Ltd., and AXA SA acquiring XL Group Ltd.) contributed $21 billion. Both the deals valued the target entity at about 1.5x price-to-book, attractive valuations by any measure, though not as high as those observed when Asian buyers were willing to pay around 2x book value.

Unless we see a market-changing event, we do not expect the recent consolidation to materially alter market dynamics over the next 12 to 24 months. The sector remains fairly fragmented. Despite high valuations and a potential increase in the cost of capital as interest rates move, capital remains relatively cheap. Therefore, we expect conditions to favor M&A and further consolidation for the next few years.

The market has shifted slightly over time, boosting the power of brokers, the capital markets, and large cedants—if the sector can coalesce around some large players, it may perhaps regain its balance. Given that such a transformation could take many years, we anticipate that less diversified, non-specialty reinsurers will continue to struggle in a consolidating market in the near term.

A well-executed strategic deal that has a sound rationale can improve prospects for the combined entity through a stronger competitive position built on scale, product expertise, diversity, and profitability, all of which can help maintain or potentially strengthen the creditworthiness. That said, such deals carry risks for both the acquirer and the target that can't be overlooked, especially given the industry's mediocre track record. As such, we maintain an overall neutral view of reinsurance industry M&A, with a slight negative bias.

"We expect conditions to favor M&A and further consolidation for the next few years. "

A Tough Business Environment Is Stoking M&A Activity

The reinsurance sector has been facing significant headwinds and weak business conditions for a number of years now, and we do not foresee a significant change in the underlying conditions. The pressure is more intense for reinsurers that have relatively greater exposure to the property-catastrophe business and for those that benefit less from diversification and have narrow or commoditized product offerings.

For several years, excess reinsurance capacity has been driving down premium rates, thereby reducing profit margins. Even though 2017 was one of the costliest years on record, the momentum supporting rate increases is already fading out. Alternative capital remains abundant, and appears to be here to stay, despite rising interest rates. Investors see property-catastrophe risk as attractive from a diversification perspective, due to the low correlation between catastrophe risk and capital markets.

Furthermore, cedants' expectations have evolved. They look for not only capacity providers, but also for risk partners: those that can provide a plethora of value-added services, assist in evaluating risk, provide customized solutions, and implement risk and capital management solutions. Cedants, especially larger ones, have been consolidating their reinsurance panels. Their preferences are changing in favor of dealing with fewer reinsurers that are more-strongly capitalized, and those with good product expertise and a broad product offering.

Scale And Diversification Will Increasingly Define Competitive Position

With business models being tested, limited organic growth opportunities, and returns under pressure, reinsurers are looking for ways to stay relevant. Those that have the scale, breadth, and depth of products; strong underwriting capabilities; and the ability to build partnerships with their clients will fare best. Scale and diversification can also help bring capital and operating efficiencies that partially offset margin pressures. These factors inform reinsurers' varied strategies, which include the acquisition of teams to enter new lines, the undertaking of bolt-on transactions, and transformative M&A.

A lot of deal activity over the past couple of years highlights carriers' desire to diversify into complementary insurance or reinsurance businesses (and, in a few cases, into non-insurance operations as well), a trend we expect to continue. As a result, there could be even fewer pure play reinsurers than the handful that currently exist.

Recent transactions—such as this year's AIG-Validus and AXA-XL deals—highlight several of these trends, including the move toward greater product and geographic diversification. AIG and AXA are both re-entering the reinsurance sector, which they had exited many years ago because of the sector's poor earnings and capital volatility. AXA's entry into reinsurance is a by-product of XL's corporate specialty activity (about 70% of XL's gross premium written), which we assume AXA values the most. The transaction will provide both product

Table 1: Major Merger And Acquisition Deals In Reinsurance (August 2013– June 2018)

Announced	Closed	Acquirer	Acquiree	Purchase price (bil. $)
Aug-13	Nov-13	Lancashire Holdings Ltd.	Cathedral Capital Ltd.	0.41
Feb-14	Jun-14	Qatar Insurance Company S.A.Q.	Antares Holdings Ltd.	0.30
Nov-14	Mar-15	RenaissanceRe Holdings Ltd.	Platinum Underwriters Holdings Ltd.	1.90
Jan-15	May-15	XL Group Ltd.	Catlin Group Ltd.	4.10
Feb-15	Jul-15	Fairfax Financial Holdings Ltd.	Brit Insurance Holdings PLC	1.88
Mar-15	Jul-15	Endurance Specialty Holdings Ltd.	Montpelier Re Holdings Ltd.	1.83
May-15	Nov-15	Fosun International Ltd.	Ironshore Inc.	2.30
Jun-15	Oct-15	Tokio Marine & Nichido Fire Insurance Co. Ltd.	HCC Insurance Holdings Inc.	7.53
Jul-15	Jan-16	ACE Ltd.	Chubb Corp.	28.30
Jul-15	Mar-16	Meiji Yasuda Life Insurance Co.	StanCorp Financial Group Inc.	4.95
Jul-15	Apr-16	China Minsheng Banking Corp. Ltd.	Sirius International Insurance Group	2.60
Aug-15	Mar-16	EXOR SpA	PartnerRe Ltd.	6.90
Aug-15	Jan-16	Sumitomo Life Insurance Co.	Symetra Financial Corp.	3.80
Sep-15	Feb-16	Mitsui Sumitomo Insurance Co. Ltd.	Amlin PLC	5.30
Apr-16	Nov-16	AmTrust Financial Services Inc.	ANV Holdings B.V.	0.20
Aug-16	Jan-17	Arch Capital Group Ltd.	United Guaranty Corp.	3.40
Sep-16	Dec-16	Canada Pension Plan Investment Board	Ascot Underwriting Ltd.	1.10
Oct-16	Mar-17	Sompo Holdings Inc.	Endurance Specialty Holdings Ltd.	6.30
Oct-16	Apr-17	PartnerRe Ltd.	Aurigen Capital Ltd.	0.29
Nov-16	Feb-17	Argo Group US Inc.	Ariel Re Holdings Ltd.	0.24
Nov-16	Apr-17	AXIS Capital Holdings Ltd.	Aviabel Cie. Belge d'Assurances Aviation S.A.	N.A.
Dec-16	May-17	Liberty Mutual Group Inc.	Ironshore Inc.	2.94
Dec-16	Jul-17	Fairfax Financial Holdings Ltd.	Allied World Assurance Co. Holdings AG	4.90
May-17	Sep-17	Intact Financial Corp.	OneBeacon Insurance Group Ltd.	1.70
Jul-17	Oct-17	AXIS Capital Holdings Ltd.	Novae Group PLC	0.60
Feb-18	May-18	Enstar Group Ltd.	KaylaRe Ltd.	0.40
Jan-18	Jul-18	American International Group Inc.	Validus Holdings Ltd.	5.56
Mar-18	Ongoing	AXA SA	XL Group Ltd.	15.35
				Total: 115.07

N.M.: Not meaningful. N.A.: Not available. Source: S&P Global Market Intelligence, Company Reports

and geographic diversification to AXA's European and Asian property/casualty operations and increase the scale of AXA's Corporate Solutions business.

On the other hand, AIG's acquisition of Validus constitutes expansion into new business platforms (including the acquisition of Alphacat, one of the largest catastrophe funds, which has approximately $3.5 billion of assets under management), and adds strong catastrophe modeling and research capabilities.

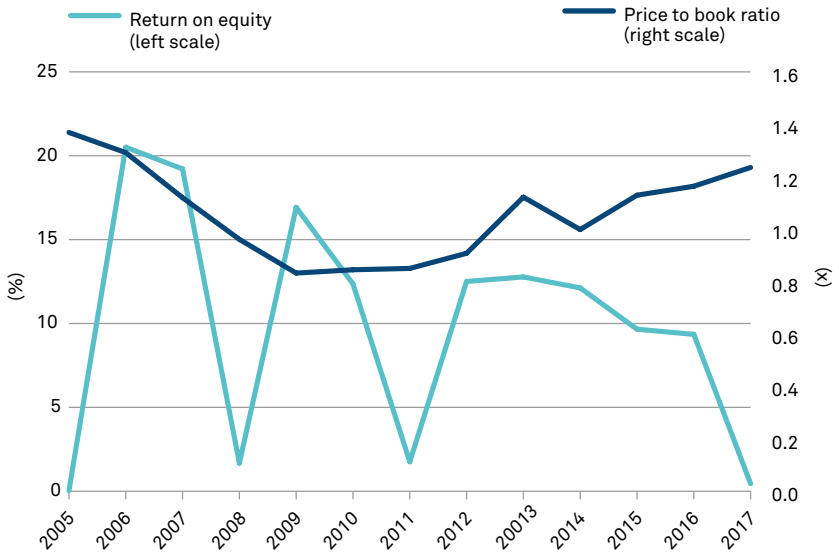
Historically, reinsurers, particularly those based in Bermuda, have expanded primarily into the high-severity commercial lines, including excess casualty. Some have established or acquired Lloyd's syndicates to access the Lloyd's market's global distribution channels. As a result, only a few stand-alone specialist writers with most of their business emanating from Lloyd's remain.

Various small-to-midsize players have acquired insurance carriers and managing general agents to accelerate their growth in primary markets. Even the large players, such as Swiss Reinsurance Ltd., have been emphasizing their primary business. We believe that reinsurers are likely to continue increasing their share of primary business, including via M&A.

One of the main objectives of groups that move to a dual platform (insurance and reinsurance) or seek to broaden their product base and geographic presence within those platforms, is to improve their ability to properly manage the underwriting cycle, based on prevalent pricing conditions within the various business lines in their specific portfolios.

Terms of the transaction	Deal price to book value (x)
All cash	N.A.
N.A.	N.A.
Cash and stock	1.13
Cash, stock, and debt	1.21
All cash	1.63
Cash and stock	1.21
All cash	1.12
Cash and debt	1.9
Cash, stock, and debt	1.77
All cash	2.21
All cash	1.43
All cash	1.11
All cash	1.2
All cash	1.93
All cash	N.M.
Cash and stock	1.01
All cash	N.M.
All cash	1.36
All cash	N.A.
Cash and debt	1.45
N.A.	N.A.
All cash	1.45
Stock and cash	1.36
All cash	1.66
All cash	1.53
Stock exchange	N.A.
All cash	1.53
All cash	1.5
	Median: 1.45

Chart 1: Global Reinsurers' Return On Equity And Price To Book Value



Source: Bloomberg.

The March Toward Consolidation Will Go On

We anticipate that M&A activity will continue, as conditions are conducive to large deals, but small bolt-on transactions will remain in vogue. Small-to-midsize specialty carriers that have good underwriting books are appealing targets for players that seek growth and diversification.

However, we could see fewer deals. The number of potential targets has shrunk and the era of cheap capital may, arguably, be coming to an end (at least in the U.S.). Furthermore, despite lower returns on equity in recent years, the price-to-book value has steadily increased (Chart 1). At those valuations, the case for acquisition becomes a bit tough to justify to stakeholders.

In previous years, the attractiveness of the target's business model and ability to generate acceptable returns relative to yields available elsewhere motivated the deals. Classic examples include Exor SpA and PartnerRe Ltd., and China Minsheng Investment Corp. Ltd. and Sirius International Insurance Group. However, such deals are idiosyncratic and future interest is hard to predict.

In the past few years, we've also observed an active international M&A market, primarily due to Japanese reinsurers and Chinese players acquiring U.S., European, or Bermuda-based companies. However, due to tighter regulatory controls (China) and a number of players having already undertaken deals (Japan), near-term M&A activity from Asia-Pacific is likely to be modest.

Regardless of the factors highlighted above, we foresee a more consolidated market in the next few years as structural changes in the sector weigh on reinsurers and while capital is still relatively cheap. Another mega deal involving players that shakes up the market order won't be a surprise.

Consolidation Can Help, But Risks Abound

From a credit perspective, although M&A have failed to improve buyers' creditworthiness at the outset, they have generally helped buyers and their targets to maintain ratings. A strategic merger or acquisition can provide benefits such as growth opportunities through combined platforms, a stronger position in chosen products and regions, increased diversification, and potential expense synergies that could improve the earnings profile. A well-executed deal can protect creditworthiness and improve shareholder value.

However, M&A inevitably results in various risks, particularly for larger deals. In any transaction, there is always a risk of overpaying, which may reflect an overly optimistic view of the strategic benefits and of expense and capital efficiencies. In addition, execution risk is paramount because these transactions generally involve integration of teams that may have very different cultures, separate books that might have an overlapping customer base and distribution channels, underwriting and technology platforms,

and other infrastructure.

We place heavy emphasis on management's ability to execute on strategic objectives after the transaction closes, to manage flight risk of key customers and employees (both management and underwriters), and to develop a combined comprehensive framework for enterprise risk management from two very distinct groups.

Among market watchers, the consensus is that the reinsurance industry has a mediocre track record in M&A. Its history is replete with failed acquisitions or suboptimal outcomes resulting in destruction of shareholder value; very few companies have been able to achieve their initial goals. Therefore, we tend to take a conservative perspective on M&A, with a general negative bias at the outset.

Chart 2: Outlook On Acquirers Upon Announcement Of Acquisition

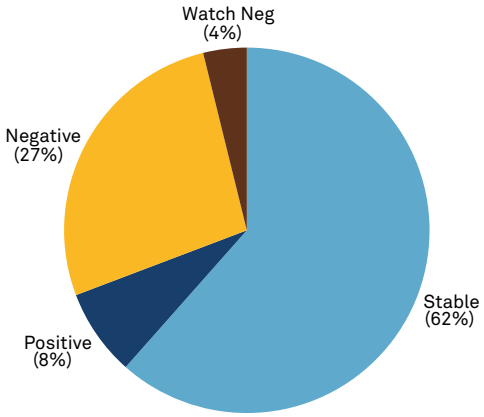
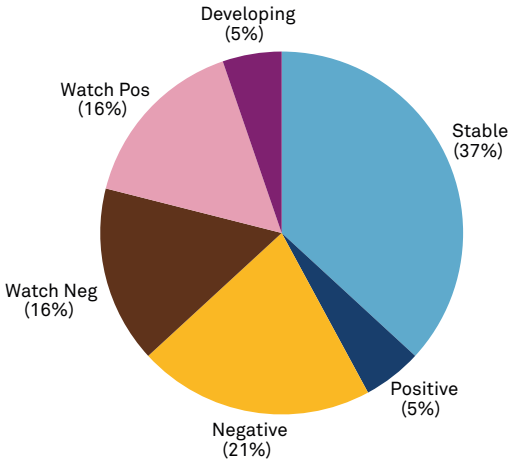


Chart 3: Outlook On Acquirees Upon Announcement Of Acquisition



Ratings Impact Following M&A

In general, M&A hasn't triggered positive rating actions; instead, it has helped buyers and acquired entities to maintain ratings.

In our credit analysis, the key positive factors have been improvements in competitive position, including diversification, as well as improvements in capital adequacy and, occasionally, improvements in earnings and capital volatility. The key negative factors have often been the execution risks inherent in such transactions, as well as increased financial leverage and/or weakened capitalization.

Acquirers often cite synergies, either through business cross-selling opportunities or through expense savings, as the main motivation. However, we're cautious about factoring these synergies into our assessment, unless tangible evidence of their impact emerges.

Acquirers

In general, we've kept our ratings on the buyers at the same level as pre-M&A. Of the entities in the table, we placed 31% on either negative outlook or on CreditWatch negative upon announcement of an acquisition (Chart 2). We eventually affirmed the ratings on almost all of these companies during the subsequent two years. This demonstrates our conservative view of M&A at the initial stage, when we place more weight on some of the execution risks, despite potential upside from the strategic imperatives underlying the deal. As we see evidence that the transaction has helped (or is unlikely to reduce) the combined group's creditworthiness, we tend to revert to a stable view of the issuer.

Acquirees

Our assessment of acquired companies reflects any upside or downside potential, based on our view of the combined entity. Typically, we limit the ratings on a subsidiary to its parent rating level or below, unless there is strong evidence that the parent is unlikely to negatively affect the subsidiary's business and financial profiles. The ratings impact following an acquisition is generally mixed (Chart 3). For example, some entities may cease to exist following optimization of legal and organization structures (in which case, we would withdraw the ratings). The surviving entities may see a change in their relative importance to the combined group (in which case, we would take positive or negative rating actions, or none, as appropriate).

Bulking Up For The Long Slog

M&A will remain part of the changing landscape as reinsurers refine their business models and adapt to a difficult operating environment. While the level of deal activity will depend in part on the market valuations—many players are wary of the high costs and risks involved—the potential strategic benefits in the face of continued market pressure may ultimately push a few to take the plunge.

Therefore, we expect M&A activity to continue over the next few years, leading to increasing consolidation. In our view, consolidation is unlikely to significantly change near-term market dynamics, given the abundance of reinsurance capacity and fragmented nature of the sector. However, a well-executed M&A that has a sound rationale can improve the competitive standing of the combined entity.

We maintain a broadly neutral view, but given the inherent risks, especially those in transformative deals, we have a slight negative bias to M&A.

Barring any unexpected developments, the pressures on market participants are likely to continue unabated. Therefore, we expect reinsurers to seek to "bulk up" to endure the marathon ahead. Those that have the scale, broad product suite, geographic presence, and strong balance sheet, as well as offering more than just capacity, will likely make it to the finish line. ■

Hardeep S Manku
Toronto, (1) 416-507-2547
hardeep.manku@spglobal.com

Ali Karakuyu
London, (44) 20-7176-7301
ali.karakuyu@spglobal.com

Taoufik Gharib
New York, (1) 212-438-7253
taoufik.gharib@spglobal.com

David Masters
London, (44) 20-7176-7047
david.masters@spglobal.com

A Decade Since The Sichuan Earthquake, Catastrophe Reinsurance Is Gaining Momentum In China

By WenWen Chen and Eunice Tan

2018 marks the 10th anniversary of a massive earthquake in China's Sichuan province that caused disastrous losses of life and property. More than 70,000 people died and millions were left homeless as buildings collapsed. Less than 1% of losses were covered by insurance claims.

In the decade since the Sichuan earthquake, authorities have invested in systems to improve everything from construction standards to insurance. S&P Global Ratings believes reinsurers will be at the forefront of China's efforts to mitigate risk from natural disasters and other types of catastrophes.

Over the past few years, premiums have accelerated for nonmotor property/casualty (P/C) reinsurance, especially agriculture. This comes at a time when we expect demand in China's dominant auto-reinsurance segment to shift to a lower gear over the next two years.

In our view, the potential for growth is a given in China's reinsurance markets. Profitability, however, is another matter.

istock photo / hansekala

Insufficient underwriting expertise, unmodeled catastrophe risks due to continued urbanization, and an evolving risk management framework, are among the factors that can lead to volatility in returns.

How The Market Can Help Mitigate Risk From Natural Disasters

China's reinsurance market has the mission of enhancing domestic primary insurers' capacity to offer coverage for risks such as liability, agriculture failure, and extreme weather events. While the premium contribution to the overall P/C market remains small, we expect liability and agriculture to grow faster than other nonauto business in the domestic primary insurance market.

