Best's Market Segment Report

Welcome to AM Best's annual commentary on the global reinsurance industry.

In December 2018, we revised our outlook for the global reinsurance segment from Negative to Stable. Key factors that influenced the change included a non-life pricing environment that had stabilized, albeit at levels remaining below long-term adequacy, as well as a better alignment of risk and return through partnerships and retrocessions between third-party capital and traditional reinsurers.

Reinsurers faced a challenging year in 2018—following an even more challenging 2017. Typhoon Jebi, California wildfires, and Hurricanes Florence and Michael caused above-average insured losses even as insurers and reinsurers were hoping for a respite after 2017. The loss creep from Hurricane Irma (a 2017 event) was due partly to unanticipated Assignment of Benefits lawsuits. The issue of loss creep has become a recurring theme in the reinsurance segment, as insurers continue to revise their loss estimates for Typhoon Jebi, which struck Japan in September 2018, as new information trickles in.

This year, Swiss Re regained the top spot from Munich in our listing of the world's 50 largest reinsurers, and we expect the two companies to continue competing for first place.

At a recent panel discussion we held, reinsurance experts agreed that, after the natural disasters in 2017 and 2018, the reinsurance market would be more rational over the near term and that third-party capital investors would maintain their presence in the market owing to differing return expectations and lower interest rates. We examined the impact of reinsurers' cost of capital, as well as the growth in collateralized reinsurance, which has become integral to the insurance-linked securities market.

Mortgage reinsurance appears to be an attractive option for many, as reinsurers look to diversify into profitable areas. The US market is providing more opportunities as Freddie Mac and Fannie Mae have been transferring mortgage risk through programs such as the Agency Credit Insurance Structure (ACIS) and Credit Insurance Risk Transfer (CIRT).

Lloyd's maintains its unique position in the global insurance and reinsurance markets, built on a foundation of flexible underwriting and expertise and is looking for innovation to take it to the next level.

Global reinsurers are finding new growth opportunities in Latin America. Economies that have met or exceeded reinsurance market expectations in Chile, Colombia, and Peru are somewhat offsetting the weaker economies of Brazil, Mexico, and Argentina. In Asia-Pacific, the reinsurance industry continues to evolve, while Hong Kong and Singapore compete with each other for leadership. In the Middle East and North Africa, growing turbulence in recent years has created challenges for some reinsurers and opportunities for others. And in Sub-Saharan Africa, the reinsurance markets, which are small by global standards, offer interesting opportunities for diversification and growth for those taking a longer-term perspective.

We at AM Best are committed to refining our analytical tools and sharing our expertise to address an ever-evolving spectrum of issues facing the (re)insurance industry. In the years ahead, if (re)insurers are to remain relevant, they will need to innovate, not just technologically, but also with regard to products, services, and customer relations.

I hope you find this report valuable to your understanding of AM Best's views on issues that impact the reinsurance industry, as well as our ratings, and welcome your thoughts. Please feel free to reach out to me or any of my colleagues to discuss your thoughts.

Matt C Mosher

Matt Mosher
President & Chief Executive Officer, AM Best

BEST'S MARKET SEGMENT REPORT

August 29, 2019

Global Reinsurance: Fighting the Last War

Global reinsurers have seemingly entered a period of seismic change and nerve-wracking uncertainty following the costly disasters of 2017 and 2018

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Investors often are described as fighting the last war—they overweight recent events when making decisions and project the latest performance indefinitely into the future. Owing to a series of costly disasters in 2017 and 2018, the global reinsurance market seems to have entered a period of seismic change and nerve-wracking uncertainty, after several years of benign loss activity.

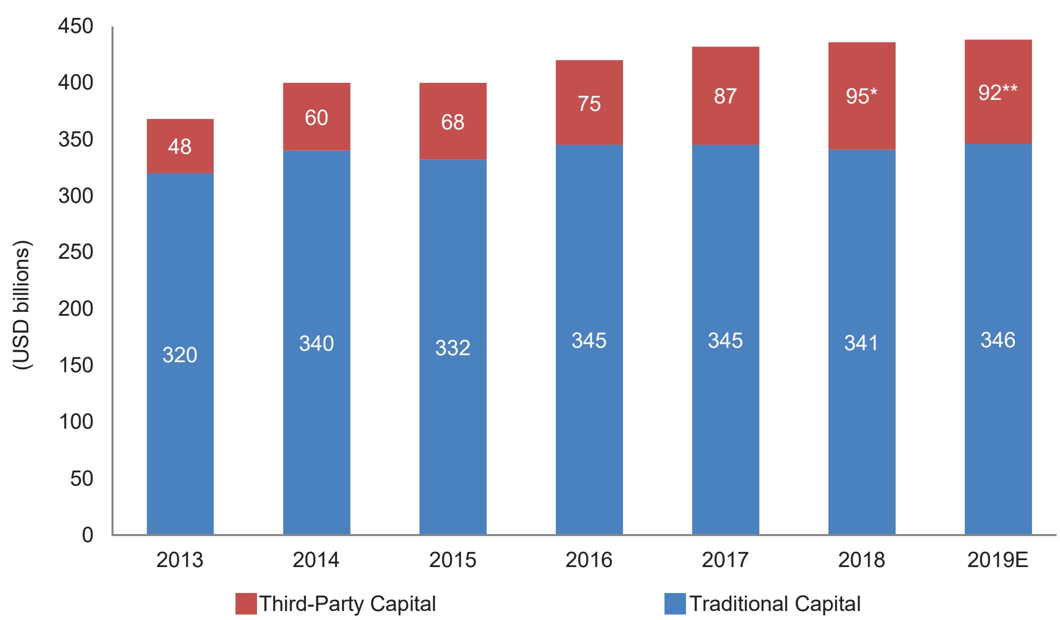
Our natural human tendency is to resist change; it is disruptive. The stock markets similarly hate uncertainty, as do most businesses—including (re)insurance—because it makes long-term planning far more challenging. We insulate ourselves by thinking that the same market scenario will happen again, and that we will be better prepared by repositioning the portfolio. The more likely result is getting caught off-guard again.

Unfortunately, no two market cycles are ever quite the same so the past is never prologue in precise terms. This causes investors to shift their tolerance for risk depending on market conditions. The underwriting cycle is no different; currently, it appears that the days of large catastrophic events triggering a widespread market hardening are gone, replaced by pockets of micro-cycles based on geographic and loss experience.

Third-Party Capital Continues to Grow

Third-party capital (TPC) has been around for well over a decade now, but over the last five years has proliferated more rapidly as investor interest has increased and reinsurance structures have become more varied in form. What is clearly transpiring through this aspect of the market's evolution is that TPC is becoming more closely aligned with traditional reinsurance capital.