Given that the Sichuan 2008 reconstruction bill may have been the world's costliest for a quake, it is no surprise China is committed to developing a catastrophe-insurance system. According to government figures, economic losses from the Sichuan quake reached Chinese renminbi (RMB) 845 billion (US$124 billion at today's conversion rates). The insured loss amount was RMB1.6 billion, indicating only around 0.2% of economic losses were ultimately insured. In more developed markets, by comparison, often around 20% to 30% of economic losses from large natural catastrophes are insured.

China's P/C insurance penetration has deepened since 2008, but remains low (Charts 1 and 2) by both regional and global standards.

Until 2015, China had only one dedicated domestic reinsurer, China Reinsurance (Group) Corp. (China Re Group; A/Stable/--). Since then three domestic reinsurers have been granted licenses to operate. As of July 31, 2018, there are seven global reinsurers branches in China.

A major step toward increased coverage came with the establishment of a domestic earthquake insurance pool in 2015, after years of study and negotiation. The China Residential Earthquake Insurance Pool (CREIP) comprises 45 P/C insurance participants. China Property & Casualty Reinsurance Co. Ltd. (China Re P&C—the P/C reinsurance arm of China Re Group; local currency A/Stable/--) is the sole reinsurer and plays a lead role in setting pricing at CREIP.

"A major step toward increased coverage came with the establishment of a domestic earthquake insurance pool in 2015, after years of study and negotiation."

As agricultural price controls lift, insurance coverage demands rise

Policymakers are also very focused on developing protection in agriculture markets. Since the government introduced premium subsidies to support the growth of agriculture insurance in 2007, sector premiums have grown 55 times, to RMB47.9 billion at end 2017, compared with less than RMB1.0 billion in 2006 (Chart 3). In the first five months of 2018, agricultural premiums rose by 33.9% year-on-year.

China already has the world's second-largest agricultural insurance market; however, the system is heavily subsidized. We expect further strong growth in agriculture insurance. With support for the segment provided from reinsurers, we also anticipate that primary insurers will expand their product suite to provide more innovative agriculture insurance products to underpin demand. Besides the conventional crop insurance, index-based insurance products are also offered by market participants.

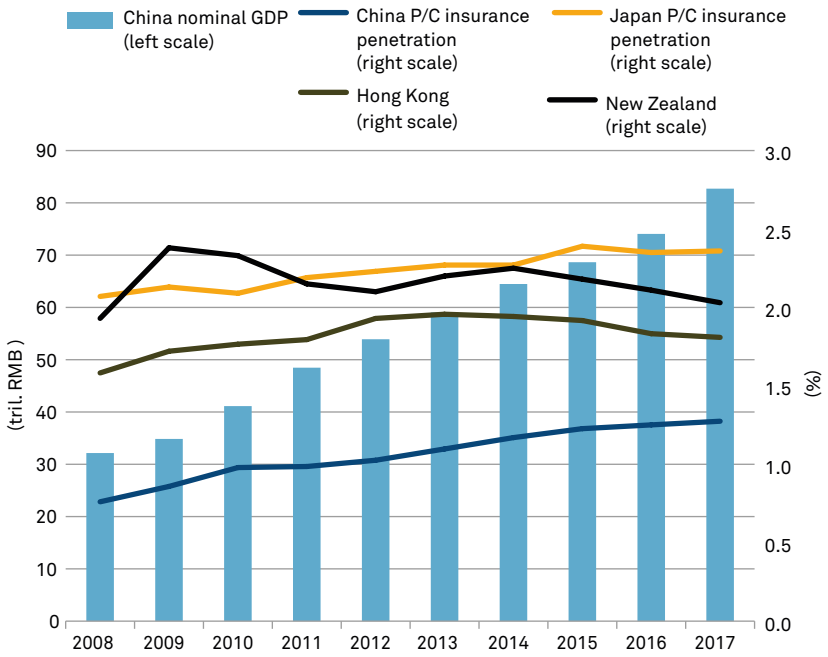
This sector has benefited from insurance pools to extend coverage and improve risk assessment. China's agricultural reinsurance pool (CARP) was established in 2014, with China Re P&C and 23 licensed insurance companies initially providing reinsurance (later increased to 32).

With new markets come new investments in technology

Given the industry's growing catastrophe exposures, we anticipate that domestic reinsurers will increase investments in catastrophe modeling to counter uncertainties. The country's first

Chart 1: China's P/C Insurance Penetration Is Rising But Remains Comparatively Low

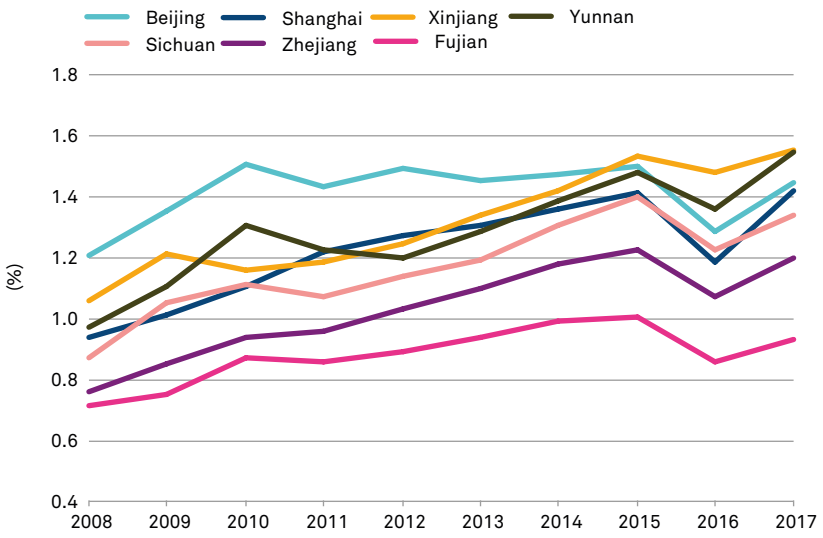
Penetration rate = insurance contracts as a % of GDP



P/C: Property/casualty. tril.: Trillion. RMB: Chinese renminbi. Source: S&P Global Ratings.

Chart 2: P/C Insurance Penetration Is Higher In Catastrophe-Prone Regions

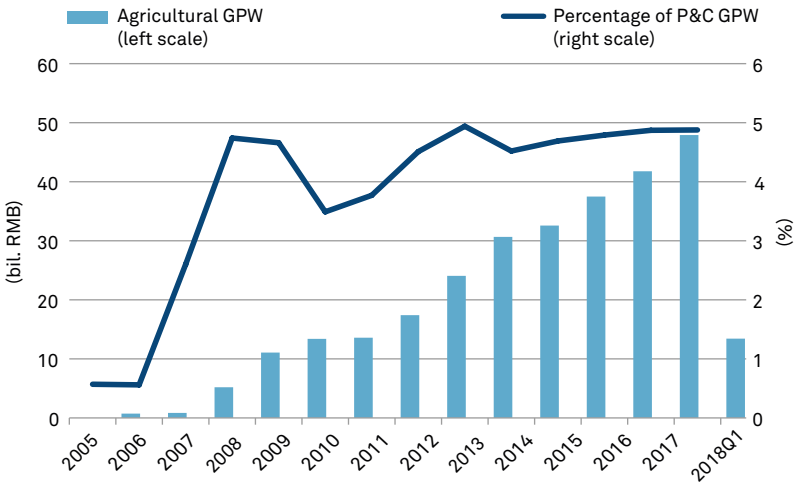
Penetration rate = insurance contracts as % of GDP



Source: National Bureau of Statistics of China, China Banking and Insurance Regulatory Commission.

Chart 3: Agricultural Insurance Has Expanded Rapidly; Subsidies Play A Role

Gross premiums written: for agriculture and as a percentage of total P/C premiums



GPW: Gross premiums written. P/C: Property/casualty. bil.: Billion. RMB: Chinese renminbi.
Source: China Insurance Yearbook.

earthquake catastrophe model was established by China Re Group in May 2018. In December 2017, PICC Reinsurance Co. Ltd. (PICC Re) announced a partnership with AIR Worldwide (AIR) to manage their growing catastrophe exposures.

We also expect domestic reinsurers to utilize technology, such as drones or remote sensing, for better risk assessment. China is a big country with much geographic diversification. Some areas are prone to floods and typhoons, other to earthquakes. The concentration of risks underwritten in urban areas remain largely untested amid continuous urbanization.

Reinsurance Is A Favored Sector

We anticipate the reinsurance sector in China will play an increasingly important role in the government initiative of promoting the insurance sector's growth over the next five years. By our estimates, the reinsurance cession rates for China's P/C sector will stabilize at around 9% by 2020 (Chart 4). As of year-end 2017, the industry's reinsurance cession rate was 8.7%.

Individuals and business interests are also more aware of losses that can come from natural or even man-made disasters, for example the August 2015 explosion at a storage container in Tianjin. That caused RMB70 billion in economic losses, of which RMB10 billion was insured. The unexpected event imposed underwriting pressure on a long list of domestic P/C insurers, as well as reinsurers.

Some growth will also come from overseas expansion, but this is marginal

Chinese reinsurers are likely to remain domestically focused, given their knowledge and established relationships in the market. We expect them to grow their international presence only cautiously. In 2017, overseas premiums for Chine Re Group jumped by 23% from a low base. We also expect more partnerships between Chinese reinsurers and global reinsurance companies to come. China Re Group's stand-alone reinsurance entity, Syndicate 2088, continues the strategic partnership with XL Catlin from 2011. Taiping Re has established a cooperative relationship with Lloyd's of London since October 2015.

Profitability: A Different Kind Of Challenge

Domestic reinsurers' returns mirror those of the underlying insurance industry. This is because most reinsurance contracts are proportional-treaty in nature. For the China Re P&C, proportional treaty contracts account for more than 95% of the total premium income, with nonproportional business equating to less than 5%.

Consequently, domestic reinsurers'

underwriting performance is closely linked to the primary market—where underwriting margins are volatile and have been on a weakening trend in recent years (Chart 5). Among the recent pressures: continuous motor pricing reforms, soft premium rates environment amid frenetic competition, and rising regulatory costs. We expect the reinsurance industry to take more time to balance its growth and profitability aspirations, also due to insufficient underwriting expertise, rising uncertainties associated with catastrophe exposures, and evolving risk management frameworks.

Given low penetration rates in China, we feel confident that long-term growth fundamentals are solid. Profitability will always be more volatile, however. We believe market participants will accept increased investment risk offset pressure on underwriting margins.

Take China Re P&C as an example. Its investments in equity and alternative assets (such as debt schemes, trust plans and wealth management products that are considered part of China's "shadow banking" sector), more than doubled from 2015 to end 2017. We foresee a further expansion in these investments, exposing reinsurers to greater liquidity and asset risks.

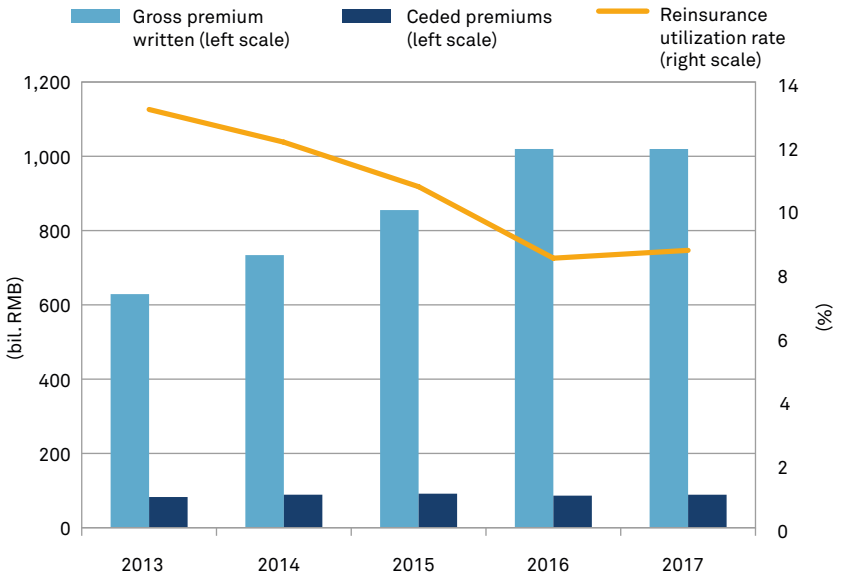
Despite constraints, the potential for China's reinsurance markets remains promising. Nor is the growth or interest just domestic: already there are more global reinsurers than domestic ones in the country, and we expect more international peers to set up operations. ■

WenWen Chen
Hong Kong, (852) 2533-3559
wenwen.chen@spglobal.com

Eunice Tan
Hong Kong, (852) 2533-3553
eunice.tan@spglobal.com

Chart 4: Reinsurers Are Being Ceded A Declining Portion Of China's Primary Insurance Market

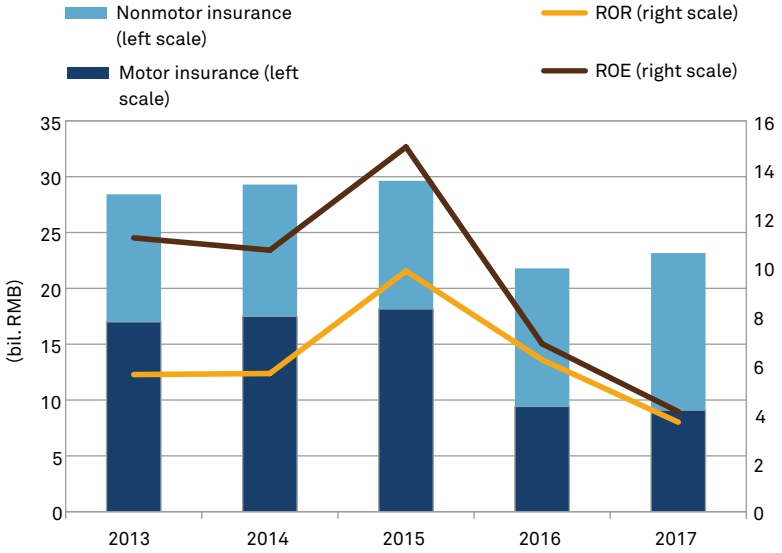
Historical ceded premiums from primary market



Note: Reinsurance utilization ratio = ceded premiums/gross premiums written.
RMB: Chinese renminbi. bil.: Billion.
Source: Wind.

Chart 5: P/C Reinsurance Margins Have Been Volatile In Recent Years

China Property & Casualty Reinsurance Co. Ltd.: Product mix and profitability



ROR: Return on revenue. ROE: Return on equity. RMB: Chinese renminbi. bil.: Billion.
Source: Company annual report

Global Life Reinsurers' Strong Fundamentals Fuel Future Growth

By Sebastian Dany, Johannes Bender, Taoufik Gharib, and WenWen Chen

The insurance and reinsurance industry will remember the year 2017 for multiple natural catastrophe events and historically high insured losses of $138 billion. Nevertheless, the global life reinsurance industry weathered this difficult year well, not least because of its margin-protective high barriers to entry and solid profit prospects.

istock photo / Scott_Walton

S&P Global Ratings believes business conditions for the global life reinsurance sector will remain sound for the next two to three years. We predict stable premium growth for the industry of about 3% per year, and a return on equity just above 10% over 2018–2020—outperforming the global property/casualty (P/C) reinsurance sector, which we estimate will reach about 7% to 9% in 2018 in a normalized nat-cat year.

This is because the fundamental strengths of the global life re industry remain intact, in our opinion, despite some M&A activity, the emergence of alternative capital in some selected markets, and increasing interest in longevity swap transactions by global life reinsurers.

We expect the sector's "bread and butter" U.S. mortality business will remain stable, with cession rates not exceeding 30% over the next few years. Expansion is likely to come from Asia, where global life reinsurers are benefiting from significant growth in the still nascent primary life insurance markets.

Asia-based life reinsurers such as China Re, Korean Re, and Taiping Re have been gaining in importance on the global stage in view to their strong positions in respective primary insurance markets. Nevertheless, we don't envisage any significant shifts in global market shares over the coming two to three years.

We think the industry's focus on biometric risks remains unchanged, with mortality business still dominating and morbidity growth rates remaining stable. Nevertheless, we expect to see increasing longevity risk appetite, in particular from longevity swap deals, mainly in the U.K. but increasingly also in other markets, such as the Netherlands and the U.S.

We consider that the industry's efficient risk management practices are strong lines of defense against inherent volatility the sector is facing from changes in key actuarial assumptions for calculating premiums, regulatory risks, and data restrictions.

Eight Global Players Dominate, With 90% Of Global Premiums

The life reinsurance industry is dominated by a few large global players, which represents a high hurdle for any potential new competitors. With the top eight companies covering about 90% of the premiums generated globally (Table 1), it would be difficult for new entrants to quickly enter the market, reach critical mass, build sustainable customer relationships, and establish underwriting expertise. Such a scale of competitive advantage would be difficult to replicate in the short to medium term.

Nevertheless, the market does not stand still, and over the past few years the industry has observed some M&A activity, a typical way of gaining scale. In 2017, for example, PartnerRe completed the merger with Aurigen Re, boosting its premiums by about 20%, as well as growth in other areas.

In Europe, SCOR last year acquired MutRé and a significant block of AEGON's life reinsurance business. We don't believe that sizable M&A transactions are likely to change the global competitive landscape, owing to a lack of targets. Yet, small to midsize portfolio transfers remain likely.

In addition to the M&A dynamic, the market entry of Langhorne Re earlier this year is also significant. This vehicle is sponsored by two major reinsurers, Reinsurance Group of America Inc. (RGA) and RenaissanceRe Holdings Ltd. (RenRe). They have committed about $780 million of equity capital, including investments from RGA, RenRe, and third-party capital. Langhorne Re will be targeting large in-force life and annuity blocks, allowing cedants to de-risk and optimize their capital management. We currently do not believe that this market entry is changing the competitive landscape, since underwriting capabilities remain key and pure pricing and capacity are of lower importance to the sector.

Another shift is that Asia-based life reinsurers such as China Re, Taiping Re, or Korean Re have generated growth rates higher than global competitors in

Table 1: Top Eight Global Life Reinsurers' GPW

	Billion $		% change	
	2017	**2016**	**Actual**	**At constant FX rates**
Munich Reinsurance Co.	16,468	14,341	14.8	0.7
Swiss Reinsurance Co. Ltd.	13,313	12,801	4.0	4.0
Reinsurance Group of America Inc.	10,704	10,107	5.9	5.9
SCOR SE	10,515	8,609	22.1	7.0
Hannover Rück SE	8,494	7,518	13.0	(1.0)
China Reinsurance (Group) Corp.	6,811	4,514	50.9	41.3
General Reinsurance Corp.*	3,306	3,068	7.7	7.7
PartnerRe Ltd.	1,399	1,168	19.8	19.8
Total	71,010	62,126	14.3	6.5

**Net premium written. GPW: Gross premiums written. FX: foreign exchange.*

recent years. These players have strong local market positions in the region and have benefitted from growth of primary life insurance markets. We consider Asia an important growth area for the entire sector, giving these players higher growth potential than their international peers.

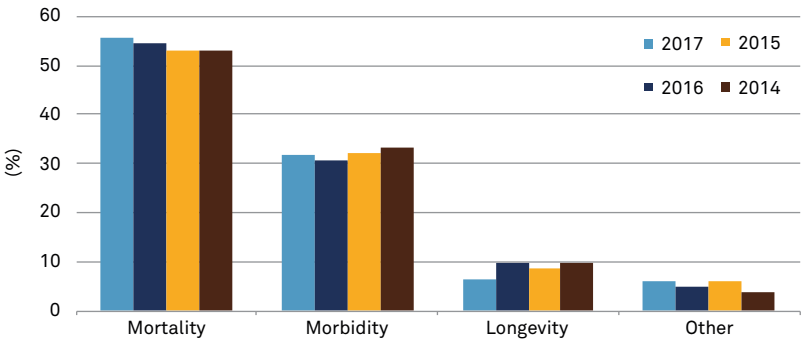
Premiums Are Growing At A Healthy Rate

Global life reinsurance experienced premium growth in most lines of business across all markets in 2017. Based on our estimates, gross premiums written (GPW) increased to about $73 billion, from $64 billion in 2016. This high growth rate also reflects foreign exchange (FX) rate changes, but even excluding FX effects, the industry grew markedly by about 6.6% year on year.

The mortality business remains the largest contributor in terms of premiums and net profits. The contribution of the longevity business remains consistently lower based on GPW (Chart 1). This reflects the sector's increased appetite for writing longevity business in the form of swaps, in our view.

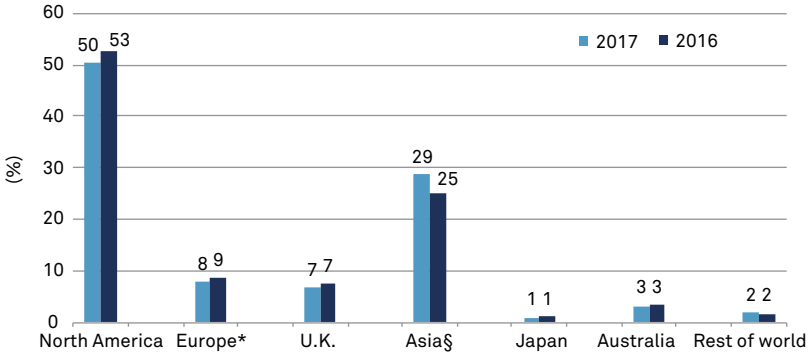
We estimate the sector's exposure to longevity swaps, in terms of present value of future claims, is well over $60 billion and growing. The reinsurers in this space compete with primary insurance companies. The U.K. remains the most significant longevity swap market, but some growth is also visible in selected other countries, such as the Netherlands and the U.S.

Chart 1: Global Life Reinsurers' GPW By Business Line



GPW: Gross premiums written.

Chart 2: Global Life Reinsurance Industry's GPW By Region



*Excluding the U.K. §Excluding Japan and Australia. GPW: Gross premiums written.

Growth In Asia-Pacific Will Outpace Gains In The Rest Of The World

The North American region generates about one-half of all premiums in the life reinsurance industry (Chart 2). The U.S. market has shown signs of maturing, with growth for reinsurers stagnating over the past few years as primary insurers have retained more business on their books. In 2017, however, growth for reinsurers improved as the U.S. cession rates increased to over 25% in this market.

This momentum is encouraging for life re players in this key market, but we do not expect the cession rate to increase to

Table 2: Real GDP Growth Of Select Countries And The Eurozone

Country or region	Sovereign foreign-currency rating as of Aug. 15, 2018	2016 %	2017 %	2018f %	2019f %	2020f %	2021f %
U.S.	AA+/Stable/A-1+	1.5	2.3	3.0	2.5	1.8	2.3
China	A+/Stable/A-1	6.7	6.9	6.5	6.3	6.1	6.0
India	BBB-/Stable/A-3	7.1	6.6	7.5	7.8	7.9	8.1
Eurozone	N.A.	1.8	2.6	2.1	1.7	1.6	1.4
Germany	AAA/Stable/A-1+	1.9	2.5	2.0	1.8	1.5	1.3
France	AA/Stable/A-1+	1.1	2.3	1.7	1.6	1.7	1.6
U.K.	AA/Negative/A-1+	1.9	1.8	1.2	1.4	1.6	1.3

f: Forecast. N/A: Not applicable. Source: S&P Global Ratings.

Table 3: Top Eight Global Life Reinsurers' Financial Strength Ratings And ERM Scores

	Financial strength rating*	ERM score
Munich Reinsurance Co.	AA-/Stable	Very strong
Swiss Reinsurance Co. Ltd.	AA-/Stable	Very strong
Reinsurance Group of America Inc.	AA-/Stable	Adequate, strong risk controls
SCOR SE	AA-/Stable	Very strong
Hannover Rück SE	AA-/Stable	Very strong
China Reinsurance (Group) Corp.	A/Stable	Adequate
General Reinsurance Corp.	AA+/Negative	Adequate
PartnerRe Ltd.	A+/Stable	Strong

**Ratings of core operating entities. ERM: Enterprise risk management. Data as of July 26, 2018.*

more than 30% over the short to medium term. Many U.S. primary insurers continue to express a strong preference for mortality risk relative to other types of risk on their balance sheet (for example, market, spread, or longevity).

The growth story for the sector remains the Asia-Pacific region (Table 2). Life insurance penetration in large, growing economies such as China is still relatively low, with strong growth opportunities for primary players as well as life reinsurers. Asia-Pacific's estimated premium share of total life reinsurance premiums increased to about 29% in 2017, from 25% in 2016. We estimate growth in this region will continue to outpace the rate in the rest of the global life reinsurance sector for the next two to three years. Overall, we expect worldwide growth rates for the sector to be around 3%, barring any extraordinary foreign exchange fluctuations.

"Over the next two to three years, we believe the sector will be well placed to generate ROE of just above 10%."

Sector Profitability Looks Set To Remain Strong

The global life reinsurance industry has well-developed underwriting expertise that enables it to perform well (Chart 3). Access to key data for underwriting and global exposure enable global players to develop and maintain longstanding, trusting relationships with primary life insurance companies. They therefore experience less margin pressure than more capacity-driven P&C reinsurance business.

Added to this, the sector's sophisticated risk management skills and globally diversified risk transfer capabilities enable them to diversify risk across regions and lines of business, resulting in stable business performance.

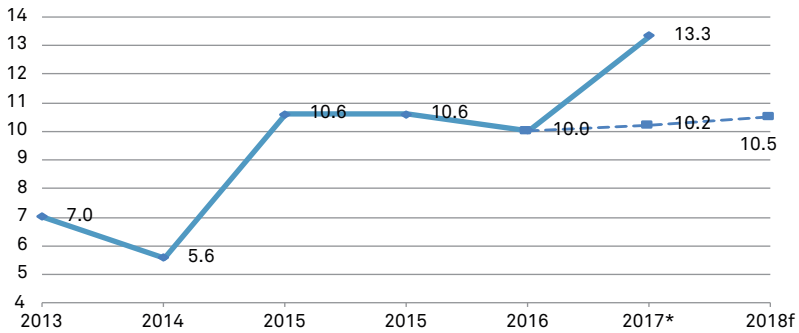
In 2017, the estimated return on equity (ROE) was about 13.3%, benefitting from extraordinary tax gains from the recent tax reform in the U.S. Nonetheless, even excluding these extraordinary effects, we estimate the sector's ROE to be 10.2%, still slightly above the result for 2016 and beyond our initial estimates.

Over the next two to three years, we believe the sector will be well placed to generate ROE of just above 10%. However, some volatility in earnings may occur from material changes in key actuarial assumptions for calculating premiums, such as mortality, morbidity, and longevity rates. For example, in 2012–2014, most reinsurers with exposure to the Australian disability business were facing adverse developments, and the industry suffered a loss of about $1 billion.

Another example of the sector's exposure versus potential volatility is the publication of updated mortality tables in the U.K. in 2017, which projected lower life expectancies than previously. It remains to be seen how this will progress, and if the U.K. and other developed countries on average are potentially facing reducing life expectancies after years of steady improvements.

In Norway, the introduction of a dynamic longevity table in 2013 led to an increase in the longevity reserve for

Chart 3: Global Reinsurers' Average Return On Equity



*Extraordinary RoE in 2017 of 13.2% driven by U.S. tax reform. f: Forecast.

the Norwegian life insurance sector. Although the Norwegian life insurance market is naturally much smaller than that in the U.K., this indicates that longevity assumptions may indeed vary.

Sound Risk Management Helps Balance Volatility And Emerging Risks

Given the sector's exposure to volatility from actuarial assumption changes—mainly from changes in mortality, morbidity, and longevity trends—underwriting knowledge backed by reliable data are key conditions for sustainable success for the sector. Expansion into emerging markets therefore also exposes reinsurers to the risks of limited market and underlying actuarial data, in our view.

Further limitations will come from regulations such as the EU General Data Protection Regulation (GDPR), which could make access to data in the EU more challenging. It could also be potentially more cost-intensive because of new technical standards for life reinsurers for storing and assessing data.

We continue to believe that the industry will be able to manage these challenges, owing to its advanced risk-management and underwriting capabilities. We believe these skills will support life reinsurers in identifying viable growth opportunities and managing regulatory challenges, while keeping them away from aggressive growth in young markets where it is easy to underestimate risks.

We assess the sector's enterprise risk management (ERM) capabilities as sound. The majority of reinsurers have strong or very strong ERM assessments (Table 3). The four top Europe-based players have installed very sophisticated strategic risk-management tools, including fully fledged internal economic capital models. What's more, most reinsurance groups are composite groups that write P/C reinsurance. Their mixed portfolios provide diversification benefits given that life and P/C reinsurance are less correlated. ■

Sebastian Dany
Frankfurt, (49) 69-33-999-238
sebastian.dany@spglobal.com

Johannes Bender
Frankfurt, (49) 69-33-999-196
johannes.bender@spglobal.com

Taoufik Gharib
New York, (1) 212-438-7253
taoufik.gharib@spglobal.com

WenWen Chen
Hong Kong, (852) 2533-3559
wenwen.chen@spglobal.com

Milan Kakkad
Mumbai, (91) 22-3342-8336
milan.kakkad@spglobal.com

Running At A Steady Pace: U.S. Mortgage Reinsurance Continues To Grow Despite The Credit Cycle Passing Its Peak

By Hardeep Manku, Saurabh Khasnis, and Taoufik Gharib

In the past five years, the U.S. housing and mortgage market has had a strong run, benefitting re/insurers that recognized the opportunities early on and moved to take advantage of a strong underwriting cycle, in the process providing an avenue to offset some of the pricing pressures in traditional reinsurance business. Since the government-sponsored entities Freddie Mac and Fannie Mae moved to tap private capital in 2013 in pursuit of managing taxpayers' risk as part of their mandate, the market for U.S. mortgage reinsurance has steadily grown—in terms of both capacity and number of balance sheets.

istock photo / dszc

As more re/insurers get comfortable with the risk, overcoming their experience through the financial crisis, the number of players is keeping pace with the rising demand from the government-sponsored entities Freddie Mac and Fannie Mae(GSEs) and private mortgage insurers (PMIs), despite the increasing risk profile and lower pricing. S&P Global Ratings believes the underwriting cycle is past its peak—credit risk will continue to increase and pricing will continue to be pressured as capacity expands. Consequently, the underwriting margins on a risk-adjusted basis will likely be lower. However, under the current economic and housing outlook, and the fact that the mortgage underwriting quality is still significantly better than it was pre-crisis, earnings will remain robust in the next few years.

Re/insurers need to remain disciplined with their approach, especially those entering the mortgage reinsurance business at this stage in the cycle. Considering the long-tail nature of this business line, if things were to go south, it would be difficult to get this risk off the books. As a result, re/insurers should have a good understanding of the risk and its correlation, align limits with their risk appetite, and strengthen risk controls to manage exposure.

Re/insurers should have the means to analyze the risk-reward profile, which can be developed either through investments in their own infrastructure (which would be quite an undertaking), or by relying on partners that have developed theirs over the past few years. A proper framework, along with willingness to act in response to changing credit conditions, should enable re/insurers to leverage opportunities prudently.

"Re/insurers can benefit from still-good earnings from this business line but it requires understanding of the risk and active management of the cycle."

Reinsurance Demand Should Remain Robust

Demand for mortgage reinsurance, which primarily originates from GSEs and PMIs, continues to grow and will remain robust considering the underlying still-strong macro-economic and housing fundamentals; this is notwithstanding the anticipated lower level of origination activity due to declining affordability caused by higher interest rates, housing supply constraints, and house price increases.

Therefore, considering new business and accounting for accumulation of exposure (mortgage reinsurance is a long-tail business), we believe additional capacity is necessary to absorb the risk, thereby sustaining a certain level of demand for the reinsurance of these risks.

GSEs' mandate provides base-level demand

The GSEs continue to offload their risks, obliging their mandate to involve private capital and reduce taxpayers' risk. From 2013 through 2017, the GSEs transferred about $69 billion of risk in force covering about $2 trillion of unpaid principal balance by means of credit risk transfer (CRT) programs beyond the traditional method of seeking mortgage insurance (Table 1).

Of this, about 20% or $14 billion was placed with the re/insurance sector. GSEs continue to develop additional programs, such as initiatives for front-end credit risk transfer transactions that look to transfer risk before or simultaneous with the GSEs' acquisition of the risk. An example is the recently launched mortgage credit risk transfer program between Freddie Mac and Arch Capital Group Ltd. known as IMAGIN (Integrated Mortgage Insurance), a pass-through structure that primarily looks to tap into reinsurance capacity for lender paid mortgage insurance (Fannie Mae initiated a similar program).

Fueled by the GSEs' mandate, as the CRT programs mature and GSEs expand ways of transferring risks to private markets, reinsurance will remain an

Table 1: Government-Sponsored Entity Single-Family Mortgage Credit Risk Transfer Activity

	Total (Bil. $ unless otherwise noted)		Insurance/reinsurance (Bil. $ unless otherwise noted)		
	Covered mortgage loans	Note size or risk-in-force	Covered mortgage loans	Risk-in-force	Portion of total risk-in-force/note size (%)
2013	89.8	2.2	8.1	0.4	18
2014	378.4	12.2	30.7	1.3	11
2015	420.4	16.1	106.0	3.1	19
2016	548.0	17.9	100.8	4.4	25
2017	689.1	20.6	121.1	4.6	22
Total	2,125.6	69.1	366.7	13.8	20

Notes: 1. Volume of notes issued in debt transactions or risk-in-force in re/insurance transactions equals the maximum credit loss exposure of private investors. 2. Unpaid principal balance of pools of mortgage loans on which credit risk is transferred. 3. Risk-in-force includes credit risk transferred through ACIS, CIRT, front-end transactions. GSEs are Fannie Mae and Freddie Mac. Source: Federal Housing Finance Agency: 2017 Scorecard Progress Report (March 29, 2018).

important capital source. Therefore, S&P Global Ratings expects a sustained demand for reinsurance capacity providing about $4 billion-$5 billion of risk limits annually. However, the growth in total deployed capacity will be lower than that amount as prior-year covers run down. Overall, the estimated annual total run-rate of reinsurance premiums could be in the range of $2 billion-$3 billion as the market matures.

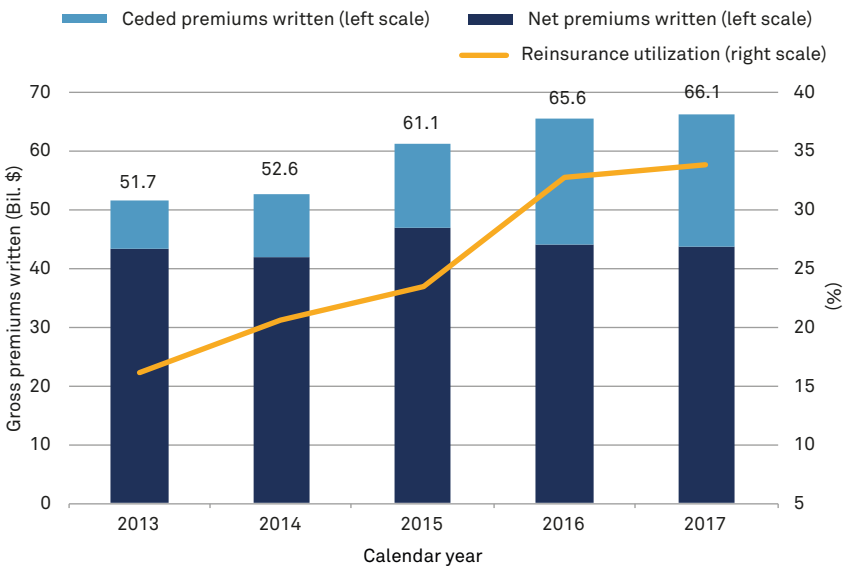
PMIs have increased their reinsurance utilization

Alongside GSEs, the U.S. PMIs have increasingly used reinsurance capacity. U.S. PMIs' primary business is to provide insurance against borrower default on mortgages held by GSEs. Reinsurance utilization grew to 34% in 2017 from 16% in 2013 on top of growth in premiums as the mortgage markets recovered a few years after the financial crisis (Chart 1).

What started as an opportunistic approach to help meet new capital requirements from the GSEs (Private Mortgage Insurer Eligibility Requirements—PMIERs) and manage their balance sheets as PMIs emerged from the financial crisis in 2008, reinsurance has become a sustained source of capital relief. While new insurance written by PMIs might not grow as much depending on housing activity (and the sector's market share with respect to the Federal Housing Administration [FHA]), the overall risk exposure will expand as rising interest rates push persistency higher, resulting in existing mortgages being on the books longer (which also holds true for GSE pools).

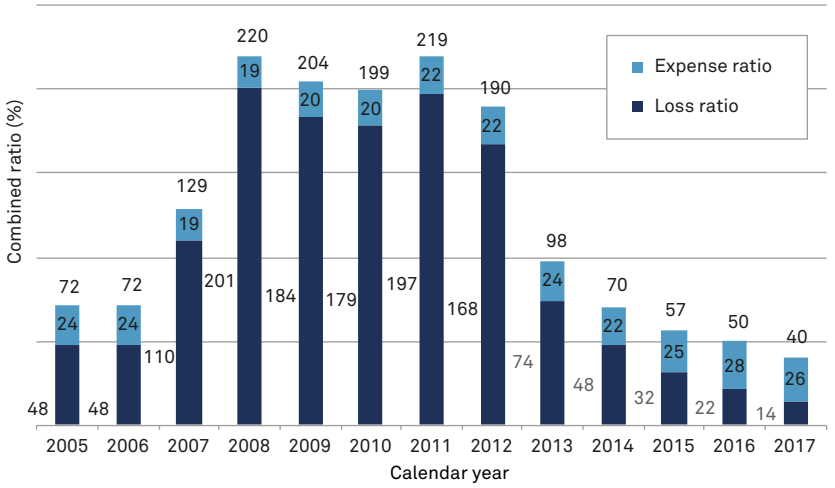
In addition, GSEs are working on the next version of PMIERs, which could increase capital requirements, based on some initial indications. Both of these factors support the continued demand for mortgage reinsurance despite PMIs developing mortgage-based insurance-linked securities (ILS) solutions to tap into capital markets and expand their range of capital providers.

Chart 1: U.S. Private Mortgage Insurance Sector—Reinsurance Utilization



Source: NAIC statutory financials.