Exhibit 1
Global Reinsurance – Estimated Dedicated Reinsurance Capital



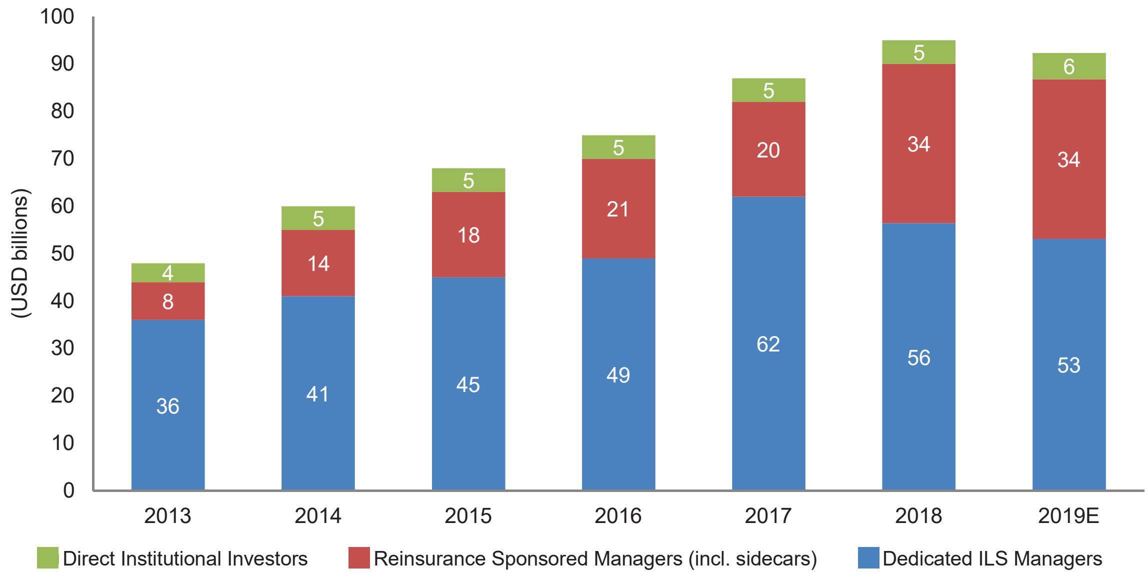
*20-25% of Third-Party Capital trapped in 2018
**15% of Third-Party Capital trapped in 2019
E=AM Best and Guy Carpenter estimate

Source: AM Best data and research, in conjunction with Guy Carpenter

Dedicated reinsurance capital is shown in **Exhibits 1** and **2**. This is the seventh year that AM Best has compiled an estimate of dedicated global reinsurance capacity, working in conjunction with Guy Carpenter. This estimate is not a simple aggregation of the shareholders' equity of all companies that write reinsurance, since some of that capacity is allocated to the insurance business or other outside interests. AM Best and Guy Carpenter have estimated the amount of capital dedicated to writing reinsurance by using AM Best's proprietary capital model, BCAR, and reviewing line-of-business allocations for the majority of the top 50 reinsurance organizations, while giving consideration to reinsurance capacity offered by smaller participants in the market.

Exhibit 2

Global Reinsurance – Estimated Third-Party Capital



E=Forecast by Guy Carpenter and AM Best
Source: AM Best data and research, in conjunction with Guy Carpenter

Innovation Isn't Just Technology

We know for certain that the world will not stay the same. Therefore, (re)insurers must move forward and embrace change or risk extinction. Organizations can choose to do things as they always have and miss out on innovation, or they can welcome transformation and enjoy the benefits of development and growth. If there is a silver lining to all that has transpired in the global reinsurance market over the past ten years, it is one that has only been obtainable by those organizations that have embraced the market's evolution brought about by innovation in the business model. Discussions around innovation naturally center on technology. Although technology is a key component of innovation and makes change possible, it is not the only one. More paramount to the evolution that is transpiring in the reinsurance space has been the sourcing of new, cheaper sources of capital on one end and more inventive ways to source risk on the other. Technology, at times, plays a role in both.

Natural Catastrophes Challenge Reinsurers Two Years in a Row

The natural catastrophes in 2017 and 2018 clearly illustrated the increased participation of third-party capital in these losses, mostly through the use of collateralized retrocession placed by traditional reinsurers. While this form of alternative capacity served to insulate the traditional market from excessive losses, it also delayed an adequate response to obtain higher risk pricing following the 2017 catastrophe losses. The catastrophe events of 2018 may have further exacerbated this fact, but the loss creep, particularly from 2017 Hurricane Irma, showed how the overall market failed to recognize and price for the fundamental changes that had occurred both operationally and structurally in the Florida property market.

The 2018 wildfires in California and Typhoon Jebi in Japan also caught many underwriters and capacity providers by surprise due to a failure to appropriately manage and adequately price for the actual underlying risk. The industry continued to rely on existing inadequate models and underwriting tools that failed to keep pace with the changing dynamics of the true exposure. In all these circumstances, one can point to complacency that built up during previous years of benign loss activity. It proves that models are no substitute for individual risk underwriting and purely relying on modelling can be a recipe for disaster.

Third-party capital investors rightly felt slighted by the events that unfolded following the initial impact of 2017 losses. Perhaps some of the subsequent surprise can be attributed to timing, but clearly more emphasis has to be placed on improved risk selection, mitigation, and pricing by the underwriter or, in many cases today, the fund manager.

The 2017 and 2018 catastrophes point back to the warning that Warren Buffett made in his 2001 letter to shareholders, which followed the devastating events of 9/11:

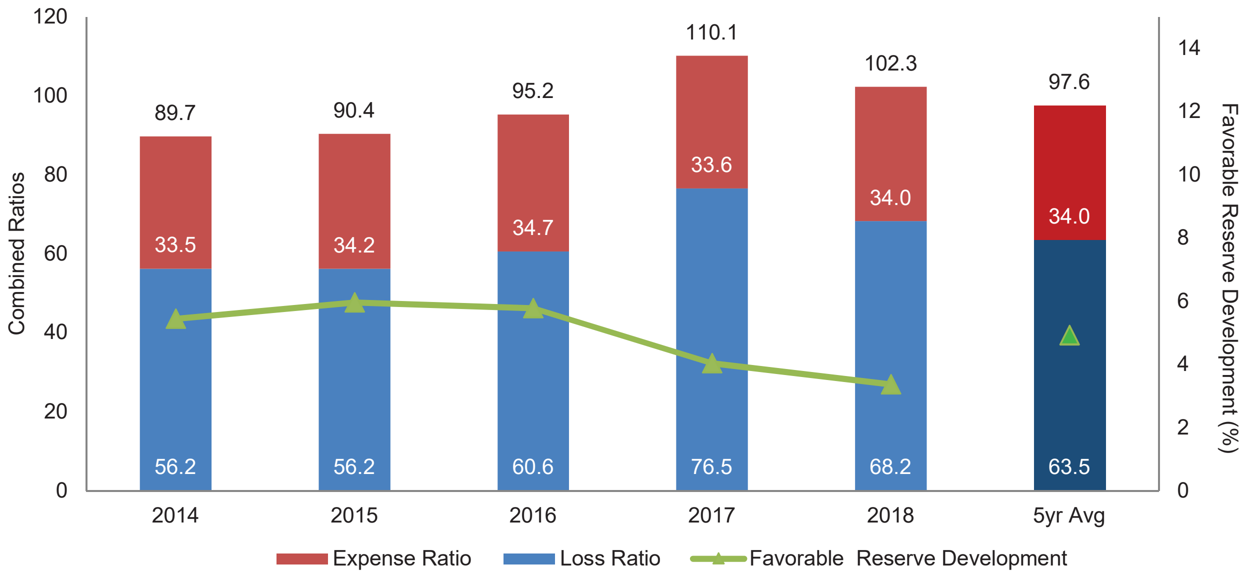
When a daisy chain of retrocessionaires exists, a single weak link can pose trouble for all. In assessing the soundness of their reinsurance protection, insurers must therefore apply a stress test to all participants in the chain, and must contemplate a catastrophe loss occurring during a very unfavorable economic environment. After all, you only find out who is swimming naked when the tide goes out.