Chart 2: U.S. Private Mortgage Insurance Sector—Underwriting Performance



Note: Based on NAIC statutory financials.

Performance Remains Strong But The Risk Profile Is Expanding

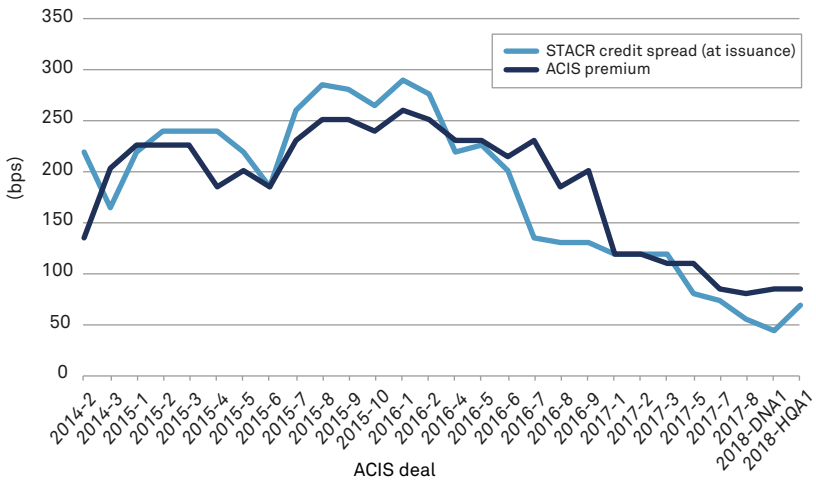
Mortgage performance of post-crisis vintages has been tremendously strong and exceeded our expectations. This is primarily a result of tightened underwriting standards in the aftermath of the financial crisis. After a crisis, underwriting guidelines tend to tighten but the credit risk profile typically expands in subsequent years. Although there has been some expansion in credit risk, with a higher proportion of mortgages carrying loan-to-value ratios greater than 95%, lower average credit scores, and higher tolerance for debt service ratios, the underwriting standards remain much stronger than they were before the crisis.

The introduction of qualified mortgage (QM) and qualified residential mortgage (QRM) guidelines provide guardrails, which along with a cautious stance so far from lenders and mortgage insurers have helped maintained relatively tight underwriting (Chart 2). Risk-based capital requirements for PMIs in the form of PMIERs also support rational underwriting behavior. Furthermore, lenders' conservative stance is also a

reaction to the higher risk of mortgage put-back from GSEs and the FHA post-crisis.

Considering underwriting is still strong, and the macro-economic and housing outlook is supportive, we don't foresee major performance issues in the near term. Nevertheless, from a credit risk perspective, there is only one way to go, and the credit risk characteristics of underlying mortgages (credit-box) will continue to expand gradually.

Chart 3: Freddie Mac CRT Program Pricing—M1 Layer



Source: Freddie Mac—ACIS and STACR pricing terms.
Notes: ACIS premium and STACR credit spreads at issuance prior to 2017 are for M2 layer; Pricing on STACR M1 is from ACIS equivalent STACR transcations.

Returns Remain Attractive, Spurring Re/Insurance Participation

Despite the downward trend in risk-adjusted pricing, mortgage reinsurance is still attractive with generally low double-digit return on capital, and more once re/insurers build in their diversification benefits. Therefore, it's no surprise that overall capacity has increased—both in terms of appetite of existing players and the entry of new players.

Munich Reinsurance Co. is one of those new entrants. In 2018, Munich Re announced a multiyear agreement with Arch Credit Risk Services Inc., becoming the first among the large European re/insurers to start participating in that business. Others may be waiting in the wings to follow suit. The business line, especially the GSE market, has primarily been the domain of U.S.- and Bermuda-domiciled re/insurers and they will likely remain key players but we expect the number of participants to keep rising, notwithstanding pressure on pricing and credit risk expansion.

After Sliding Through 2017, Risk-Adjusted Pricing Has Stabilized, But Downward Pressure Remains

Risk-adjusted pricing has been declining, a trend more visible in Freddie Mac deals. With increasing re/insurance capacity and gradual expansion in the credit risk profile, the stresses are likely to continue over the next 12 months.

In 2017, Freddie Mac made some changes to its insurance-based credit risk-sharing vehicle, Agency Credit Insurance Structure (ACIS), wherein it moved to two mezzanine layers from three in 2016 by eliminating the top mezzanine tranche (M1), with the remaining tranches becoming the new M1 and M2. Everything else being equal, the resulting mezzanine layers therefore carry higher risk. With those changes and resulting pricing on those tranches, risk-adjusted pricing came down, a trend that continued through 2017, although it seems to have stabilized in first-quarter 2018 (Chart 3).

The pricing on Freddie-Mac reinsurance deals (ACIS), despite the slide through 2017, is still better than the equivalent capital market (Structured Agency Credit Risk—STACR) transactions. To explain the pricing difference between ACIS and STACR, re/insurers would point to the sector's underwriting discipline, whereas GSEs would attribute the pricing gap to their desire to develop a sustainable reinsurance market. In our view, both factors may have been at work.

Our understanding is that the pricing of ACIS deals does not necessarily widen or tighten to the same degree as seen in the STACR bonds placed in the capital markets. Indeed, at times ACIS deals were pricing below STACR bonds but the movements were reflected to some extent. Furthermore, new programs like IMAGIN, which might add to reinsurance demand, aren't going to provide much relief from a pricing perspective. IMAGIN is primarily targeted at lender paid mortgage insurance currently placed with PMIs, which we already view as a discounted and a low margin product.

The pricing issue was not just confined to the GSE credit risk-sharing programs; PMIs were equally exposed. The sector recently took a rate cut, a not-unexpected development considering heightened competitive dynamics, the strong ongoing performance of the underlying mortgages, and change in the U.S. tax regime (as cited by one of the leading PMIs). These pricing trends along with PMIs' increasing use of ILS to access alternate capacity will influence reinsurance pricing.

Overall, the current situation at the GSEs and PMIs highlights pressures that could influence pricing during the next couple of years.

Preparedness Matters

In our assessment of re/insurers, we consider management's strategy for mortgage risk and resultant appetite. Considering the systemic nature of this business, it will serve re/insurers well to heighten their focus on managing the exposure to within their risk tolerances—either through own investments in

infrastructure or leveraging off those that have developed such capabilities, a few of which are providing managing general agency/advisory services. Although we believe re/insurers are exercising due caution in the sector, lax or slipping underwriting standards are often a precursor to future underwriting losses. As exposures increase, we expect greater sophistication in terms of establishing limits, analytics, and risk monitoring from market participants.

Re/insurers can benefit from still-good earnings from this business line but it requires understanding of the risk and active management of the cycle, which is coming off its peak. Some re/insurers are taking a cautious stance, manifested through pricing discipline or reduced participation rates. Our view of a company's financial strength will weaken if the company has oversized risk tolerances, doesn't have the means to manage risk to within its defined limits, or fails to maintain adequate capitalization. ■

Hardeep S Manku
Toronto, (1) 416-507-2547
hardeep.manku@spglobal.com

Saurabh B Khasnis
Centennial, (1) 303-721-4554
saurabh.khasnis@spglobal.com

Taoufik Gharib
New York, (1) 212-438-7253
taoufik.gharib@spglobal.com

Global Reinsurance Peer Review

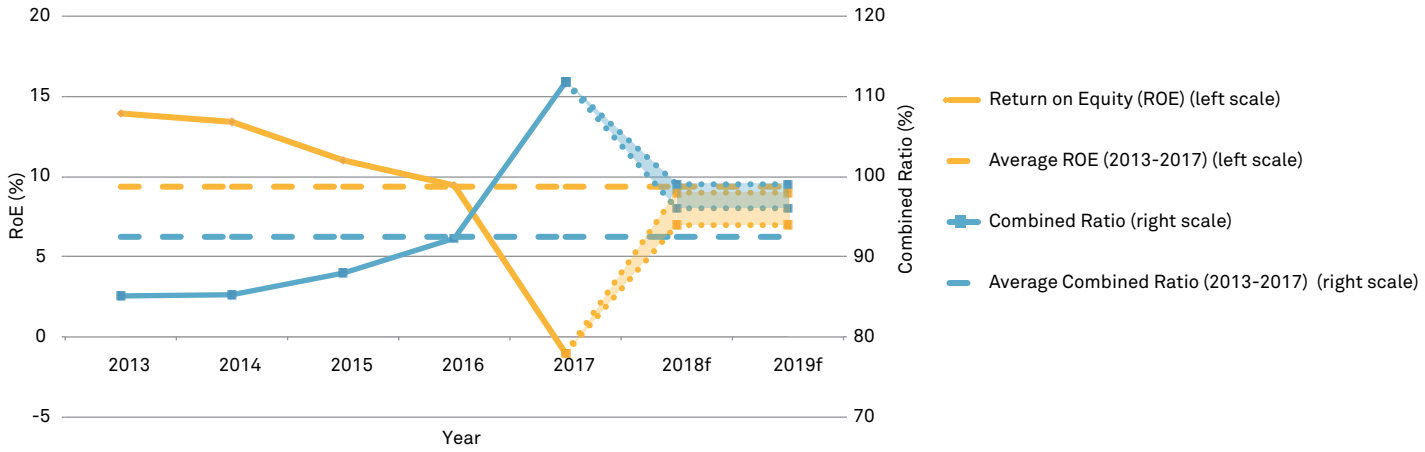
For the past several years, the global reinsurance sector has weathered unfavorable and continuously changing business conditions. The challenges have included a prolonged soft reinsurance pricing cycle, heightened competition, limited organic growth opportunities, a record influx of alternative capital, low interest rates, mergers and acquisitions, and large catastrophe losses in 2017. Against this backdrop, reinsurers are trying to pull whatever levers they can to not only remain relevant but sustain profitability. However, S&P Global Ratings is maintaining its stable outlook on the global reinsurance sector and on the majority of the reinsurers it rates. This is mostly because of reinsurers' still-robust capital adequacy and because underwriting has remained relatively disciplined, at least so far, supported by overall strong enterprise risk management. At the same time, we continue to believe the global reinsurance sector is facing weak business conditions because the fundamental challenges of the sector have not abated, even after 2017's heavy natural catastrophe losses.

Unless otherwise stated, the following peer review includes data from our top-20 global reinsurance cohort, including: Swiss Re, Munich Re, Hannover Re, SCOR, Lloyd's, Everest Re, PartnerRe, TransRe, XL, AXIS, RenaissanceRe, Validus, Qatar, Aspen, Arch, Sirius, Allied World, Lancashire, MS Amlin, and Hiscox.

S&P Global
Ratings

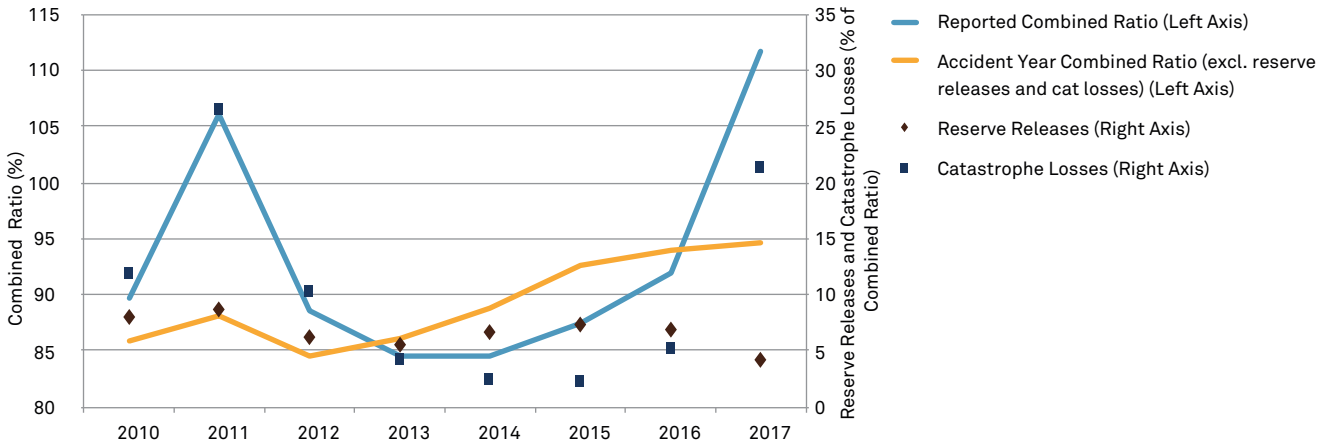
Competitive Position

Top-20 Global Reinsurers' Combined Ratio and RoE Performance



The global reinsurance industry has found itself walking a tightrope as combined ratios have ticked up in recent years, even before the impact of the 2017 catastrophe losses. Weak business conditions have dampened performance, making for a difficult industry landscape. The question remains whether reinsurers can maintain their underwriting discipline while generating adequate returns.

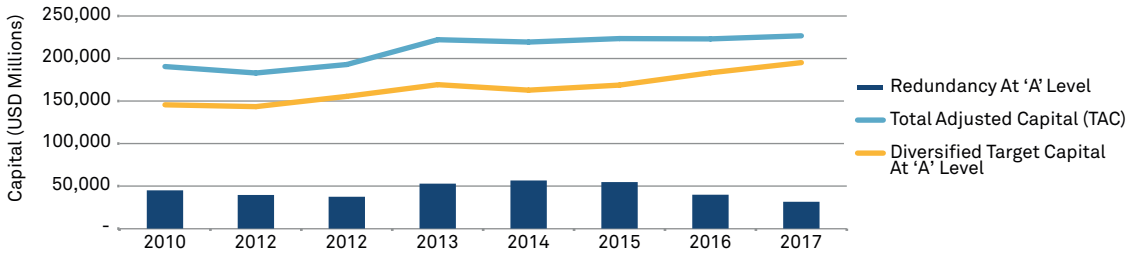
Top-20 Global Reinsurers' Underwriting Performance



The global reinsurance industry has benefitted from favorable reserve releases and benign catastrophe experience from 2012 to 2016. However, underlying combined ratios have been trending upwards since 2012, with the deterioration in 2017 accident year combined ratios exacerbated by the 2017 catastrophe losses. Furthermore, prior year releases continue to occur, albeit at a declining rate.

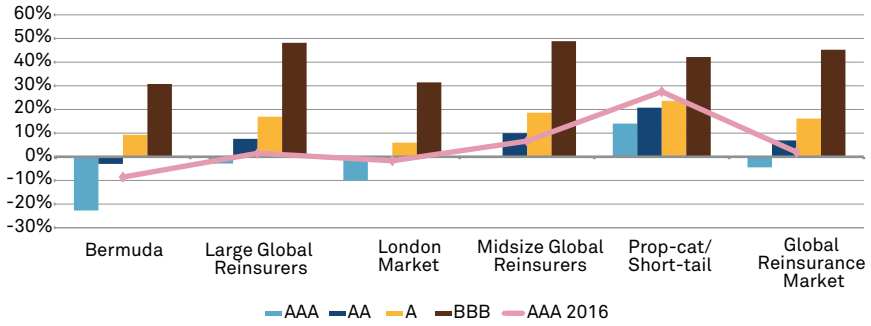
Capital Adequacy

Evolution Of Total Adjusted Capital (TAC) Versus Target Capital

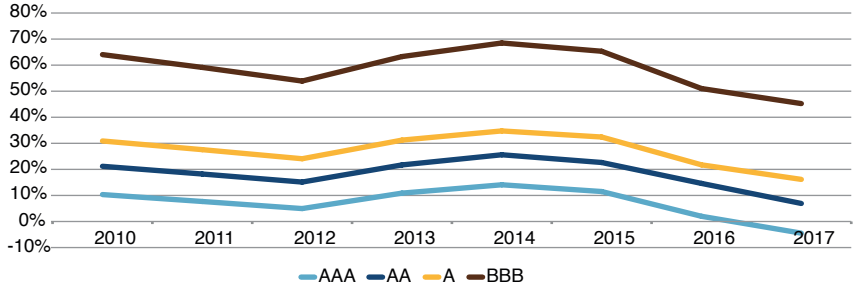


Capital adequacy strength has been reducing but the sector remains capitalised above the 'A' level. At the 'A' level, we estimate that capital redundancies of the Top-20 global reinsurers at the end of 2017 were about $31.5 billion, down from $39.8 billion as of the end of 2016, and $54.7 billion in 2015. The recent drop in capital adequacy is mostly due to the 2017 catastrophe losses, adjustments to the large global reinsurers' asset liability management and/or longevity risk capital charges, and continued buybacks and special dividends.

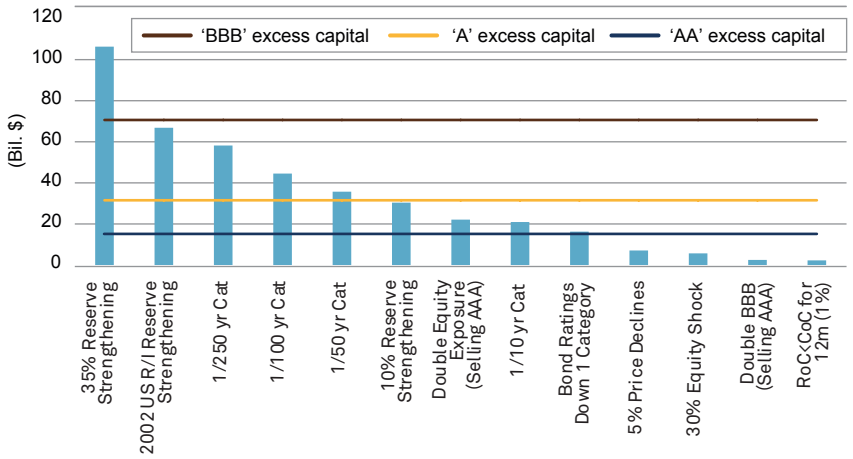
2017 Average Capital Adequacy By Peer Group



Historical Sector Capital Adequacy By Rating Level



2017 Global Reinsurance Capital Stress Tests

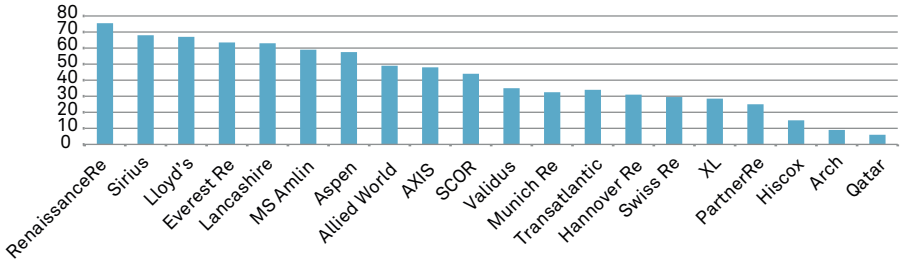


After a 10% reserve strengthening, capital adequacy would deteriorate into the 'A' range.

If the sector's total return on capital is one percentage point below its cost of capital for 12 months, capital adequacy would remain in the 'AA' range.

Catastrophe Risk

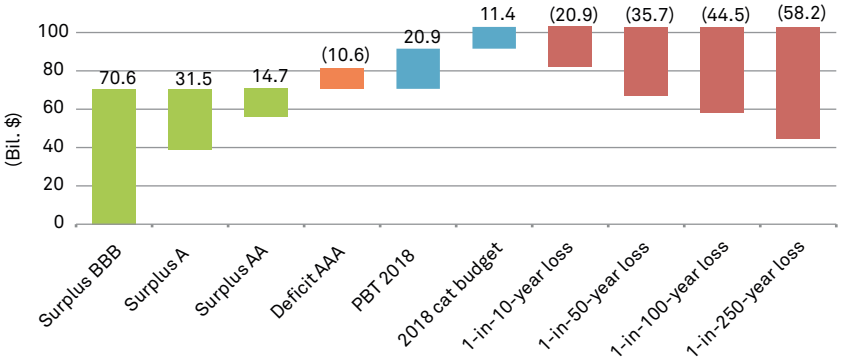
Cat Exposure: Cumulative Riskiness Scoring Jan. 1, 2018



We consider that, on average, reinsurers' property-catastrophe risk appetite at a 1-in-250-year return period rose only slightly, to 31% of shareholder equity, but we have seen increases or reductions by up to 10 percentage points for some reinsurers. Despite some capital depletion, the sector remains resilient to extreme events. Albeit fewer than last year, 12 out of 20 global reinsurers are likely to maintain at least 'AA' capital adequacy following a 1-in-250-year event.

This chart provides a ranking of reinsurers' relative exposure to catastrophe risk against one another. It is based on blended ranking of cat risk metrics developed by S&P (some of the risk metrics used include earnings at risk, capital at risk, post events capital adequacy and historical experience).

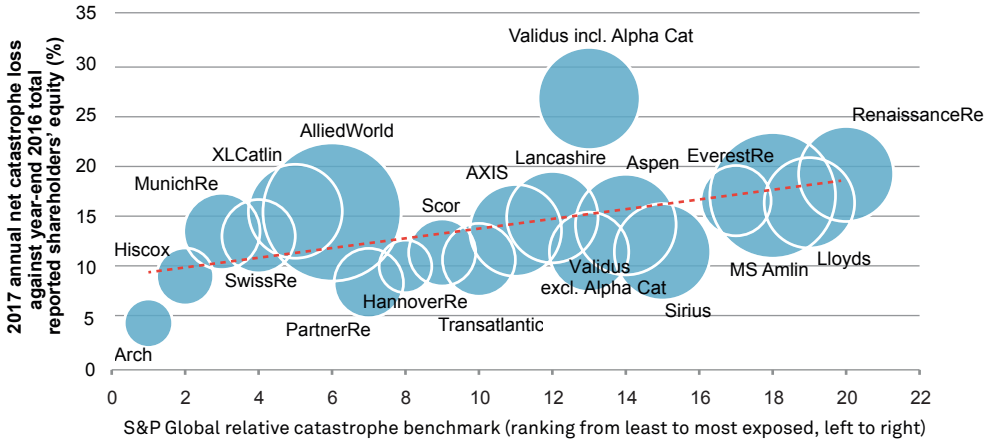
Top-20 Global Reinsurers' Aggregate Capital Surplus Resilience To Stress At Year-End 2017



PBT: Profit before tax. Source: S&P Global Ratings estimates.

An aggregated 1-in-10-year loss experience, which we assume to be about $21 billion, would exceed the annual natural catastrophe budget and hit the sector's earnings, but would not hit its capital on aggregate. This chart takes into account the natural catastrophe budget the sector incorporates in a normalized year and the projected earnings that may be achieved in a normalized year.

S&P Global Ratings' Relative Catastrophe Benchmark Performed Well In 2017

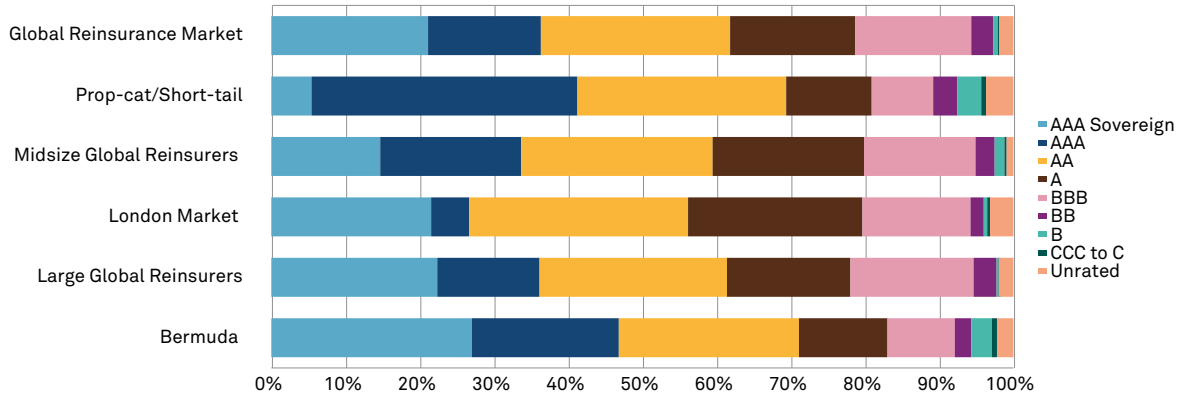


Bubble size shows 2017 annual net catastrophe loss against two-year average profit before tax (excluding cat).
Source: S&P Global Ratings.

Nat cat losses in 2017 wiped out earnings for nine out the top 20 reinsurers. Losses averaged about 1.3x their annual 'normalized' earnings and affected about 12% of their shareholders' equity at year end 2016.

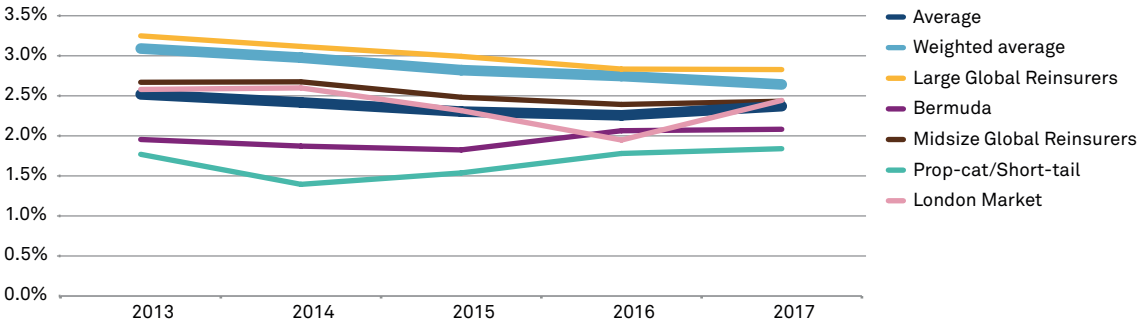
Investment Risk

2017 Credit Risk Profile



Investment strategies for the sector remain relatively conservative. However the sector continues to respond to the low interest rate environment with an increase in credit risk. Average credit quality remains strong but BBB bonds have gradually increased, to about 16% at year-end 2017 compared to 12% in 2013. There is also a modest increase in equity risk while property risk remained largely stable in 2017. In anticipation of rising interest rates (in some markets), asset duration has slightly decreased in 2017 to around 3.4 years.

Net Investment Yield



Net investment income bottomed out in 2016 and a 10 bps increase in 2017 on a simple average basis was driven by moderate interest rate increases in particular in the US. The highest increase in net investment yield is visible at the London Market and Prop-cat/Short tail writers (on a simple average basis) due to their shorter duration and thus more rapid benefits from increased interest rates. For the Large Global Reinsurers, the net investment yield is still flat in 2017 (simple average basis), reflecting their longer duration than the other cohorts in the peer group.

S&P Global Economic Forecasts*

	2015	2016	2017	2018f	2019f
			Real GDP growth (%)		
Eurozone	2.0	1.8	2.6	2.1	1.7
Asia Pacific	5.5	5.5	5.5	5.6	5.6
UK	2.3	1.9	1.8	1.2	1.4
US	2.9	1.5	2.3	3.0	2.5
			CPI Inflation (%)		
Eurozone	0.0	0.2	1.5	1.7	1.6
Asia Pacific	1.8	1.8	1.8	2.4	2.3
UK	0.1	0.6	2.7	2.5	1.9
US	0.1	1.3	2.1	2.4	2.1
			Long-Term (10-Year) Interest Rates (%)		
Eurozone	1.2	0.9	1.0	1.5	2.2
Asia Pacific	2.9	2.6	3.1	3.3	3.5
UK	1.9	1.3	1.3	1.8	2.7
US	2.2	2.1	2.4	3.2	3.4

* as per 26.July 2018
f: Forecast

Ratings Score Snapshots*

Company Name	Financial Strength Rating***	Outlook	Anchor	Business Risk Profile	IICRA	Competitive Position	Financial Risk Profile
Bermuda							
Allied World Assurance Company Holdings GmbH	A-	Positive	a-	Strong	Intermediate Risk	Strong	Moderately Strong
Arch Capital Group Ltd.	A+	Stable	a	Strong	Intermediate Risk	Strong	Strong
AXIS Capital Holdings Ltd.	A+	Negative	a	Strong	Intermediate Risk	Strong	Strong
Sirius International Group Ltd.	A-	Stable	a-	Strong	Intermediate Risk	Strong	Strong
Large Global Reinsurers							
Hannover Rück SE	AA-	Stable	aa-	Very Strong	Intermediate Risk	Very Strong	Strong
Lloyd's	A+	Negative	a+	Very Strong	Intermediate Risk	Very Strong	Moderately Strong
Munich Reinsurance Co.	AA-	Stable	aa-	Very Strong	Intermediate Risk	Extremely Strong	Strong
SCOR SE	AA-	Stable	aa-	Very Strong	Low Risk	Very Strong	Strong
Swiss Reinsurance Co. Ltd.	AA-	Stable	aa-	Very Strong	Intermediate Risk	Extremely Strong	Very Strong
London Market							
Aspen Insurance Holdings Ltd.	A	Negative	a-	Strong	Intermediate Risk	Strong	Moderately Strong
Hiscox Insurance Co. Ltd.	A	Stable	a-	Strong	Intermediate Risk	Strong	Moderately Strong
Qatar Insurance Co. S.A.Q.	A	Stable	a	Strong	Intermediate Risk	Strong	Strong
MS Amlin AG**	A	Stable	NA	NA	NA	NA	NA
Midsize Global reinsurers							
Everest Re Group Ltd.	A+	Stable	a+	Very Strong	Intermediate Risk	Very Strong	Strong
PartnerRe Ltd.	A+	Stable	a+	Very Strong	Intermediate Risk	Very Strong	Strong
Transatlantic Holdings Inc.	A+	Stable	a	Strong	Intermediate Risk	Strong	Strong
XL Group Ltd.	A+	Stable	a+	Very Strong	Intermediate Risk	Very Strong	Moderately Strong
Property-catastrophe / short-tail specialists							
Lancashire Holdings Ltd.	A-	Stable	a-	Strong	Intermediate Risk	Strong	Upper Adequate
RenaissanceRe Holdings Ltd.	A+	Stable	a	Strong	Intermediate Risk	Strong	Strong
Validus Holdings Ltd.	A	Stable	a	Strong	Intermediate Risk	Strong	Strong

* As of July 27, 2018

** MS Amlin AG rating is derived from its parent MS&AD Insurance Group

*** Ratings of core operating entities of the groups

Ratings Score Snapshots (Continued)*

Company Name	Capital & Earnings	Risk Position	Financial Flexibility	ERM	Management & Governance	Holistic Analysis	Liquidity
Bermuda							
Allied World Assurance Company Holdings GmbH	Very Strong	High Risk	Adequate	Strong	Satisfactory	0	Strong
Arch Capital Group Ltd.	Very Strong	Moderate Risk	Strong	Strong	Satisfactory	0	Strong
AXIS Capital Holdings Ltd.	Extremely Strong	High Risk	Strong	Strong	Satisfactory	0	Adequate
Sirius International Group Ltd.	Extremely Strong	High Risk	Adequate	Adq, Strong Risk Controls	Satisfactory	0	Exceptional
Large Global Reinsurers							
Hannover Rück SE	Very Strong	Moderate Risk	Adequate	Very Strong	Strong	0	Exceptional
Lloyd's	Very Strong	High Risk	Strong	Adq, Strong Risk Controls	Strong	0	Strong
Munich Reinsurance Co.	Very Strong	Moderate Risk	Strong	Very Strong	Strong	0	Exceptional
SCOR SE	Very Strong	Moderate Risk	Strong	Very Strong	Strong	0	Exceptional
Swiss Reinsurance Co. Ltd.	Extremely Strong	Moderate Risk	Strong	Very Strong	Strong	0	Exceptional
London Market							
Aspen Insurance Holdings Ltd.	Very Strong	High Risk	Strong	Adq, Strong Risk Controls	Satisfactory	+1	Strong
Hiscox Insurance Co. Ltd.	Moderately Strong	Moderate Risk	Strong	Strong	Strong	0	Exceptional
Qatar Insurance Co. S.A.Q.	Strong	Intermediate Risk	Adequate	Adequate	Satisfactory	0	Strong
MS Amlin PLC**	NA	NA	NA	NA	NA	NA	NA
Midsize Global reinsurers							
Everest Re Group Ltd.	Extremely Strong	High Risk	Strong	Strong	Strong	0	Adequate
PartnerRe Ltd.	Extremely Strong	High Risk	Adequate	Strong	Satisfactory	0	Strong
Transatlantic Holdings Inc.	Extremely Strong	High Risk	Adequate	Strong	Satisfactory	0	Exceptional
XL Group Ltd.	Very Strong	High Risk	Adequate	Strong	Satisfactory	0	Exceptional
Property-catastrophe / short-tail specialists							
Lancashire Holdings Ltd.	Very Strong	Very High Risk	Adequate	Strong	Satisfactory	-1	Strong
RenaissanceRe Holdings Ltd.	Extremely Strong	High Risk	Strong	Very Strong	Strong	0	Strong
Validus Holdings Ltd.	Extremely Strong	High Risk	Strong	Strong	Satisfactory	-1	Adequate

* As of July 27, 2018

** MS Amlin AG rating is derived from its parent MS&AD Insurance Group

Top 40 Global Reinsurance Groups Ranked By Net Reinsurance Premiums Written

						Net Reinsurance Premiums Written (Mil. $)	
Ranking	**Company**	**Country**	**Rating**	**Outlook**	**Footnote**	**2017**	**2016**
1	Munich Reinsurance Co.	Germany	AA-	Stable		36,454.4	31,839.4
2	Swiss Reinsurance Co.	Switzerland	AA-	Stable	1	32,316.0	33,570.0
3	Berkshire Hathaway Re	United States	AA+	Negative	2	24,212.0	13,917.0
4	Hannover Rück SE	Germany	AA-	Stable	3	19,321.4	15,363.4
5	SCOR SE	France	AA-	Stable		16,163.5	13,231.0
6	Lloyd's	United Kingdom	A+	Negative	4	10,746.5	8,958.8
7	China Reinsurance (Group) Corp	China	A	Stable		9,970.3	7,513.8
8	Reinsurance Group of America, Inc.	United States	AA-	Stable		9,841.1	9,248.9
9	Everest Re Group Ltd.	Bermuda	A+	Stable		6,244.7	5,270.9
10	General Insurance Corporation of India	India	NR	-		5,796.3	4,674.7
11	MS&AD Insurance Group Holdings, Inc.	Japan	A+	Stable	5	5,427.0	5,180.9
12	PartnerRe Ltd.	Bermuda	A+	Stable		5,120.0	4,954.0
13	Korean Reinsurance Co.	South Korea	A	Stable		4,705.9	3,891.2
14	XL Catlin Group	Ireland	A+	Stable		3,963.9	3,514.7
15	SOMPO Holdings, Inc.	Japan	A+	Stable		3,893.0	2,873.9
16	Transatlantic Holdings Inc.	United States	A+	Stable		3,810.1	3,969.4
17	Mapfre Re	Spain	A	Positive		3,388.8	2,946.3
18	R+V Versicherung AG	Germany	AA-	Stable	6	3,017.4	2,301.7
19	Tokio Marine & Nichido Fire Insurance Co. Ltd.	Japan	A+	Positive	7	2,728.8	2,684.9
20	Fairfax Financial Holdings Limited	Canada	A-	Positive	8	2,576.8	2,383.6
21	Toa Re Co. Ltd.	Japan	A+	Stable		2,238.5	2,008.6
22	AXIS Capital Holdings Ltd.	Bermuda	A+	Negative		1,939.4	1,945.9
23	RenaissanceRe Holdings Ltd.	Bermuda	A+	Stable		1,871.3	1,535.3
24	Taiping Reinsurance Co., Ltd.	Hong Kong	A+	Stable		1,501.4	1,259.4
25	Caisse Centrale de Reassurance	France	AA	Stable		1,416.5	1,347.6
26	Aspen Insurance Holdings Ltd. (Bermuda)	Bermuda	A	Negative	9	1,250.0	1,269.2
27	IRB-Brasil Resseguros S.A.	Brazil	NR	-		1,223.0	1,088.7
28	Arch Capital Group Ltd.	Bermuda	A+	Stable		1,174.5	1,053.9
29	Sirius Group	Bermuda	A-	Stable	10	1,090.2	938.1
30	Validus Holdings Ltd	Bermuda	A	Stable		985.9	999.5
31	Markel Corporation	United States	A	Stable	11	978.2	898.7
32	Chubb Tempest Reinsurance Ltd.	Bermuda	AA	Stable	12	880.2	907.0
33	Deutsche Rueckversicherung AG	Germany	A+	Stable		851.2	756.4
34	Peak Reinsurance Co. Ltd	Hong Kong	NR	-		845.0	620.5
35	QBE Insurance Group Ltd.	Australia	A+	Stable		837.3	1,390.2
36	Allianz SE	Germany	AA	Stable	13	788.8	550.2
37	Qatar Reinsurance Co. Ltd	Qatar	A	Stable		712.6	363.6
38	African Reinsurance Corp.	Nigeria	A-	Stable		625.7	557.0
39	W. R. Berkley Corporation	United States	A+	Stable		544.6	680.3
40	Nacional de Reaseguros S.A.	Spain	A	Stable		532.6	398.7
	Total:					**231,984.4**	**198,857.1**

Rating = Financial strength ratings of core operating entities of the groups as of August 02, 2018
NA = Not available
Note: Exchange rates may slightly differ from previous years' GRH data due to alignment of foreign exchange rates with other S&P Global surveys.