While Mr. Buffet's warning was at the time aimed at the (re)insured, given the fact that much of the retrocessional capacity today is from collateralized vehicles, perhaps the warning should now also be aimed at the investor. If investors hope to achieve a reasonable return for risk, they must not only be well-informed as to the nature of the risks, but also must be able to fully assess the underwriting and administration capabilities of the fund manager and underwriter. A long benign period for losses seems to inevitably lead to some level of complacency with regard to accumulation control and pricing, at least for as long as all are enjoying attractive profits. But it's when that accumulated profit is wiped out from a single loss, the underwriting flaws are ultimately revealed. An underwriting track record of excellence should be the prerequisite for any investor. Putting money in the hands of capable risk takers keeps the market rational.

Given all that has transpired, finally, it appears that both third-party capital providers and traditional reinsurers held capacity back at the midyear renewal for US and Japanese programs. But this newfound discipline is once again being driven by the same old supply/demand equation as much as by pricing models. It was apparent at the last January renewal that pricing for both property catastrophe and longer-tailed classes of business remained weak despite the series of losses that had previously transpired. The rationale for the status quo then on pricing was ample capacity despite losses, rather than acceptable return for the risk. The next question that arises is how sustainable is this newfound underwriting discipline and how will market participants react if overcapacity begins to push pricing to irrational levels again?

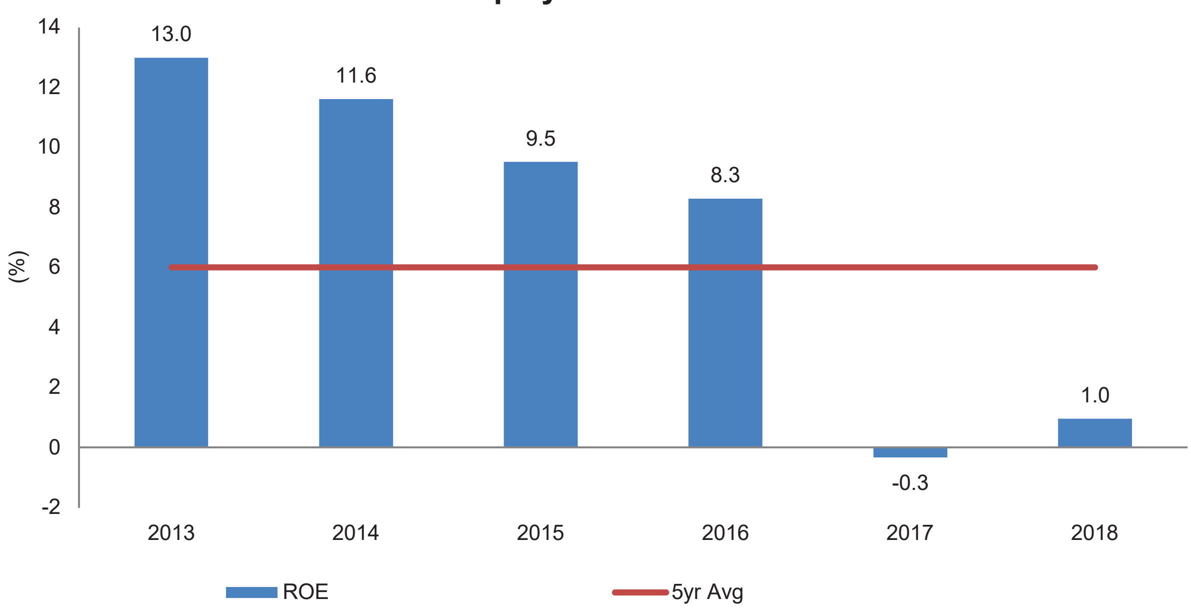
Over the longer term, the failure of some reinsurers to adapt to changing market dynamics has resulted in AM Best's Global Reinsurance composite producing a five-year average combined ratio of 97.6 (**Exhibit 3**) and an ROE of 6% (**Exhibit 4**), hardly a reasonable economic return on capital considering the risk. Pockets of profitable business have dwindled in recent years and the subsidy that they provided through favorable reserve releases to less profitable classes is running out.

Exhibit 3
Global Reinsurance – Combined Ratios



Source: AM Best data and research

Exhibit 4
Global Reinsurance – Return on Equity



Source: AM Best data and research

The composite contains a few winners, companies that consistently outperform their peers and, in some cases, by a considerable margin. So the question is what do they do differently? Each company has deployed its own unique strategy, but there are some broad similarities. Each is globally diversified, capable of leading programs across a broad spectrum of risks. It is also evident that, over time, their business models have continually evolved, adapting to the shifting dynamics of the reinsurance market. Interestingly, M&A has not been critical to the success of the better-performing companies, while it has been necessary for some second- and third-tier reinsurers simply to maintain relevance in an increasingly competitive landscape. But what appears to be the most transformative element recently is the embrace and use of third-party capital.

As third-party capital has grown in prominence and almost literally taken over the retro reinsurance space, it has provided ballast for traditional reinsurers to continue to offer property catastrophe capacity to clients despite the rate pressures that exist in that space. Beyond retrocession, many traditional reinsurers have been at the forefront of managing this capacity on behalf of investors by using sidecar vehicles, which for both the investor and underwriter allows for a strong alignment of risk in terms of sharing profit and reputational risk. So it should be no surprise that more recently a growing number of M&A transactions have brought together traditional and third-party capital providers. This increasing alignment should serve to bring about a more rational and stable pricing environment, at least in the property catastrophe segment of the market (**Exhibit 5**).

With the mid-year renewals behind us, the question is what lessons have been learned from the loss events of 2017 and 2018 and whether those lessons will result in any meaningful and sustainable change in the market. No one can predict the longer-term outcome; only time will tell. We do know that the future will be different from what it is today and market disrupters will continue to emerge. We also know that those who learned from the last war are not the ones fighting the last war; rather, they are tactically preparing for whatever challenges lie on the horizon.

Exhibit 5
ILS Fund Managers' Assets

	Assets Under Management (USD millions)	Change in AUM	Funds Location	ILS Fund Managers Acquisitions
Nephila Capital	11,500	▼	Bermuda	Purchased by Markel 2018
RenaissanceRe Holdings Ltd.	8,200	▲	Bermuda	
Credit Suisse Insurance Linked Strategies Ltd.	8,000	▼	Zurich, Switzerland	
LGT ILS Partners Ltd.	7,100	▼	Pfaeffikon, Switzerland	
Markel CATCo Investment Management	6,800	▼	Bermuda	Purchased by Markel 2015
Fermat Capital Management, LLC	6,300	▲	Westport, Connecticut, US	
Stone Ridge Asset Management	5,930	▼	New York	
Securis Investment Partners LLP	5,900	▼	London	Northill bought out Swiss Re's shares in 2012
Leadenhall Capital Partners LLP	5,500	▲	London	Purchased by Amlin 2014
AlphaCat Managers	4,200	▲	Bermuda	Purchased by AIG in 2018
Aeolus Capital Management Ltd	4,000	●	Hamilton, Bermuda	Purchased by Elliott in 2016
Elementum Advisors, LLC	4,000	●	Chicago, IL	White Mountain purchased 30% stake in 2019
Twelve Capital AG	4,000	●	Zurich, Switzerland	
Schroder Investment Management	2,930	▼	London	
Amundi Pioneer	2,300	▲	Boston, MA	
Top 15 Fund Managers	**86,660**			

* Renaissance Re includes Top Layer, DaVinci, Langhorn, Vermeer and Medici.

*As of July 2019.

Source: Artemis

Market Segment Outlook: Global Reinsurance

In December 2018, AM Best revised its outlook for the global reinsurance segment to Stable from Negative. The change primarily reflected a non-life pricing environment that had stabilized, but at levels still below long-term adequacy, combined with a stable market environment in the global life reinsurance segment. Although the operating and competitive landscapes of these two major reinsurance business segments are distinct, the resulting diversification benefits the global reinsurance segment from an overall earnings perspective.