1. *Swiss Reinsurance Co.: Figures represent the group as a whole including primary business.*
2. *Berkshire Hathaway Re: Adjusted Shareholders' Funds are for the group as a whole, including both its primary and reinsurance operations.*
3. *Hannover Rück SE: The combined ratio includes primary business.*
4. *Lloyd's: The figures in the Pretax Operating Income column reflect the underwriting result. Net Premium Written, underwriting result and the combined ratio relate to reinsurance business only; all other items include direct business. The data presented is based on the published pro forma accounts for the Market, which represents an aggregation of all syndicates participating at Lloyd's. As such, some premium included for Lloyd's may also be included by other groups that consolidate their Lloyd's operations. Adjusted Shareholders' Funds are members' funds for the Market as a whole.*
5. *MS&AD Insurance Group Holdings, Inc.: Mitsui Sumitomo Insurance Co Ltd, Aioi Nissay Dowa, and MS Amlin are now aligned under MS&AD Insurance Group Holding.*

Pre-tax Operating Income (Mil. $)		*Combined Ratio (%)*		*Total Adjusted Shareholders' Funds Mil. $)*		*Return on Revenue (%)*	
2017	**2016**	**2017**	**2016**	**2017**	**2016**	**2017**	**2016**
-650.7	2,666.8	114.0	95.8	37,585.3	36,779.0	-1.5	7.0
-1,202.0	2,993.0	115.4	94.8	34,428.0	35,630.0	-3.2	8.0
NA	NA	116.0	90.1	170,000.0	136,000.0	NA	NA
1,052.8	1,457.3	100.0	94.0	10,803.2	10,001.9	5.2	8.8
328.9	827.9	103.7	91.9	7,437.1	7,007.4	2.0	6.1
-1,798.3	677.2	117.2	92.3	36,191.7	34,246.2	NA	7.4
696.8	522.3	103.9	101.9	11,573.9	10,379.5	6.1	6.0
1,038.5	948.8	NM	NM	9,569.5	7,093.1	8.4	8.3
277.5	1,128.3	103.5	87.0	8,369.2	8,075.4	4.3	19.4
557.7	581.7	103.8	101.1	3,711.4	3,113.8	8.3	12.0
NA	NA	NA	NA	38,769.9	35,141.1	NA	NA
NA	NA	99.3	93.6	6,745.0	6,688.0	NA	NA
180.9	175.3	96.5	99.5	2,047.6	1,763.8	3.9	4.4
NA	NA	103.8	79.3	NA	NA	NA	NA
NA	NA	NA	NA	21,589.7	17,669.1	NA	NA
-13.7	493.7	106.9	93.2	5,217.9	5,202.8	-0.3	11.9
265.6	265.9	94.9	94.1	1,562.4	1,345.9	7.0	8.8
246.9	251.0	106.1	100.1	7,508.5	6,517.1	7.2	9.7
3,065.9	2,804.7	NA	NA	28,561.5	25,080.3	NA	NA
57.3	636.7	106.6	83.1	12,475.6	8,484.6	2.1	24.2
146.8	246.7	96.5	93.9	3,074.6	2,782.7	6.3	11.9
NA	NA	108.8	87.8	5,341.3	6,272.4	NA	NA
NA	NA	137.9	72.5	4,391.4	4,866.6	NA	NA
11.0	36.8	96.4	92.9	1,049.8	885.9	0.8	3.2
-1,101.3	86.8	197.5	74.0	6,267.8	6,568.5	-72.4	6.0
-203.3	214.2	125.1	89.9	2,928.5	3,648.3	-15.6	16.8
399.6	402.5	81.5	81.9	1,081.2	1,023.1	28.2	28.9
203.4	568.1	99.9	78.7	6,148.8	5,835.4	14.7	44.1
-68.1	65.5	107.6	93.1	1,917.2	2,239.4	-5.9	6.8
177.7	417.9	96.1	71.6	3,495.1	3,688.3	15.3	38.2
-299.2	106.8	132.0	87.2	NA	NA	-32.0	12.8
222.3	500.2	111.2	79.5	NA	NA	18.0	41.4
54.8	48.0	98.0	96.7	881.1	736.4	6.2	6.2
35.3	5.7	107.7	97.4	911.6	841.1	3.9	1.0
73.7	157.2	108.4	87.8	8,901.0	1,924.2	8.4	11.4
72.7	129.9	92.6	78.9	NA	NA	9.9	22.5
-66.8	54.0	122.0	98.5	1,148.7	771.8	-11.1	14.1
87.4	102.4	95.9	90.3	902.0	812.3	13.0	16.7
-15.3	98.3	117.6	100.6	NA	NA	-2.2	12.6
33.9	23.3	96.1	90.4	466.2	363.7	5.8	5.5
3,868.7	**19,695.0**	**109.8**	**93.1**	**503,053.5**	**439,479.1**	**1.3**	**9.4**

6. *R+V Versicherung AG: Figures include intra group reinsurance business.*
7. *Tokio Marine Holdings, Inc.: Figures represent Tokio Marine & Nichido Fire Insurance Co, Ltd. and exclude the group's other reinsurance subsidiaries.*
8. *Fairfax Financial Holdings Limited: Total Revenue and Pretax Operating Income is from reinsurance operations only. Total Adjusted Shareholders' Funds are the totals from all operations; as reported.*
9. *Aspen Insurance Holdings Ltd. (Bermuda): 2017 and 2016 numbers have been reported as a mixture of the reinsurance segment and whole company. Where available numbers relate to reinsurance segment, and where unavailable the group results are shown.*
10. *Sirius Group: In light of the company's acquisitions during 2017, this year's responses reflect the results of Sirius International Insurance Group, Ltd (SIG's top parent). 2016 figures have been adjusted accordingly.*
11. *Markel Corporation: Lloyd's Syndicate data are included in the Group data, but specific company data are not provided.*
12. *Chubb Tempest Reinsurance Ltd.: Chubb's reinsurance operations, comprising Chubb Tempest Re Bermuda, Chubb Tempest Re USA, Chubb Tempest Re International, and Chubb Tempest Re Canada.*
13. *Allianz SE: Figures represent Allianz SE standalone, not consolidated with other Allianz Group entities. Pretax Operating Income excludes administrative expenses.*

Global Reinsurers By Country

To bring you the 2018 edition of Global Reinsurance Highlights, S&P Global Ratings sought data on around 168 reinsurance organizations from over 36 countries. As in previous years, the data is based on survey responses from reinsurance organizations worldwide.

To ensure consistency, we requested that respondents complied with clear guidelines on the definition of the financial items required. In addition, S&P Global Ratings attempted to verify the veracity of the data submitted with reference to publicly available data sources, insofar as this was possible.

Our ongoing aim in producing this data is to provide market participants with an indication of the ongoing reinsurance capacity available in each market. Hence, we try to exclude intragroup reinsurances as far as possible. Companies that have not been able to exclude intragroup reinsurance are highlighted in the footnotes on pages 82 and 83.

One of the challenges has been to separate reinsurance from primary insurance business, especially when reinsurance operation is a division within a company and not a distinct operation. Generally speaking, the premium data relates to a company's reinsurance premiums written but, in some cases, other metrics will include both primary and reinsurance business. These cases can be identified through the footnotes to the tables, although if we do not consider that the metrics provided by the company are representative of the company's reinsurance operations, we have marked the metric as not applicable (NA).

For companies that report in currencies other than the U.S. dollar, we have converted the reported data at year-end exchange rates.

We have endeavored to collect the data underlying each group or entity's combined ratio in order to calculate this

				Net Reinsurance Premiums Written (Mil. $)		
Rating as of 02 August, 2018	Outlook	Company	Footnotes	2017	2016	Change %
Australia						
AA-	Stable	Munich Reinsurance Co. of Australasia Ltd.		518.4	384.3	34.9
AA-	Stable	Hannover Life Re of Australasia Ltd.		317.3	351.2	-9.7
AA+	Negative	General Reinsurance Life Australia Ltd.		207.9	188.9	10.0
AA-	Stable	SCOR Global Life Australia		93.9	58.2	61.4
AA+	Negative	General Reinsurance Australia Ltd.		53.3	45.3	17.7
AA-	Stable	Swiss Re Life & Health Australia Ltd.		-360.7	792.0	-145.5
		Total:		**829.9**	**1,819.9**	**-54.4**
Bahrain						
A+	Stable	Hannover Re Takaful		164.1	151.7	8.2
		Total:		**164.1**	**151.7**	**8.2**

metric in a comparable manner. The combined ratios presented in our Global Reinsurance Highlights report have been calculated as: (net losses incurred + net underwriting expenses)/net premiums earned. The combined (loss and expense) ratio of any entity that writes purely life reinsurance has been marked as not meaningful (NM), as we do not consider this to be an accurate measure of a life reinsurer's profitability. For these groups or entities writing both non-life and life reinsurance business, the combined ratio reflects non-life business only.

The main group and country listing for each entity surveyed is representative of that group or company's total reinsurance business written, whether it be life, non-life, or a combination of both. ■

Claire Latchford
London, (+44) 20-7176-7078
claire.latchford@spglobal.com

Antun Zvonar
New York, (1) 212-438-7338
antun.zvonar@spglobal.com

Ruchika Agrawal
Mumbai, (91) 22-3342-4056
ruchika.agrawal@spglobal.com

Simon Virmaux
Paris, (33) 1-4075-2519
simon.virmaux@spglobal.com

David Masters
London, (44) 020-7176 7047
david.master@spglobal.com

Pretax Operating Income (Mil. $)		*Combined Ratio (%)*		*Total Adjusted Shareholders' Funds (Mil. $)*			*Return on Revenue (%)*	
2017	2016	2017	2016	2017	2016	Change %	2017	2016
-31.7	102.0	NM	NM	1,020.6	817.5	24.9	-5.3	22.6
16.0	29.1	NM	NM	387.6	346.0	12.0	4.2	7.1
23.3	23.6	NM	NM	131.7	106.9	23.2	4.0	11.6
5.3	6.1	NM	NM	113.0	101.0	11.8	5.2	8.8
20.6	16.8	72.4	92.2	319.8	281.5	13.6	38.6	28.6
233.0	158.9	NM	NM	1,251.5	971.8	28.8	-73.1	18.6
266.6	**336.6**	**72.4**	**92.2**	**3,224.2**	**2,624.7**	**22.8**	**19.1**	**16.5**
19.6	10.8	95.4	91.5	169.9	174.6	-2.7	10.3	6.7
19.6	**10.8**	**95.4**	**91.5**	**169.9**	**174.6**	**-2.7**	**10.3**	**6.7**

Global Reinsurers By Country

Rating as of 02 August, 2018	Outlook	Company	Footnotes	Net Reinsurance Premiums Written (Mil. $) 2017	2016	Change %
Bermuda						
A+	Stable	Everest Reinsurance (Bermuda) Ltd.		3,092.2	2,865.5	7.9
A+	Stable	Partner Reinsurance Company Ltd.		2,919.7	2,386.2	22.4
A+	Stable	Equator Re (Bermuda)	1	2,144.0	2,421.0	-11.4
A-	Stable	Sompo International Holdings Ltd.		1,380.3	1,313.7	5.1
A+	Stable	Renaissance Reinsurance Ltd.		1,139.3	1,022.5	11.4
A	Stable	Validus Reinsurance Ltd. (Bermuda)	2	985.9	999.5	-1.4
A+	Stable	Arch Reinsurance Ltd.		919.2	792.0	16.1
AA	Stable	Chubb Tempest Reinsurance Ltd.		685.0	675.6	1.4
A+	Stable	XL Bermuda Ltd		503.3	511.4	-1.6
AA-	Stable	Hannover Re Bermuda Ltd.		389.6	358.2	8.8
A+	Stable	DaVinci Reinsurance Ltd.		281.5	230.4	22.2
A	Stable	Markel Bermuda Limited		217.3	167.8	29.5
AA	Stable	Chubb Tempest Life Reinsurance, Ltd.		195.3	231.5	-15.6
A-	Stable	International General Insurance Co. Ltd.		168.8	148.7	13.6
A	Negative	Aspen Bermuda Ltd.		159.6	159.4	0.1
A-	Stable	Lancashire Insurance Co. Ltd.	3	87.4	77.5	12.8
A	Stable	Hiscox Insurance Co. (Bermuda) Ltd.		72.4	81.4	-11.1
A+	Negative	AXIS Specialty Limited	4	56.3	238.1	-76.3
AA	Stable	Top Layer Reinsurance Ltd.		22.5	21.9	2.7
A	Stable	Catlin Insurance Co. Ltd.		-3.9	10.2	-137.8
		Total:		**15,415.8**	**14,712.4**	**4.8**
Bosnia-Herzegovina						
NR	-	Bosna Re		14.8	13.8	6.5
		Total:		**14.8**	**13.8**	**6.5**
Brazil						
NR	-	IRB-Brasil Resseguros S.A.		1,223.0	1,088.7	12.3
brAAA	Stable	Austral Resseguradora S.A.		122.1	90.5	34.9
brAA+	Stable	Terra Brasis Resseguros		23.3	15.7	48.1
NR	-	Markel Resseguradora do Brasil		11.4	18.6	-38.6
		Total:		**1,379.8**	**1,213.6**	**13.7**
Canada						
AA-	Stable	Munich Reinsurance Co. of Canada		175.6	152.4	15.2
AA-	Stable	SCOR Canada Reinsurance Co.		129.2	113.6	13.7
A+	Stable	Temple Insurance Company	5	100.3	113.5	-11.6
		Total:		**405.0**	**379.5**	**6.7**
China						
A	Stable	China Reinsurance (Group) Corp		9,970.3	7,513.8	32.7
		Total:		**9,970.3**	**7,513.8**	**32.7**

Pretax Operating Income (Mil. $)		*Combined Ratio (%)*		*Total Adjusted Shareholders' Funds (Mil. $)*			*Return on Revenue (%)*	
2017	2016	2017	2016	2017	2016	Change %	2017	2016
563.8	663.9	89.2	82.9	3,079.5	2,946.2	4.5	15.0	21.4
-81.4	390.7	107.6	88.1	3,319.6	3,830.4	-13.3	-2.7	14.6
-441.0	197.0	121.8	98.7	936.0	1,472.0	-36.4	-19.3	8.7
NA	337.6	NA	77.9	7,036.3	4,882.4	44.1	NA	22.4
NA	NA	134.4	69.6	2,000.0	2,000.0	0.0	NA	NA
177.7	417.9	96.1	71.6	3,495.1	3,688.3	-5.2	15.3	38.2
189.0	518.6	101.8	77.9	4,677.3	4,350.3	7.5	17.0	51.1
179.6	404.0	111.2	79.5	NA	NA	NA	18.4	41.4
NA	NA	112.4	58.1	NA	NA	NA	NA	NA
125.2	200.3	81.8	56.6	1,210.7	1,245.9	-2.8	28.9	49.2
NA	NA	169.9	47.1	1,447.7	1,457.2	-0.6	NA	NA
-68.7	89.2	136.0	46.7	NA	NA	NA	-36.0	53.3
42.7	96.1	NM	NM	NA	NA	NA	16.6	34.1
-1.9	22.9	101.2	85.4	316.1	312.4	1.2	-1.1	13.7
-122.1	79.0	175.3	49.1	1,857.8	2,296.2	-19.1	-43.3	27.2
-56.9	164.8	167.2	16.3	931.3	1,008.7	-7.7	-24.3	49.8
9.2	54.0	88.3	33.9	864.8	834.1	3.7	8.5	58.3
NA	NA	282.4	63.7	3,762.4	4,217.9	-10.8	NA	NA
NA	NA	NA	134.3	100.4	120.7	-16.8	NA	NA
NA	NA	61.8	35.8	NA	NA	NA	NA	NA
515.1	**3,636.0**	**109.2**	**79.5**	**35,035.0**	**34,662.6**	**1.1**	**3.7**	**25.3**
8.4	1.2	90.2	86.8	23.7	15.7	50.9	35.8	8.8
8.4	**1.2**	**90.2**	**86.8**	**23.7**	**15.7**	**50.9**	**35.8**	**8.8**
399.6	402.5	81.5	81.9	1,081.2	1,023.1	5.7	28.2	28.9
10.8	13.8	98.5	115.3	85.1	86.9	-2.0	8.7	14.0
-3.6	-2.6	NA	NA	31.4	31.3	0.2	-12.2	-12.3
-2.8	-4.7	119.5	134.9	NA	NA	NA	-19.5	-34.9
404.0	**409.0**	**83.4**	**85.0**	**1,197.7**	**1,141.3**	**4.9**	**25.5**	**26.8**
54.8	45.7	76.6	85.4	226.7	209.7	8.1	29.8	21.3
14.8	22.2	93.8	86.5	113.3	115.8	-2.1	11.4	18.8
4.9	5.1	103.9	103.6	147.1	143.9	2.2	4.1	4.8
74.6	**72.9**	**89.4**	**90.1**	**487.1**	**469.4**	**3.8**	**17.2**	**16.7**
696.8	522.3	103.9	101.9	11,573.9	10,379.5	11.5	6.1	6.0
696.8	**522.3**	**103.9**	**101.9**	**11,573.9**	**10,379.5**	**11.5**	**6.1**	**6.0**

Global Reinsurers By Country

Rating as of 02 August, 2018	Outlook	Company	Footnotes	Net Reinsurance Premiums Written (Mil. $) 2017	2016	Change %
Czech Republic						
A+	Stable	VIG Re		308.7	237.8	29.8
		Total:		**308.7**	**237.8**	**29.8**
France						
AA-	Stable	SCOR Global Life SE		2,835.6	2,369.1	19.7
AA-	Stable	SCOR SE		2,141.7	1,641.1	30.5
AA-	Stable	SCOR Global P&C SE		1,467.0	1,269.8	15.5
AA	Stable	Caisse Centrale de Réassurance	6	963.9	902.0	6.9
A-	Stable	CCR RE	6	452.6	445.6	1.6
		Total:		**7,860.8**	**6,627.5**	**18.6**
Germany						
AA-	Stable	Munich Reinsurance Co.		24,489.0	22,223.5	10.2
AA-	Stable	Hannover Rück SE		12,507.9	9,074.0	37.8
AA-	Stable	R+V Versicherung AG	7	3,017.4	2,301.7	31.1
AA+	Negative	General Reinsurance AG		2,973.2	2,614.0	13.7
AA-	Stable	E+S Rueckversicherung AG		2,264.3	1,988.4	13.9
AA	Stable	Allianz SE	8	788.8	550.2	43.4
A+	Stable	Deutsche Rueckversicherung AG		564.0	493.7	14.2
A+	Stable	DEVK		448.6	335.6	33.7
		Total:		**47,053.3**	**39,581.1**	**18.9**
Hong Kong						
A	Stable	Taiping Reinsurance Co. Ltd.	9	1,501.4	1,259.4	19.2
NR	-	Peak Reinsurance Co. Ltd		845.0	620.5	36.2
AA-	Stable	SCOR Reinsurance Company (Asia) Limited		118.7	94.7	25.4
		Total:		**2,465.1**	**1,974.5**	**24.8**
India						
NR	-	General Insurance Corporation of India		5,796.3	4,674.7	24.0
		Total:		**5,796.3**	**4,674.7**	**24.0**
Iran						
NR	-	Iranian Reinsurance Company		18.2	16.0	13.7
		Total:		**18.2**	**16.0**	**13.7**
Ireland						
AA-	Stable	SCOR Global Life Reinsurance Ireland Ltd.		4,388.1	4,075.6	7.7
AA-	Stable	Hannover Reinsurance (Ireland) DAC	10	2,878.1	3,303.8	-12.9
A+	Stable	Partner Reinsurance Europe SE		1,926.2	1,061.7	81.4
A+	Negative	AXIS Re SE		839.8	923.7	-9.1
A+	Stable	XL Re Europe SE		600.5	611.7	-1.8
NR	-	Atradius Reinsurance DAC.		507.4	452.3	12.2
A+	Stable	Arch Re Europe		64.5	47.0	37.2
		Total:		**11,204.5**	**10,475.7**	**7.0**
Japan						
A+	Positive	Tokio Marine & Nichido Fire Insurance Co. Ltd.		2,728.8	2,684.9	1.6
A+	Stable	Sompo Japan Nipponkoa Ins Inc (Prev Sompo Japan)		2,356.3	2,796.0	-15.7
A+	Stable	Aioi Nissay Dowa Insurance Co. Ltd.		2,038.2	1,846.0	10.4
A+	Stable	Mitsui Sumitomo Insurance Co. Ltd.		1,793.9	1,716.0	4.5
A+	Stable	Toa Reinsurance Co.		1,746.0	1,570.7	11.2
		Total:		**10,663.2**	**10,613.5**	**0.5**
Kazakhstan						
BB+	Positive	Eurasia Insurance Co.		67.3	56.9	18.2
		Total:		**67.3**	**56.9**	**18.2**

Pretax Operating Income (Mil. $)		Combined Ratio (%)		Total Adjusted Shareholders' Funds (Mil. $)			Return on Revenue (%)	
2017	2016	2017	2016	2017	2016	Change %	2017	2016
12.0	11.8	93.1	91.4	204.2	146.3	39.5	3.7	4.7
12.0	**11.8**	**93.1**	**91.4**	**204.2**	**146.3**	**39.5**	**3.7**	**4.7**
96.0	135.7	95.0	98.4	990.4	731.1	35.5	3.2	5.3
-61.2	692.2	116.3	107.4	4,128.5	3,932.4	5.0	-2.8	29.7
162.1	395.6	105.0	95.3	2,721.5	2,226.0	22.3	9.6	24.0
-1,104.1	74.4	227.2	103.5	5,740.0	6,122.1	-6.2	-104.2	7.7
4.6	13.5	105.4	107.2	780.3	643.7	21.2	1.0	2.9
-902.5	**1,311.3**	**119.4**	**101.2**	**14,360.8**	**13,655.3**	**5.2**	**-10.7**	**16.4**
182.5	3,520.0	113.7	96.9	35,336.7	34,685.5	1.9	0.6	14.1
693.3	1,166.9	100.2	102.7	9,596.9	10,435.2	-8.0	5.2	11.4
246.9	251.0	106.1	100.1	7,508.5	6,517.1	15.2	7.2	9.7
404.8	340.9	94.6	99.8	5,183.6	4,099.5	26.4	13.1	12.1
279.8	197.3	95.8	102.9	2,715.9	2,428.4	11.8	11.4	9.1
72.7	129.9	92.6	78.9	NA	NA	NA	9.9	22.5
63.5	46.3	91.1	92.5	793.9	642.2	23.6	11.2	9.2
114.2	118.7	96.7	91.5	1,403.5	1,198.3	17.1	17.6	23.8
2,057.7	**5,771.0**	**106.8**	**98.6**	**62,539.0**	**60,006.2**	**4.2**	**3.9**	**13.0**
11.0	36.8	96.4	92.9	1,049.8	885.9	18.5	0.8	3.2
35.3	5.7	107.7	97.4	911.6	841.1	8.4	3.9	1.0
18.9	-24.8	73.8	115.7	247.3	217.3	13.8	15.7	-28.1
65.2	**17.7**	**99.4**	**95.5**	**2,208.7**	**1,944.3**	**13.6**	**2.8**	**1.0**
557.7	581.7	103.8	101.1	3,711.4	3,113.8	19.2	8.3	12.0
557.7	**581.7**	**103.8**	**101.1**	**3,711.4**	**3,113.8**	**19.2**	**8.3**	**12.0**
17.4	15.9	96.7	83.8	97.1	81.9	18.6	51.9	55.3
17.4	**15.9**	**96.7**	**83.8**	**97.1**	**81.9**	**18.6**	**51.9**	**55.3**
463.8	152.7	NM	NM	911.2	579.6	57.2	10.4	3.7
-320.9	73.0	99.5	100.8	1,479.9	1,714.0	-13.7	-10.0	2.1
81.4	219.7	71.2	76.4	2,603.3	1,991.8	30.7	6.9	18.4
NA	NA	96.5	90.6	736.0	670.4	9.8	NA	NA
NA	NA	84.3	69.3	NA	NA	NA	NA	NA
53.9	7.8	89.3	98.5	842.7	692.8	21.6	10.5	1.8
NA	NA	73.6	75.1	NA	NA	NA	NA	NA
278.1	**453.1**	**91.5**	**91.9**	**6,573.1**	**5,648.6**	**16.4**	**3.0**	**4.9**
3,065.9	2,804.7	NA	NA	28,561.5	25,080.3	13.9	NA	NA
NA	NA	NA	NA	19,040.9	17,143.6	11.1	NA	NA
NA	593.7	NA	NA	10,587.4	10,268.4	3.1	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA
125.8	255.7	95.0	92.6	2,400.8	2,201.2	9.1	7.0	15.4
3,191.7	**3,654.1**	**95.0**	**92.6**	**60,590.5**	**54,693.5**	**10.8**	**7.0**	**15.4**
-15.9	19.2	126.6	63.0	328.3	336.7	-2.5	-16.5	25.2
-15.9	**19.2**	**126.6**	**63.0**	**328.3**	**336.7**	**-2.5**	**-16.5**	**25.2**

Rating as of 02 August, 2018	Outlook	Company	Footnotes	Net Reinsurance Premiums Written (Mil. $) 2017	2016	Change %
Kenya						
NR	-	ZEP-RE (PTA Reinsurance Company)		112.2	103.4	8.5
		Total:		**112.2**	**103.4**	**8.5**
Kuwait						
NR	-	Kuwait Reinsurance Co. K.S.C.P		114.2	83.7	36.4
		Total:		**114.2**	**83.7**	**36.4**
Luxembourg						
AA-	Stable	Swiss Re Europe S.A.		7,385.3	5,704.3	29.5
		Total:		**7,385.3**	**5,704.3**	**29.5**
Nigeria						
A-	Stable	African Reinsurance Corp.		425.9	402.4	5.8
		Total:		**425.9**	**402.4**	**5.8**
Poland						
NR	-	Polskie Towarzystwo Reasekuracji S.A.		60.6	57.0	6.3
		Total:		**60.6**	**57.0**	**6.3**
Qatar						
A	Stable	Qatar Reinsurance Co. Ltd		712.6	363.6	96.0
		Total:		**712.6**	**363.6**	**96.0**
Russia						
NR	-	Russian National Reinsurance Company		133.6	NA	NA
BB+	Positive	Ingosstrakh Insurance Co.		53.2	36.5	45.5
NR	-	Russian Re Co. Ltd.		12.8	10.0	28.4
		Total:		**199.6**	**46.5**	**329.1**
Saudi Arabia						
NR	-	Saudi Re for Cooperative Reinsurance Co.		169.8	250.0	-32.1
		Total:		**169.8**	**250.0**	**-32.1**
Sierra Leone						
NR	-	WAICA Re		58.5	45.5	28.3
		Total:		**58.5**	**45.5**	**28.3**
Singapore						
A-	Stable	Asia Capital Reinsurance Group Pte Ltd		446.0	296.0	50.7
AA-	Stable	SCOR Reinsurance Asia-Pacific		399.9	431.7	-7.4
		Total:		**845.9**	**727.7**	**16.2**
Slovenia						
A	Stable	Pozavarovalnica Sava, d.d.	11	111.1	93.2	19.1
A	Stable	Triglav Re		89.2	73.1	22.1
		Total:		**200.3**	**166.3**	**20.4**
South Africa						
A-	Stable	Munich Reinsurance Co. of Africa Ltd.		319.0	252.8	26.2
NR	-	Swiss Re Life & Health Africa Ltd.		203.2	180.1	12.8
A-	Stable	General Reinsurance Africa Ltd.		184.2	166.3	10.8
A-	Stable	Hannover Life Reassurance Africa Ltd.		152.6	138.9	9.9
A-	Stable	African Re Corp. (South Africa) Ltd.		60.9	48.3	26.0
A-	Stable	Hannover Reinsurance Africa Ltd.	12	58.3	30.6	90.6
A-	Stable	SCOR Africa Ltd		49.7	25.3	96.7
BB+	Stable	GIC Re South Africa Ltd		31.5	7.1	341.9
		Total:		**1,059.4**	**849.4**	**24.7**

Pretax Operating Income (Mil. $)		*Combined Ratio (%)*		*Total Adjusted Shareholders' Funds (Mil. $)*			*Return on Revenue (%)*	
2017	2016	2017	2016	2017	2016	Change %	2017	2016
12.4	12.0	92.8	92.9	227.5	199.9	13.8	10.3	9.7
12.4	**12.0**	**92.8**	**92.9**	**227.5**	**199.9**	**13.8**	**10.3**	**9.7**
11.1	6.9	95.1	93.1	151.5	139.8	8.4	10.6	6.5
11.1	**6.9**	**95.1**	**93.1**	**151.5**	**139.8**	**8.4**	**10.6**	**6.5**
358.3	1,178.6	94.8	69.2	1,272.1	1,552.2	-18.0	11.7	46.4
358.3	**1,178.6**	**94.8**	**69.2**	**1,272.1**	**1,552.2**	**-18.0**	**11.7**	**46.4**
85.9	98.1	79.6	84.2	840.2	761.4	10.3	18.9	21.8
85.9	**98.1**	**79.6**	**84.2**	**840.2**	**761.4**	**10.3**	**18.9**	**21.8**
4.0	-1.1	91.8	103.0	74.7	62.1	20.4	6.3	-1.9
4.0	**-1.1**	**91.8**	**103.0**	**74.7**	**62.1**	**20.4**	**6.3**	**-1.9**
-66.8	54.0	122.0	98.5	1,148.7	771.8	48.8	-11.1	14.1
-66.8	**54.0**	**122.0**	**98.5**	**1,148.7**	**771.8**	**48.8**	**-11.1**	**14.1**
-36.1	NA	152.5	NA	381.7	NA	NA	-34.5	NA
31.0	30.9	40.3	34.3	1,075.1	833.1	29.1	54.6	58.9
1.2	1.9	88.6	79.6	13.1	10.9	19.7	10.1	20.6
-3.8	**32.8**	**102.7**	**42.0**	**1,469.9**	**844.0**	**74.2**	**-2.2**	**53.3**
10.4	4.9	91.9	93.0	221.0	214.6	3.0	6.0	1.6
10.4	**4.9**	**91.9**	**93.0**	**221.0**	**214.6**	**3.0**	**6.0**	**1.6**
5.1	7.8	85.1	81.6	84.1	62.9	33.7	9.1	18.4
5.1	**7.8**	**85.1**	**81.6**	**84.1**	**62.9**	**33.7**	**9.1**	**18.4**
39.3	5.3	107.1	115.4	811.4	665.7	21.9	8.3	1.4
10.8	-15.2	100.9	112.8	145.5	129.1	12.7	2.3	-4.0
50.2	**-9.9**	**103.7**	**114.0**	**956.9**	**794.8**	**20.4**	**5.3**	**-1.3**
41.7	36.8	91.5	94.6	349.3	284.4	22.8	22.3	21.7
5.4	2.8	93.8	96.7	99.3	86.3	15.1	6.1	3.6
47.2	**39.6**	**92.3**	**95.3**	**448.6**	**370.7**	**21.0**	**17.0**	**16.1**
-1.0	7.7	115.9	84.1	232.5	212.7	9.3	-0.2	2.1
-2.7	0.6	115.4	112.0	48.9	40.5	20.8	-1.2	0.3
13.7	17.6	349.8	NA	123.8	105.4	17.5	6.4	9.1
4.3	3.6	NM	NM	43.2	40.6	6.3	2.6	2.4
1.5	8.2	122.7	105.5	61.9	54.0	14.5	1.9	14.0
2.3	4.9	93.9	90.5	61.8	53.2	16.1	3.6	10.5
-10.1	-3.0	130.0	116.5	20.5	13.9	47.5	-21.2	-10.2
-6.4	-2.0	127.5	115.9	NA	14.6	NA	-29.7	-29.5
1.6	**37.6**	**164.5**	**97.3**	**592.6**	**534.9**	**10.8**	**0.1**	**3.6**

Rating as of 02 August, 2018	Outlook	Company	Footnotes	Net Reinsurance Premiums Written (Mil. $) 2017	2016	Change %
South Korea						
A	Stable	Korean Reinsurance Co.		4,687.0	3,874.5	21.0
		Total:		**4,687.0**	**3,874.5**	**21.0**
Spain						
A	Positive	Mapfre Re, Compania de Reaseguros, S.A.		3,310.4	2,864.2	15.6
A	Stable	Nacional de Reaseguros S.A.		532.6	398.7	33.6
		Total:		**3,843.0**	**3,262.9**	**17.8**
Switzerland						
AA-	Stable	Swiss Reinsurance Co. Ltd.		11,875.1	13,162.0	-9.8
AA-	Stable	New Reinsurance Co.		4,436.6	3,866.8	14.7
AA-	Stable	SCOR Switzerland AG		1,653.6	1,478.5	11.8
A+	Stable	Catlin Re Switzerland Ltd.	13	1,466.8	895.8	63.8
A+	Positive	Tokio Millennium Re AG		1,301.6	1,317.9	-1.2
A-	Positive	Allied World Assurance Co Ltd		679.2	664.9	2.1
A+	Stable	Deutsche Rueckversicherung Schweiz AG		273.0	267.2	2.2
NR	-	SIGNAL IDUNA Reinsurance Ltd.		162.9	128.8	26.5
A-	Stable	Echo Rueckversicherungs-AG	14	114.4	NA	NA
A+	Stable	TransRe Zurich		89.9	103.7	-13.3
A+	Stable	The Toa 21st Century Reinsurance Company (TTFC)		45.2	46.5	-2.7
AA-	Stable	Swiss Re Asia Ltd (SRAL)	15	-2.8	-17.2	-83.8
		Total:		**22,095.5**	**21,914.9**	**0.8**
Taiwan						
A	Stable	Central Reinsurance Corp.		460.3	405.6	13.5
		Total:		**460.3**	**405.6**	**13.5**
Turkey						
trAA	-	Milli Reasurans T.A.S.		251.2	235.9	6.5
		Total:		**251.2**	**235.9**	**6.5**
United Kingdom						
A+	Negative	Lloyd's	16	10,746.5	8,958.8	20.0
A	Stable	MS Amlin		1,594.8	1,464.9	8.9
A	Negative	Aspen Insurance U.K. Ltd.		1,043.7	929.3	12.3
A+	Stable	QBE Re (Europe) Ltd.		447.4	377.4	18.6
NR	-	Brit Limited		291.0	289.5	0.5
A+	Stable	TransRe London Ltd	17	220.8	216.0	2.2
AA-	Stable	SCOR U.K. Co. Ltd.		137.1	109.8	24.8
A+	Stable	QBE Insurance (Europe) Ltd.		130.0	161.1	-19.3
A	Stable	Markel International Insurance Company Limited		65.6	56.7	15.7
NR	-	Cathedral Capital Holdings Limited		50.6	56.7	-10.8
NR	-	Korean Re Underwriting Limited		18.9	16.8	12.6
		Total:		**14,746.3**	**12,637.0**	**16.7**

Pretax Operating Income (Mil. $)		Combined Ratio (%)		Total Adjusted Shareholders' Funds (Mil. $)			Return on Revenue (%)	
2017	2016	2017	2016	2017	2016	Change %	2017	2016
182.6	174.0	96.5	99.5	2,030.8	1,751.8	15.9	3.9	4.3
182.6	**174.0**	**96.5**	**99.5**	**2,030.8**	**1,751.8**	**15.9**	**3.9**	**4.3**
255.8	261.5	94.2	94.0	1,370.3	1,281.1	7.0	6.9	8.9
33.9	23.3	96.1	90.4	466.2	363.7	28.2	5.8	5.5
289.7	**284.9**	**94.5**	**93.6**	**1,836.4**	**1,644.8**	**11.7**	**6.7**	**8.5**
1,924.9	629.3	109.4	98.3	13,504.3	14,903.1	-9.4	14.0	4.9
67.1	32.6	100.7	94.4	1,320.9	1,248.4	5.8	1.5	0.8
-17.9	140.8	98.9	91.7	1,537.0	1,418.6	8.3	-1.1	9.8
NA	NA	101.3	99.2	NA	NA	NA	NA	NA
-217.7	47.5	116.2	95.8	1,190.6	1,320.8	-9.9	-15.5	3.9
-131.7	189.7	129.4	82.3	NA	NA	NA	-18.5	24.8
-12.8	3.4	107.8	115.9	215.3	188.2	14.4	-4.5	1.2
9.0	7.9	97.9	98.2	228.2	203.6	12.1	5.1	5.6
-5.8	NA	101.2	NA	97.4	NA	NA	-5.0	NA
-3.3	-2.8	104.7	103.9	271.0	258.9	4.7	-3.2	-2.3
22.2	22.1	55.4	70.2	398.2	358.2	11.2	46.7	39.8
-19.5	-27.2	152.0	67.9	1,420.8	NA	NA	-5.5	-27.9
1,614.5	**1,043.2**	**107.2**	**96.7**	**20,183.7**	**19,899.8**	**1.4**	**7.0**	**5.0**
49.5	29.3	91.2	96.7	519.1	412.4	25.9	10.5	7.0
49.5	**29.3**	**91.2**	**96.7**	**519.1**	**412.4**	**25.9**	**10.5**	**7.0**
16.6	24.1	113.6	113.0	484.0	403.1	20.1	6.6	9.3
16.6	**24.1**	**113.6**	**113.0**	**484.0**	**403.1**	**20.1**	**6.6**	**9.3**
-1,798.3	677.2	117.2	92.3	36,191.7	34,246.2	5.7	NA	7.4
-523.0	44.4	133.9	NA	NA	NA	NA	-29.7	3.2
-163.9	41.1	116.4	95.3	888.5	958.8	-7.3	-15.6	4.4
47.9	39.9	52.0	88.3	828.2	700.7	18.2	11.9	10.8
49.6	85.9	86.9	73.6	NA	NA	NA	16.1	29.0
-5.6	13.8	111.3	94.5	519.1	522.6	-0.7	-2.3	6.0
-16.3	21.0	115.3	92.4	176.5	193.6	-8.8	-11.4	13.8
19.4	3.7	107.2	97.9	1,897.7	1,727.7	9.8	13.7	2.0
-65.6	0.7	212.4	98.8	NA	NA	NA	-112.4	1.2
6.7	16.1	128.4	63.4	45.4	68.2	-33.4	3.2	9.6
-1.8	1.2	105.4	97.8	16.8	12.1	39.5	-10.2	7.7
-2,450.9	**945.0**	**116.9**	**92.0**	**40,563.9**	**38,429.8**	**5.6**	**-15.1**	**7.3**

Rating as of 02 August, 2018	Outlook	Company	Footnotes	Net Reinsurance Premiums Written (Mil. $) 2017	2016	Change %
United States						
AA+	Negative	National Indemnity Co.		21,432.0	19,349.0	10.8
AA-	Stable	Swiss Reinsurance America Corp.		4,594.5	4,283.7	7.3
A	Stable	Swiss Re Life & Health America Inc.		4,034.2	5,716.5	-29.4
A+	Stable	Transatlantic Reinsurance Co.		3,479.3	3,574.2	-2.7
AA-	Stable	Munich Reinsurance America, Inc.		2,985.0	1,963.1	52.1
A+	Stable	Everest Reinsurance Co.		1,741.2	2,050.6	-15.1
BBB-	Positive	Odyssey Re Holdings Corp	18	1,411.0	1,198.4	17.7
AA-	Stable	SCOR Reinsurance Co.		1,158.0	1,123.7	3.1
AA+	Negative	General Re Life Corp.		1,093.4	990.4	10.4
A+	Negative	Axis Reinsurance Company		1,005.3	875.3	14.8
A+	Stable	Partner Reinsurance Co. of U.S.		929.3	1,188.2	-21.8
AA-	Stable	Munich American Reassurance Co.		849.3	865.0	-1.8
A+	Stable	XL Reinsurance America Inc.		628.9	643.0	-2.2
A	Stable	Markel Global Reinsurance Company		559.7	522.2	7.2
BBB+	Stable	W. R. Berkley Corporation		544.6	680.3	-19.9
A+	Stable	Toa Reinsurance Co. of America (The)		423.7	397.1	6.7
A+	Stable	Renaissance Reinsurance U.S. Inc.		351.8	249.1	41.2
AA-	Stable	Hannover Life Reassurance Co. of America		232.7	242.3	-4.0
BBB	Stable	The Navigators Group, Inc.		214.2	156.7	36.7
A+	Stable	Arch Reinsurance Co.		190.8	214.9	-11.2
AA-	Stable	SCOR Global Life USA Reinsurance Company		133.8	167.3	-20.0
A+	Stable	SCOR Global Life Americas		130.5	114.0	14.5
AA-	Stable	SCOR GLOBAL LIFE Reinsurance Company of Delaware		75.9	79.4	-4.4
AA+	Negative	Berkshire Hathaway Life Insurance Co. of NE		-604.0	1,696.0	-135.6
		Total:		**47,595.1**	**48,340.3**	**-1.5**
Vietnam						
NR	-	PVI Reinsurance Company		16.9	15.7	7.8
		Total:		**16.9**	**15.7**	**7.8**
		GRAND TOTAL:		**218,656.4**	**199,549.0**	**9.6**

NA = Not available
Note: exchange rates may slightly differ from previous years' GRH data due to alignment of foreign exchange rates with other S&P Global surveys.