Non-Life Reinsurance: Stable

In the face of a continuing competitive market environment, non-life reinsurance pricing appears to be developing more favorable momentum, following two consecutive years of significant natural catastrophes that resulted in accumulated insured losses exceeding USD 200 billion. Significant factors supporting the revision of our outlook are listed below:

- The continued alignment of traditional and third-party capital
- The belief that third-party capital will hold the line on future return expectations following the catastrophe losses incurred in 2017 and 2018
- A decline in capital consumption and earnings volatility caused by tail events, due in part to the increased utilization of third-party capital in retro programs
- Pressure on interest rates, resulting from the prospect of slower economic growth globally, which should foster greater discipline to produce underwriting profit commensurate with total return expectations
- Improving pricing momentum driven by potential loss cost inflation, coupled with lower loss reserve redundancies or reserve deficiencies relating to select casualty classes where pricing had been overly competitive
- Greater use of reinsurance by cedents, new risk transfer opportunities, and M&A all providing greater growth opportunities

It's clear that the glory days of a robust non-life pricing environment may not return. However, rates have improved modestly, with the industry reminded by catastrophes in 2017 and 2018 that USD 200 billion dollars of losses can occur over a very short period of time. What's also clear is that property catastrophe pricing is still being driven by the availability of third-party capital and is not as heavily influenced by the traditional reinsurance companies. This is an important distinction in current market conditions, since third-party capital is generally more efficient due to the lower cost of capital dynamics. However, traditional capacity has become more closely aligned with third-party capital through joint ventures, retrocession, and direct ownership, which should serve to more closely align return objectives for the market overall.

Despite the continuing alignment, third-party capital remains disruptive to the industry, in the form of pricing pressure in the property catastrophe space. However, there are also benefits realized from third-party capital, primarily in the form of stabilized earnings of rated balance sheets due to tail risk being offloaded. The catastrophic events of 2017 represented the first significant test of alternative capital use, which has led to both an affirmation of the third-party capitals owners' persistency as well as the re-evaluation of the return requirements and governance of the structures providing the capacity. A decline in earnings and reduced capital volatility has ultimately lowered the return requirements of investors from traditional reinsurance companies. The decline in volatility has favorably affected the average cost of capital for reinsurers. Long-term return on equity in the 8% to 10% range appears to represent a reasonable risk-adjusted ROE, as evidenced by equity trading multiples and catastrophic loss events experienced in 2017 and 2018, which are characterized as earnings-only events for the industry.

The growth of third-party capital is expected to continue, but the pace is likely to slow, following the frequency and severity of loss events in 2017 and 2018, owing to the improving but still relatively anemic pricing improvement. Also, the industry is digesting the recent disputes around collateral release before reinsurance recoverables are settled, which causes a significant increase in credit risk to the cedent. The longer-than-anticipated claims settlement associated with some catastrophe losses experienced in 2017 and 2018, particularly Hurricanes Irma and Maria and the California wildfires, has led both investors and capacity users to pause and assess what changes need to be made in underlying agreements, which may lead to a more measured use of alternative capital structures than currently exists.

Demand for non-life reinsurance has increased this year due primarily to the return of US economic growth and, to a lesser extent, global growth, coupled with benefits stemming from US federal tax reform. These factors should provide opportunities for organic growth and improved utilization of existing excess capacity, which should improve long-term risk pricing. Similarly, an increase in reinsurance utilization resulting from primary companies' recent loss experience may increase reinsurance demand as well. Lastly, a potential increase in demand from government risk pools, such as the National Flood Insurance Plan (NFIP) in the US, as well as opportunities in cyber, mortgage insurance, and reinsurance, and other emerging risks, should allow for greater utilization of available market capacity. These factors, taken in aggregate, should help attenuate the long-term imbalance between the reinsurance supply and demand that has caused significant pressure on pricing over the last decade.

The non-life reinsurance business model will continue to evolve as traditional companies embrace more efficient forms of capital, by retroceding risk, particularly tail risk, while expanding product and distribution capabilities whose objective is the efficient alignment of risk with the proper form of capital. Reinsurers who welcome third-party capital will thereby enhance their relevance with clients and investors and garner the ability to earn low-risk, fee-based income in the process.

Life Reinsurance: Stable

The global life reinsurance market is dominated by just five large carriers, which account for the vast majority of assumed business. While almost all of the largest carriers write both life and non-life reinsurance business, life reinsurance comprises at least 40% of gross premium written. Moreover, the US accounts for approximately one-half of global life reinsurance premiums. The global life reinsurance segment has been a source of stability to the overall global reinsurance market for the past several years, the primary factors being the following:

- Mature markets continue to experience only modest growth; expansion opportunities remain plentiful in emerging markets.
- Market potential in the retirement space is very favorable.
- Global life reinsurance has experienced strong return metrics, reflecting high barriers to entry and limited pricing pressures from new entrants.
- The leading life reinsurance carriers maintain solid and defensible market positions, with moderate premium growth and strong earnings from their seasoned mortality books of business.
- While traditional reinsurance remains somewhat stagnant due to historically low cession rates, reinsurers are benefiting from an active pipeline of blocks of life insurance and interest-sensitive business.
- Global life reinsurance business is poised for meaningful growth driven by Solvency II capital requirements and low investment returns.

- Asia-Pacific represents a meaningful portion of global life business, with double digit growth rates.
- UK pension longevity business opportunities are greater than current capacity.

Barriers to entry are significant, which helps solidify the market positions of well-established players. Relationships built over the years offer a competitive advantage that new entrants simply do not have. Additionally, reinsurers are often viewed as partners offering underwriting, facultative, and other support.

In addition to traditional mortality life reinsurance, there is a growing interest in assuming legacy blocks of business and, particularly in the UK, pension risk transfer deals.

Although low interest rates and the potential for rising impairments (when and if the credit cycle turns) could negatively impact direct life and annuities players, life reinsurers in general are somewhat less reliant on investment income to achieve return targets. Reinsurers take significant risk on the liability side of the balance sheet and thus tend to accept less investment risk. Additionally, operating results have also benefited from lengthening life expectancies over the years. Instances of rising mortality rates in the general population as a result of drug overdoses and suicides are evident, but have not yet had a material impact on overall mortality results in the reinsurance segment.

Some reinsurers are implementing broad-based rate increases and paying recapture fees in some instances due to deterioration in their books of business. Some of this can be traced back to the late-1990s and early 2000s, a period when some carriers were overly aggressive with block acquisitions. AM Best notes that carriers who stuck to their underwriting principles during this period have not needed to take such actions.

Changing Landscape

Further consolidation in the global reinsurance segment will likely be the result of these dynamics, and AM Best expects that M&A will continue, which, if done prudently, should help improve the efficiency of the market's overall capacity and lead to greater operational discipline. However, AM Best is concerned that M&A may pose risk to the combined enterprise and will maintain its conservative opinion regarding M&A as it can be used as a veil for ailing franchises.

Climate change remains an ever-present threat, especially for reinsurers who assume severity risks across the globe. On November 23, 2018, the Trump administration issued the Fourth National Climate Assessment, which outlines the impact of climate change and the new risks and vulnerabilities it creates in communities throughout the country. Although US-centric, the assessment's findings echo numerous reports by global organizations such as the World Trade Organization and the United Nations Intergovernmental Panel on Climate Change. Climate change will remain a significant challenge for the entire reinsurance industry for years to come.