1. *Equator Re (Bermuda): Equator Re (Bermuda) is a subsidiary of QBE*
2. *Validus Reinsurance Ltd. (Bermuda): Figures based on a segmental basis for Validus Re which includes both Validus Re and Validus Re Swiss.*
3. *Lancashire Insurance Co. Ltd.: Lancashire's group figures. Net reinsurance premium written and combined ratio relate to reinsurance business only; all other items include primary and reinsurance business.*
4. *AXIS Specialty Limited: Adjusted shareholders' funds represent the group as a whole, including its primary and reinsurance operations.*
5. *Temple Insurance Company: Temple Insurance Company is a subsidiary of Munich Reinsurance Co.*
6. *Caisse Centrale de Reassurance & CCR Re: CCR Re is now operating in a separated legal entity.*
7. *R+V Versicherung AG: Figures include intra group reinsurance business.*
8. *Allianz SE: Figures represent Allianz SE standalone, not consolidated with other Allianz Group entities. Pretax Operating Income excludes administrative expenses.*
9. *Taiping Reinsurance Co. Ltd.: Net reinsurance premiums written include universal life business.*
10. *Hannover Reinsurance (Ireland) DAC.: Hannover Reinsurance (Ireland) DAC has changed its legal form from a limited company to a designated activity company in order to comply with revised Irish legislation (Companies Act 2014). Reporting currency changed to USD in 2016.*
11. *Pozavarovalnica Sava, d.d.: All figures include intragroup business except net reinsurance premium written.*
12. *Hannover Reinsurance Africa Ltd.: 2016 figures have been restated.*
13. *Catlin Re Switzerland Ltd: XL RE Latin America Ltd results are part of Catlin Re Switzerland Ltd, following its merger as of 1/1/2017.*
14. *Echo Rueckversicherungs-AG: Prior year data is blank as Echo Re did not participate in the Global Reinsurance Highlights survey last year.*

Pretax Operating Income (Mil. $)		Combined Ratio (%)		Total Adjusted Shareholders' Funds (Mil. $)			Return on Revenue (%)	
2017	2016	2017	2016	2017	2016	Change %	2017	2016
-894.0	736.0	103.7	95.5	127,777.0	100,238.0	27.5	-4.5	3.0
130.7	472.5	107.5	91.9	3,238.0	3,353.0	-3.4	6.1	21.9
51.9	30.0	NM	NM	1,157.4	1,380.9	-16.2	1.8	1.1
20.2	525.8	108.1	95.5	4,992.9	4,908.7	1.7	0.5	13.7
-663.0	161.4	124.7	100.6	4,019.2	4,819.5	-16.6	-17.9	5.0
-577.8	554.3	183.6	89.9	3,391.9	3,635.1	-6.7	-48.1	22.7
117.0	313.6	101.9	85.5	NA	NA	NA	7.9	23.4
-220.9	49.0	124.8	98.3	820.1	1,102.8	-25.6	-20.3	4.7
-570.7	46.7	NM	NM	746.8	644.3	15.9	-46.5	4.1
NA	NA	103.5	97.3	966.8	896.3	7.9	NA	NA
7.2	80.8	107.3	100.1	1,335.7	1,463.8	-8.8	0.7	6.5
-77.5	-100.1	NM	NM	718.5	670.2	7.2	-6.7	-8.8
NA	NA	100.3	91.7	NA	NA	NA	NA	NA
-103.0	-12.3	119.3	102.6	NA	NA	NA	-19.3	-2.6
-15.3	98.3	117.6	100.6	NA	NA	NA	-2.2	12.6
4.1	17.3	107.0	103.5	707.3	651.2	8.6	0.9	4.1
NA	NA	108.2	96.5	660.0	645.2	2.3	NA	NA
55.9	40.5	NM	NM	211.2	131.2	61.0	23.5	14.8
-14.8	21.2	108.6	87.3	1,226.0	1,178.2	4.1	-5.5	8.7
14.4	49.6	99.3	82.6	1,471.5	1,485.2	-0.9	6.7	21.6
-31.8	7.4	NM	NM	277.1	333.0	-16.8	-21.8	4.2
9.4	7.3	NM	NM	208.0	204.1	1.9	6.2	5.5
-2.1	29.3	NM	NM	97.3	101.0	-3.7	-2.5	34.3
126.0	82.0	NM	NM	4,816.0	4,398.0	9.5	-101.6	3.8
-2,634.2	**3,210.6**	**109.3**	**95.4**	**158,838.4**	**132,239.6**	**20.1**	**-6.2**	**6.5**
3.4	3.4	74.5	81.2	33.8	34.0	-0.6	17.1	16.3
3.4	**3.4**	**74.5**	**81.2**	**33.8**	**34.0**	**-0.6**	**17.1**	**16.3**
4,833.4	**24,000.4**	**107.1**	**94.9**	**434,302.2**	**390,218.7**	**11.3**	**1.8**	**10.6**

15. *Swiss Re Asia Ltd (SRAL): Previously named European Reinsurance of Zurich. The Company serves predominantly as a risk carrier for retrocession business within the Business Unit Reinsurance.*
16. *Lloyd's: The figures in the Pretax Operating Income column reflect the underwriting result. Net Premium Written, underwriting result and the combined ratio relate to reinsurance business only; all other items include direct business. The data presented is based on the published pro forma accounts for the Market, which represents an aggregation of all syndicates participating at Lloyd's. As such, some premium included for Lloyd's may also be included by other groups that consolidate their Lloyd's operations. Adjusted Shareholders Funds are members' funds for the Market as a whole.*
17. *TransRe London Ltd: Adjusted Shareholder Funds represents statutory policyholders' surplus.*
18. *Odyssey Reinsurance Co. (US): Results reflect the reinsurance and related investment results of Odyssey Reinsurance Company and Clearwater Select Insurance Company, excluding intercompany transactions. US GAAP basis. Combined figures for Odyssey Reinsurance Company and Clearwater Select Insurance Company.*

Insurer Financial Strength Ratings

A S&P Global Ratings Insurer Financial Strength Rating is a current opinion of the financial security characteristics of an insurance organization with respect to its ability to pay under its insurance policies and contracts in accordance with their terms. Insurer Financial Strength Ratings are also assigned to Health Maintenance Organizations (HMOs) and and similar health plans with respect to their ability to pay under their policies and contracts in accordance with their terms.

This opinion is not specific to any particular policy or contract, nor does it address the suitability of a particular policy or contract for a specific purpose or purchaser. Furthermore, the opinion does not take into account deductibles, surrender or cancellation penalties, timeliness of payment, nor the likelihood of the use of a defense such as fraud to deny claims. For organizations with cross-border or multinational operations, including those conducted by subsidiaries or branch offices, the ratings do not take into account potential that may exist for foreign exchange restrictions to prevent financial obligations from being met.

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Insurer Financial Strength Ratings do not refer to an organization's ability to meet nonpolicy (i.e. debt) obligations. Assignment of ratings to debt issued by insurers or to debt issues that are fully or partially supported by insurance policies, contracts, or guaranties is a separate process from the determination of Insurer Financial Strength Ratings, and follows procedures consistent with issue credit rating definitions and practices. Insurer Financial Strength Ratings are not a recommendation to purchase or discontinue any policy or contract issued by an insurer or to buy, hold, or sell any security issued by an insurer. An Insurer Financial Strength Rating is not a guaranty of an insurer's financial strength or security.

'pi' ratings, denoted with a 'pi' subscript, are Insurer Financial Strength Ratings based on an analysis of an insurer's published financial information and additional information in the public domain. They do not reflect in-depth meetings with an insurer's management and are therefore based on less comprehensive information than ratings without a 'pi' subscript. 'pi' ratings are reviewed annually based on a new year's financial statements, but may be reviewed on an interim basis if a major event that may affect the insurer's financial security occurs. Ratings with a 'pi' subscript are not subject to potential CreditWatch listings.

Ratings with a 'pi' subscript generally are not modified with '+' or '-' designations. However, such designations may be assigned when the insurer's financial strength rating is constrained by sovereign risk or the credit quality of a parent company or affiliated group.

Insurer Financial Enhancement Ratings

A S&P Global Ratings Insurer Financial Enhancement Rating is a current opinion of the creditworthiness of an insurer with respect to insurance policies or other financial obligations that are predominantly used as credit enhancement and/or financial guaranties in S&P Global Ratings rated transactions. When assigning an Insurer Financial Enhancement Rating, S&P Global Ratings analysis focuses on capital, liquidity and company commitment necessary to support a credit enhancement or financial guaranty business. The Insurer Financial Enhancement Rating is not a recommendation to purchase, sell, or hold a financial obligation, inasmuch as it does not comment as to market price or suitability for a particular investor.

Insurer Financial Enhancement Ratings are based on information furnished by the insurers or obtained by S&P Global Ratings from other sources it considers reliable. S&P Global Ratings does not perform an audit in connection with any credit rating and may, on occasion, rely on unaudited financial information. Insurer Financial Enhancement Ratings may be changed, suspended, or withdrawn as a result of changes in, or unavailability of, such information or based on other circumstances. Insurer Financial Enhancement Ratings are based, in varying degrees, on all of the following considerations:

- Likelihood of payment capacity and willingness of the insurer to meet its financial commitment on an obligation in accordance with the terms of the obligation;
- Nature of and provisions of the obligations; and
- Protection afforded by, and relative position of, the obligation in the event of bankruptcy, reorganization, or other arrangement under the laws of bankruptcy and other laws affecting creditors' rights. *(continued overleaf)*

Insurer Financial Strength Ratings

An insurer rated 'BBB' or higher is regarded as having financial security characteristics that outweigh any vulnerabilities, and is highly likely to have the ability to meet financial commitments.

AAA
An insurer rated 'AAA' has EXTREMELY STRONG financial security characteristics. 'AAA' is the highest Insurer Financial Strength Rating assigned by S&P Global Ratings.

AA
An insurer rated 'AA' has VERY STRONG financial security characteristics, differing only slightly from those rated higher.

A
An insurer rated 'A' has STRONG financial security characteristics, but is somewhat more likely to be affected by adverse business conditions than are insurers with higher ratings.

BBB
An insurer rated 'BBB' has GOOD financial security characteristics, but is more likely to be affected by adverse business conditions than are higher rated insurers.

An insurer rated 'BB' or lower is regarded as having vulnerable characteristics that may outweigh its strengths. 'BB' indicates the least degree of vulnerability within the range; 'CC' the highest.

BB
An insurer rated 'BB' has MARGINAL financial security characteristics. Positive attributes exist, but adverse business conditions could lead to insufficient ability to meet financial commitments.

B
An insurer rated 'B' has WEAK financial security characteristics. Adverse business conditions will likely impair its ability to meet financial commitments.

CCC
An insurer rated 'CCC' has VERY WEAK financial security characteristics, and is dependent on favorable business conditions to meet financial commitments.

CC
An insurer rated 'CC' has EXTREMELY WEAK financial security characteristics and is likely not to meet some of its financial commitments.

R
An insurer rated 'R' is under regulatory supervision owing to its financial condition. During the pendency of the regulatory supervision, the regulators may have the power to favor one class of obligations over others or pay some obligations and not others. The rating does not apply to insurers subject only to nonfinancial actions such as market conduct violations.

NR
An insurer designated 'NR' is NOT RATED, which implies no opinion about the insurer's financial security.

Plus (+) or minus (-)
Ratings from 'AA' to 'CCC' may be modified by the addition of a plus or minus sign to show relative standing within the major rating categories.

CreditWatch highlights the potential direction of a rating, focusing on identifiable events and short-term trends that cause ratings to be placed under special surveillance by S&P Global Ratings. The events may include mergers, recapitalizations, voter referenda, regulatory actions, or anticipated operating developments. Ratings appear on CreditWatch when such an event or a deviation from an expected trend occurs and additional information is needed to evaluate the rating. A listing, however, does not mean a rating change is inevitable, and whenever possible, a range of alternative ratings will be shown. CreditWatch is not intended to include all ratings under review, and rating changes may occur without the ratings having first appeared on CreditWatch. The "positive" designation means that a rating may be raised; "negative" means that a rating may be lowered; "developing" means that a rating may be raised, lowered, or affirmed.

National Scale Ratings, denoted with a prefix such as 'mx' (Mexico) or 'ra' (Argentina), assess an insurer's financial security relative to other insurers in its home market.

S&P Global HQ - EMEA
20 Canada Square
Canary Wharf
London E14 5LH
(+44) 20-7176-3800

S&P Global HQ – North America
55 Water Street
New York, NY 10041
(+1) 212-438-1000

S&P Global HQ – Asia Pacific
12 Marina Boulevard
Marina Bay Financial Centre, Tower 3, L23
Singapore 018982
Phone: (+65) 6530-6447

For a complete list of all our office locations, please visit:
https://www.spglobal.com/who-we-are/our-company/contact-us

Intelligent Insurer
Kingfisher House
21-23 Elmfield Road
Bromley
BR11LT
United Kingdom
Email: info@newtonmedia.co.uk

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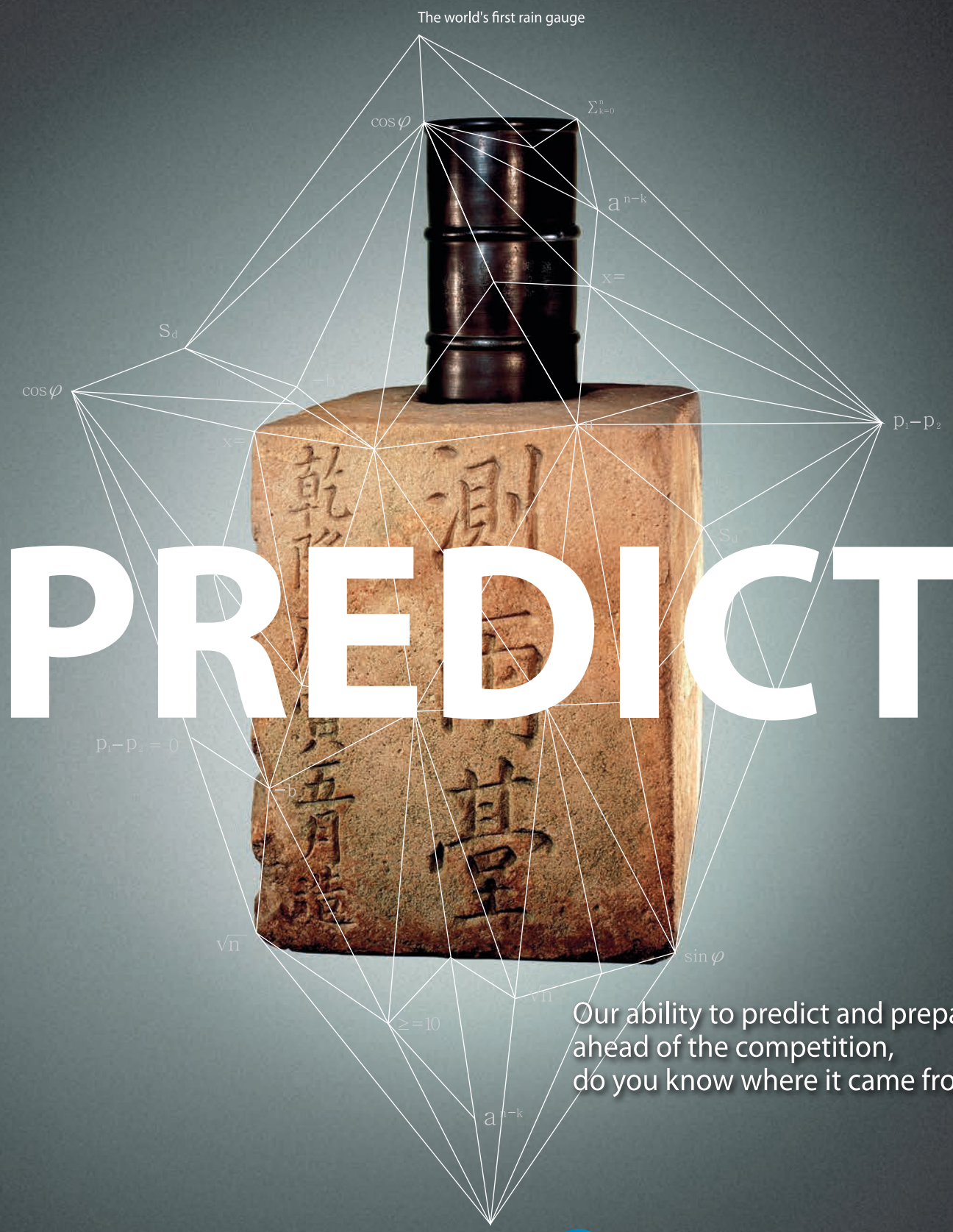

PREDICT

Our ability to predict and prepare
ahead of the competition,
do you know where it came from?

KOREAN RE

Cheugugi, the world's first rain gauge, was invented in Korea, 200years ahead of western civilization and was used to measure and predict heavy rain and make farming preparations. We at Korean Re are always one step ahead in predicting and preparing for the future.

- Rated A by both S&P and A.M. Best