Our view of what a strong reinsurance company is remains the same: a company with robust risk-adjusted balance sheets that can be relevant to and easily access alternative capital that generates sustainable operating returns from diversified reinsurance business portfolios; has prudent investment management capabilities; and embraces innovation. Reinsurers who lack these characteristics will struggle to remain relevant to the industry, maintain the support of shareholders, and preserve their independence.

AM Best's Market Segment Outlooks

Our market segment outlooks examine the impact of current trends on companies operating in particular segments of the insurance industry over the next 12 months. Typical factors we would consider include current and forecast economic conditions; the regulatory environment and potential changes; emerging product developments; and competitive issues that could impact the success of these companies. Best's ratings take into account the manner in which companies manage these factors and trends.

A Best's Market Segment Outlook, like a Best's Credit Rating Outlook for a company, can be Positive, Negative, or Stable.

- A Positive market segment outlook indicates that AM Best expects market trends to have a positive influence on companies operating in the market over the next 12 months. However, a Positive outlook for a particular market segment does *not* mean that the outlook for all the companies operating in that market segment will be Positive.
- A Negative market segment outlook indicates that AM Best expects market trends to have a negative influence on companies operating in the market over the next 12 months. However, a Negative outlook for a particular market segment does *not* mean that the outlook for all the companies operating in that market segment will be Negative.
- A Stable market segment outlook indicates that AM Best expects market trends to have a neutral influence on companies operating in that market segment over the next 12 months.

We update our market segment outlooks annually, but may revisit them at any time during the year if regulatory, financial, or market conditions warrant.

Appendix 1
Global Reinsurance Market*

(USD billions)

	5-Yr Avg	2018	2017	2016	2015	2014	2013
NPW (Non-Life Only)	145.6	158.6	152.8	138.6	137.5	140.4	144.2
Net Earned Premiums (Non-Life Only)	143.2	155.9	151.4	135.8	135.7	137.0	140.0
Net Investment Income	21.1	16.9	26.0	20.5	19.0	23.0	22.6
Realized Investment Gains/Losses	1.2	-0.1	4.2	1.5	-0.8	1.3	-0.4
Total Revenue	**223.6**	**216.8**	**244.8**	**220.6**	**213.2**	**222.5**	**232.2**
Net Income	**11.9**	**2.0**	**-0.7**	**16.3**	**18.9**	**22.9**	**24.7**
Shareholders' Equity (End of Period)	**201.7**	**198.8**	**203.3**	**202.1**	**198.4**	**205.7**	**191.5**
Loss Ratio	63.5	68.2	76.5	60.6	56.2	56.2	55.9
Expense Ratio	34.0	34.0	33.6	34.7	34.2	33.5	31.9
Combined Ratio	97.6	102.3	110.1	95.2	90.4	89.7	87.9
Reserve Development - (Favorable)/Unfavorable	-4.9	-3.4	-4.0	-5.8	-6.0	-5.4	-5.8
Net Investment Ratio[1]	14.8	10.8	17.1	15.1	14.0	16.8	16.2
Operating Ratio	82.8	91.4	93.0	80.1	76.4	73.0	71.7
Return on Equity (%)	6.0	1.0	-0.3	8.3	9.5	11.6	13.0
Return on Revenue (%)	5.4	0.9	-0.3	7.4	8.9	10.3	10.7
NPW (Non-Life Only) to Equity (End of Period) (%)	72.2	79.8	75.1	68.6	69.3	68.2	75.3
Net Reserves to Equity (End of Period) (%)	254.5	269.7	244.5	251.1	250.9	256.3	290.9
Gross Reserves to Equity (End of Period) (%)	283.0	311.8	278.2	274.6	273.5	276.8	316.5

* The composition of AM Best's Reinsurance Composite changes over time as companies enter and exit the market or rating process. When possible some historic data has been updated to reflect the changes as well as changes in companies' segment reporting

[1] Net Investment Ratio based on Non-Life NPE

Source: AM Best data and research

Appendix 2
European Big Four Market*

(USD billions)

	5-Yr Avg	2018	2017	2016	2015	2014	2013
NPW (Non-Life Only)	61.8	63.4	64.8	59.8	59.3	61.4	66.1
Net Earned Premiums (Non-Life Only)	61.2	63.2	65.3	58.8	58.4	60.4	63.8
Net Investment Income	14.9	10.8	18.9	14.3	14.2	16.3	16.6
Realized Investment Gains/Losses	1.2	2.6	2.0	1.5	0.6	-0.6	-0.5
Total Revenue	**132.6**	**115.3**	**146.9**	**134.7**	**129.9**	**136.1**	**148.3**
Net Income	**6.9**	**4.6**	**2.4**	**8.2**	**10.0**	**9.3**	**11.1**
Shareholders' Equity (End of Period)	**84.1**	**74.8**	**85.6**	**86.5**	**84.0**	**89.9**	**83.9**
Loss Ratio	65.8	67.2	76.7	63.4	59.9	61.7	60.2
Expense Ratio	32.0	32.4	32.2	32.8	31.9	30.7	29.1
Combined Ratio	97.8	99.7	108.9	96.3	91.8	92.4	89.3
Reserve Development - (Favorable)/Unfavorable	-4.4	-3.5	-5.0	-5.7	-4.6	-3.3	-3.6
Net Investment Ratio[1]	24.3	17.1	28.9	24.3	24.3	27.0	26.0
Operating Ratio	73.5	82.6	79.9	72.0	67.5	65.3	63.3
Return on Equity (%)	8.2	5.8	2.7	9.7	11.5	11.0	13.1
Return on Revenue (%)	5.2	4.0	1.6	6.1	7.7	6.8	7.5
NPW (Non-Life Only) to Equity (End of Period) (%)	73.7	84.7	75.7	69.2	70.6	68.4	78.8
Net Reserves to Equity (End of Period) (%)	431.1	486.9	392.0	423.7	425.9	426.9	492.7
Gross Reserves to Equity (End of Period) (%)	452.1	515.0	413.0	441.5	444.9	446.0	515.9

* The composition of AM Best's Reinsurance Composite changes over time as companies enter and exit the market or rating process. When possible some historic data has been updated to reflect the changes as well as changes in companies' segment reporting

[1] Net Investment Ratio based on Non-Life NPE

Source: AM Best data and research

Appendix 3
Lloyd's Market*

(USD billions)

	5-Yr Avg	2018	2017	2016	2015	2014	2013
NPW (Non-Life Only)	31.3	32.5	33.6	28.4	31.2	31.1	33.4
Net Earned Premiums (Non-Life Only)	30.7	31.9	33.1	27.9	30.5	30.4	32.5
Net Investment Income	1.4	1.3	1.9	1.7	0.6	1.6	1.4
Realized Investment Gains/Losses	-0.1	-0.6	0.5	0.0	-0.6	0.1	-0.4
Total Revenue	**32.3**	**32.7**	**35.5**	**30.0**	**31.1**	**32.0**	**33.5**
Net Income	**1.3**	**-1.3**	**-2.7**	**2.6**	**3.1**	**4.9**	**5.3**
Shareholders' Equity (End of Period)	**35.2**	**34.8**	**36.1**	**34.1**	**35.9**	**35.1**	**33.6**
Loss Ratio	59.2	65.4	74.5	57.3	49.9	49.0	48.6
Expense Ratio	39.7	39.2	39.5	40.6	40.1	39.1	38.2
Combined Ratio	98.9	104.6	114.0	97.9	90.0	88.1	86.8
Reserve Development - (Favorable)/Unfavorable	-5.6	-3.9	-2.9	-5.1	-7.9	-8.0	-8.0
Net Investment Ratio[1]	4.6	3.9	5.8	5.9	2.0	5.3	4.3
Operating Ratio	94.3	100.6	108.2	92.0	88.1	82.8	82.5
Return on Equity (%)	4.1	-3.7	-7.3	8.1	8.9	14.7	16.2
Return on Revenue (%)	4.5	-3.9	-7.6	8.6	10.1	15.3	15.8
NPW (Non-Life Only) to Equity (End of Period) (%)	89.0	93.4	92.9	83.2	86.8	88.7	99.2
Net Reserves to Equity (End of Period) (%)	135.5	149.2	142.3	131.5	124.8	129.9	139.4
Gross Reserves to Equity (End of Period) (%)	185.4	220.4	205.1	172.3	160.4	168.8	186.3

* The composition of AM Best's Reinsurance Composite changes over time as companies enter and exit the market or rating process. When possible some historic data has been updated to reflect the changes as well as changes in companies' segment reporting

[1] Net Investment Ratio based on Non-Life NPE

Source: AM Best data and research

Appendix 4
US & Bermuda Market*

(USD billions)

	5-Yr Avg	2018	2017	2016	2015	2014	2013
NPW (Non-Life Only)	52.5	62.7	54.4	50.4	47.0	47.8	44.8
Net Earned Premiums (Non-Life Only)	51.2	60.7	53.0	49.1	46.7	46.2	43.6
Net Investment Income	4.8	4.8	5.2	4.6	4.2	5.0	4.7
Realized Investment Gains/Losses	0.1	-2.1	1.7	0.0	-0.8	1.8	0.4
Total Revenue	**58.7**	**68.9**	**62.3**	**55.8**	**52.2**	**54.4**	**50.4**
Net Income	**3.6**	**-1.4**	**-0.4**	**5.5**	**5.7**	**8.7**	**8.4**
Shareholders' Equity (End of Period)	**82.3**	**89.1**	**81.7**	**81.5**	**78.5**	**80.8**	**74.0**
Loss Ratio	63.4	70.8	77.5	59.0	55.7	53.8	55.3
Expense Ratio	33.0	33.0	31.7	33.5	33.3	33.6	31.3
Combined Ratio	96.4	103.8	109.2	92.5	88.9	87.4	86.6
Reserve Development - (Favorable)/Unfavorable	-5.2	-3.0	-3.6	-6.3	-6.4	-6.5	-7.2
Net Investment Ratio[1]	9.4	8.0	9.7	9.3	9.0	10.8	10.7
Operating Ratio	87.0	95.9	99.5	83.1	79.9	76.6	75.9
Return on Equity (%)	4.7	-1.5	-0.5	6.8	7.5	10.9	11.4
Return on Revenue (%)	6.8	-2.0	-0.6	9.8	11.0	16.0	16.6
NPW (Non-Life Only) to Equity (End of Period) (%)	63.6	70.3	66.6	61.8	59.9	59.2	60.5
Net Reserves to Equity (End of Period) (%)	126.0	134.5	135.1	118.0	121.3	121.3	130.6
Gross Reserves to Equity (End of Period) (%)	152.8	177.0	169.2	140.3	142.0	135.5	149.4

* The composition of AM Best's Reinsurance Composite changes over time as companies enter and exit the market or rating process. When possible some historic data has been updated to reflect the changes as well as changes in companies' segment reporting

[1] Net Investment Ratio based on Non-Life NPE

Source: AM Best data and research

August 29, 2019

World's 50 Largest Reinsurers

SwissRe moves back into top spot in annual reinsurer ranking

For the second time in three years, Swiss Re topped the list of the world's largest reinsurers, as measured by year-end reinsurance gross premiums written (GPW) (**Exhibit 1**). Munich Re had been the undisputed leader of the Top 50 ranking every year since 2010, with the exceptions of 2016 and, now, 2018.

Swiss Re's total GPW increased by 4.7% from 2017, especially bolstered by the growth of the life business across most markets. Munich Re's total GPW declined by 5.3%, with the drop in the life business more than countering the growth in non-life business. The overall drop in Munich Re's life GPW stemmed primarily from the termination of two large transactions, with measured growth in the remaining life business across all markets. In addition, the euro depreciated slightly against the US dollar, which further penalized Munich Re's top line in this year's ranking, as the company reports in euros. AM Best converts amounts to US dollars using the foreign exchange rate that coincided with the date of the financial statements. Currency exchange rate fluctuations have, and will continue to have, an impact on company rankings.

World's 50 Largest Reinsurers Ranking – Methodology

Although AM Best's ranking of leading global reinsurers has continued to evolve over time, the intention of the Top 50 exercise is to try to isolate a (re)insurer's business profile using gross premiums written as the measurement. To obtain the most accurate figures possible, we make a number of assumptions and adjustments as we navigate through different financial statements, accounting standards, and segment reporting. Capturing only third-party business and excluding affiliated or intergroup reinsurance, in addition to trying to eliminate any compulsory business, are perhaps the most essential adjustments.

Another important adjustment is a rule of thumb we have used for splitting out reinsurance and insurance premiums. Our approach has been that if a company or group's GPW for reinsurance is equal to or greater than 75% of its entire gross premium volume, all GPW is counted in the ranking as reinsurance premiums. Conversely, if companies' or groups' reinsurance/insurance split consists of less than 75% reinsurance premiums, only the reinsurance premiums are counted and insurance premiums are excluded. The logic behind this adjustment is that if the company's book of reinsurance business is equal to or greater than 75% of its total book of business, reinsurance represents its core book of business.

In cases where financial statements and supplements do not provide a proper breakout of reinsurance premiums, AM Best seeks to obtain certain data points through direct dialogue with the (re)insurer.

Munich Re has sizable primary insurance operations, which account for approximately 35% of its total GPW, leading to an exclusion from AM Best's GPW calculation, as detailed in the methodology above. Swiss Re's primary insurance business remains below our threshold for breaking out its insurance and reinsurance lines separately.

Swiss Re and Munich Re are likely to continue to compete for first place for the foreseeable future. Together, the two account for nearly 30% of total GPW in this year's ranking and

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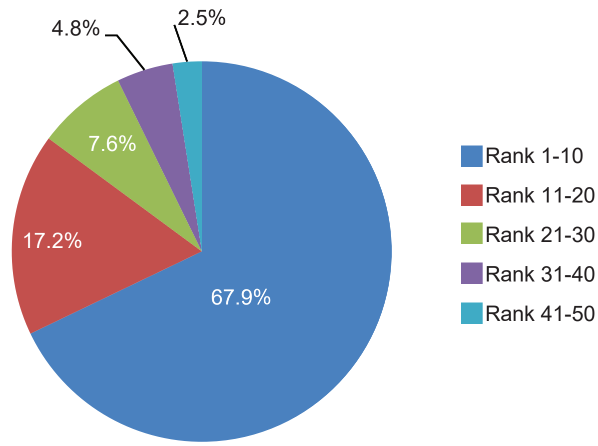
Exhibit 1
Top 50 World's Largest Reinsurance Groups, Ranked by Unaffiliated Gross Premium Written in 2018
(USD millions)[1]

		Reinsurance Premiums Written				Total			
		Life & Non-Life		Non-Life Only		Shareholders		Ratios[3]	
Ranking	Company Name	Gross	Net	Gross	Net	Funds[2]	Loss	Expense	Combined
1	Swiss Re Ltd.	36,406	34,042	20,864	20,220	28,727	74.2	32.4	106.6
2	Munich Reinsurance Company	35,814	34,515	23,395	22,570	30,336	65.2	34.2	99.4
3	Hannover Rück SE[4]	21,952	19,791	13,709	12,368	10,923	66.9	29.5	96.4
4	SCOR S.E.	17,466	15,773	7,069	6,115	6,672	66.5	32.8	99.3
5	Berkshire Hathaway Inc.	15,376	15,376	9,930	9,930	352,500	88.6	21.9	110.4
6	Lloyd's[5,6]	14,064	9,926	14,064	9,926	34,846	72.2	33.8	106.0
7	China Reinsurance (Group) Corporation	11,564	10,681	3,942	3,809	12,689	58.0	40.9	98.8
8	Reinsurance Group of America Inc.	11,341	10,544	N/A	N/A	8,451	N/A	N/A	N/A
9	Great West Lifeco	7,737	7,647	N/A	N/A	20,096	N/A	N/A	N/A
10	Korean Reinsurance Company	6,803	4,786	5,972	4,058	2,014	83.7	17.8	101.5
11	General Insurance Corporation of India[7]	6,582	5,684	6,503	5,611	7,932	88.4	16.9	105.3
12	PartnerRe Ltd.	6,300	5,803	5,065	4,592	6,517	73.7	28.1	101.8
13	Everest Re Group Ltd.	6,225	5,706	6,225	5,706	7,904	86.6	26.3	113.0
14	XL Bermuda Ltd.	5,219	4,135	5,002	4,124	9,698	80.6	32.2	112.8
15	Transatlantic Holdings, Inc	4,451	3,969	4,451	3,969	4,724	72.8	32.6	105.4
16	MS&AD Insurance Group Holdings, Inc.[7, 8]	3,657	N/A	3,657	N/A	25,058	N/A	N/A	N/A
17	RenaissanceRe Holdings Ltd.	3,310	2,132	3,310	2,132	5,045	56.7	30.9	87.6
18	R+V Versicherung AG[9]	3,231	3,164	3,201	3,146	2,461	73.8	25.3	99.1
19	MAPFRE RE, Compania de Reaseguros S.A.[10]	3,215	2,654	2,602	2,045	1,910	71.6	26.7	98.3
20	AXIS Capital Holdings Limited	3,112	2,334	3,112	2,334	5,030	69.8	28.6	98.4
21	Arch Capital Group Ltd.[11]	2,648	1,977	2,648	1,977	10,231	70.0	27.6	97.6
22	The Toa Reinsurance Company, Limited[7, 8]	2,557	2,205	2,557	2,205	1,623	82.9	26.6	109.5
23	Assicurazioni Generali SpA	2,199	2,199	935	935	28,210	65.2	26.1	91.3
24	Sompo International Holdings, Ltd.	1,996	1,573	1,996	1,573	6,967	64.9	32.2	97.1
25	Pacific LifeCorp	1,981	1,981	N/A	N/A	13,072	N/A	N/A	N/A
26	Qatar Reinsurance Company, Limited	1,842	971	1,842	971	2,190	68.2	35.7	104.0
27	IRB - Brasil Resseguros S.A.	1,795	1,313	1,396	928	1,031	45.3	30.6	76.0
28	Taiping Reinsurance Co. Ltd[8]	1,731	1,049	1,126	960	1,032	59.4	39.2	98.7
29	Odyssey Re Holdings Corp.	1,702	1,595	1,702	1,595	4,016	57.6	32.4	89.9
30	Tokio Millennium Re AG	1,626	1,179	1,626	1,179	1,257	58.6	36.4	95.0
31	Caisse Centrale de Reassurance	1,569	1,437	1,399	1,271	2,817	86.6	10.5	97.2
32	Aspen Insurance Holdings Limited	1,496	1,183	1,496	1,183	2,656	73.8	30.2	104.0
33	Validus Reinsurance, Ltd.	1,432	951	1,432	951	3,259	81.9	36.8	118.7
34	Peak Reinsurance Company Ltd	1,382	991	1,313	924	965	72.3	30.6	102.8
35	Sirius International Insurance Group, Limited	1,367	1,037	1,367	1,037	1,938	71.9	27.4	99.3
36	Deutsche Rueckversicherung AG	1,269	834	1,186	797	321	65.3	31.7	97.0
37	QBE Insurance Group Limited	1,058	920	1,058	920	8,400	62.2	27.6	89.8
38	Markel Corporation	1,051	882	1,051	882	9,100	78.9	33.8	112.7
39	American Agricultural Insurance Company[12]	992	321	992	321	580	82.2	21.2	103.4
40	Qianhai Reinsurance Co., Ltd.	967	537	315	216	410	65.2	37.7	102.9
41	Hiscox Ltd	812	241	812	241	2,317	84.7	29.4	114.1
42	African Reinsurance Corporation	797	681	745	631	917	61.7	36.2	97.9
43	Chubb Limited	722	671	722	671	50,312	71.5	30.3	101.8
44	Allied World Assurance Company Holdings, AG	713	649	713	649	2,817	66.8	27.3	94.1
45	Nacional de Reaseguros, S.A.	650	516	546	413	395	62.4	30.5	92.9
46	Third Point Reinsurance Ltd	578	558	578	558	1,205	70.6	36.2	106.8
47	Argo Group International Holdings, Ltd	572	160	572	160	1,747	66.5	16.8	83.2
48	Greenlight Capital Re, Ltd.	568	465	568	465	478	71.6	33.6	105.1
49	ACR Capital Holdings Pte, Ltd.	548	479	548	479	784	74.4	38.5	112.9
50	W.R. Berkley Corporation	545	480	545	480	5,480	68.7	37.7	106.4

[1] All non-USD currencies converted to USD using foreign exchange rate at company's fiscal year-end.
[2] As reported on balance sheet, unless otherwise noted.
[3] Non-Life only.
[4] Net premium written data not reported; net premium earned substituted.
[5] Lloyd's premiums are reinsurance only. Premiums for certain groups in the rankings may include Lloyd's Syndicate premiums when applicable.
[6] Total shareholders' funds includes Lloyd's members' assets and Lloyd's central reserves.
[7] Fiscal year-end March 31, 2019.
[8] Net asset value used for total shareholders' funds
[9] Ratios are as reported and calculated on a gross basis.
[10] Premium data excludes intergroup reinsurance.
[11] Based on Arch Capital Group Ltd. consolidated financial statements and includes Watford Re segment.
[12] Data and ratios based on US Statutory Filing.
N/A: Information not applicable or not available at time of publication.
Source: AM Best data and research

hence remain the reinsurance market's unrivaled frontrunners. The top ten players account for 68%, or USD 179 billion, of GPW in the Top 50 ranking, which reinforces the sentiment that the industry's largest reinsurers continue to house disproportionately sizable amounts of risk, despite cedents' efforts to diversify their reinsurance panels and spread out their counterparty risk (**Exhibit 2**). The market share of the top 10 reinsurers has consistently been approximately 70% over the past several years, which underlies their strong ties with both brokers and cedents.

Exhibit 2
YE2018 Life and Non-Life GPW by Ranking



Source: AM Best data and research

Berkshire Hathaway moved down to number five from number three, with Hannover Rück climbing to number three and SCOR to four (**Exhibit 3**). Last year, Berkshire Hathaway's two-place rise was due mainly to a reinsurance agreement of almost $10 billion between National Indemnity Company (NICO) and American International Group, Inc. (AIG), which covers AIG's previously underwritten commercial insurance policies. Given the one-off nature of the deal, NICO's GPW decreased by more than 30% in 2018, with the company falling back to fifth place. Although Hannover Rück and SCOR both reported modest growth in 2018, the latter experienced a mild top-line decline in this year's Top 50 ranking, driven by the weakening of the euro against the US dollar. Unaffected by the Top 5 shuffle was Lloyd's, which maintained sixth place for a third year, despite a weakened British pound versus the US dollar that led to a small decline in GPW. In this year's ranking, the gap between fifth and sixth place has shrunk to a little less than $1.4 billion.

Exhibit 3
Notable Changes in Rankings

Upwards	2018	2017	Change
Swiss Re Ltd.	1	2	1
Hannover Rück SE	3	4	1
SCOR S.E.	4	5	1
Sirius International Insurance Group, Limited	35	39	4
Argo Group International Holdings, Ltd	47	NR	NR
Taiping Reinsurance Co. Ltd	28	34	6
Qianhai Reinsurance Co., Ltd	40	NR	NR

Downwards	2018	2017	Change
Munich Reinsurance Company	2	1	-1
Berkshire Hathaway Inc.	5	3	-2
Aspen Insurance Holdings Limited	32	29	-3
Markel Corporation	38	35	-3
Greenlight Capital Re, Ltd.	48	45	-3
Maiden Holdings, Ltd.	NR	40	NR

NR = Not Ranked

Source: AM Best data and research

Taiping Re moved up from 34th to 28th place, but its premiums decreased significantly on a net basis (down 18% year over year), due primarily to a large retrocession deal involving its life business. Argo re-entered the Top 50 list for the first time in a decade.

Qianhai Re is another new entrant in this year's Top 50 ranking, landing at the 40th spot. Qianhai Re is a Chinese start-up reinsurance company, jointly controlled by three state-owned enterprises (SOE) in China. Since commencing operations in December 2016, the company has played a crucial role in the China reinsurance market as one of the three domestic reinsurers. In 2018, the company expanded its non-life business footprint to its neighbouring regional markets in the Asia-Pacific region.

The most significant drop in ranking was by Maiden Re, which fell out of the Top 50 after ranking 40th last year. The drop was driven by Maiden Re's decision to divest all of its US treaty reinsurance operations, which no longer factor into its premium revenue.

From a more holistic perspective, the year-over-year growth in the top 50's total GPW was close to nil. Total GPW increased minimally, from $262.7 billion in 2017 to $263.0 billion in 2018, with life and non-life premiums both stagnating at their prior year levels—a substantially different situation from 2017, when the top 50's total GPW increased by $36.1 billion (or 15.9%) from 2016.

However, a material portion of the 2017 growth was driven by reinstatement premiums resulting from the Harvey, Irma, and Maria hurricane losses, as well as the transaction between Berkshire Hathaway and AIG. Following two years of heavy catastrophe losses, and given persistently challenging operating conditions, reinsurers seem to have re-focused their strategy on improving bottom-line profitability rather than growing market share.

Losses arising from US hurricanes, California wildfires, and Typhoon Jebi contributed to the top 50's average combined ratio of 100.9 for 2018. The substantial improvement from the 2017 average combined ratio of 109.1 was mainly a result of lower, albeit significant, catastrophe losses that affected the (re)insurance industry. Among the big four European reinsurers, Swiss Re's combined ratio of 106.6 was the highest for the year.

Top 15 Non-Life and Top 10 Life Global Reinsurers

AM Best continues to produce two additional sub-rankings, one non-life and one life, that feature (re)insurance groups that have a truly global footprint or business profile. These groups not only have diverse product offerings, but also generally maintain a very strong geographic spread of risk and provide material capacity to a number of different markets. Nearly all of these companies have somewhat modest origins (some go back 100 years), as they have evolved from being regional or specialty providers into truly global reinsurers. Often it was their very strength as a regional or specialty reinsurer that eventually created concentration risk(s) and compelled them to expand their footprint to seek geographic and product diversification. There is no set rule to specifically determine when or how a reinsurer becomes global. As market dynamics ebb and flow, so can a group's profile. Therefore, as some of the world's largest reinsurance groups continue to enter new markets and provide capacity, expect them to be added to these lists in due time (**Exhibits 4** and **5**).

Exhibit 4
Top 15 Global Non-Life Reinsurance Groups, Ranked by Unaffiliated Gross Premium Written in 2018
(USD millions)[1]

Ranking	Company Name	Non-Life Only Gross	Non-Life Only Net	Total Share-holders' Funds	Ratios Loss	Ratios Expense	Ratios Combined
1	Munich Reinsurance Company	23,395	22,570	30,336	65.2	34.2	99.4
2	Swiss Re Ltd.	20,864	20,220	28,727	74.2	32.4	106.6
3	Lloyd's	14,064	9,926	34,846	72.2	33.8	106.0
4	Hannover Rück SE	13,709	12,368	10,923	66.9	29.5	96.4
5	Berkshire Hathaway Inc.	9,930	9,930	352,500	88.6	21.9	110.4
6	SCOR S.E.	7,069	6,115	6,672	66.5	32.8	99.3
7	Everest Re Group Ltd.	6,225	5,706	7,904	86.6	26.3	113.0
8	PartnerRe Ltd.	5,065	4,592	6,517	73.7	28.1	101.8
9	XL Bermuda Ltd.	5,002	4,124	9,698	80.6	32.2	112.8
10	Transatlantic Holdings, Inc	4,451	3,969	4,724	72.8	32.6	105.4
11	MS&AD Insurance Group Holdings, Inc.	3,657	N/A	25,058	N/A	N/A	N/A
12	RenaissanceRe Holdings Ltd.	3,310	2,132	5,045	56.7	30.9	87.6
13	R+V Versicherung AG	3,201	3,146	2,461	73.8	25.3	99.1
14	AXIS Capital Holdings Limited	3,112	2,334	5,030	69.8	28.6	98.4
15	Arch Capital Group Ltd.	2,648	1,977	10,231	70.0	27.6	97.6

1 All non-USD currencies converted to USD using foreign exchange rate at company's fiscal year-end.

Note: Please see Exhibit 1 for other footnotes.

Source: AM Best data and research

Exhibit 5
Top 10 Global Life Reinsurance Groups, Ranked by Unaffiliated Gross Premium Written in 2018
(USD millions)[1]

Ranking	Company Name	Life Only Gross	Life Only Net	Total Share-holders' Funds
1	Swiss Re Ltd.	15,542	13,822	28,727
2	Munich Reinsurance Company	12,419	11,945	30,336
3	Reinsurance Group of America Inc.	11,341	10,544	8,451
4	SCOR S.E.	10,398	9,658	6,672
5	Hannover Rück SE	8,242	7,424	10,923
6	Great West Lifeco	7,737	7,647	20,096
7	Berkshire Hathaway Inc.	5,446	5,446	352,500
8	Pacific LifeCorp	1,981	1,981	13,072
9	Assicurazioni Generali SpA	1,264	1,264	28,210
10	PartnerRe Ltd.	1,235	1,211	6,517

1 All non-USD currencies converted to USD using foreign exchange rate at company's fiscal year-end.

Note: Please see Exhibit 1 for other footnotes.

Source: AM Best data and research

August 29, 2019

Experts Agree: Reinsurance Markets Likely To Be Rational in the Short Term

Reinsurance is becoming increasingly complex, given the growing abundance of alternative capital, as well as rapid and nearly constant advances in technology

A panel of experts came together at AM BestTV to discuss the increasingly complex reinsurance market. Alternative capital has become more agile and abundant, forming strategic partnerships with traditional reinsurers. Risk and capital are in greater alignment with investor expectations through third-party capital, and innovation has the potential to disrupt the primary insurers and distribution. Reinsurers need to follow these trends, as well as partner or invest in insurtechs, to maintain a competitive edge.

The panel was moderated by Meg Green, Publication and News Services at AM Best, with the following panelists:

- Mario Bonaccorso, Chief Financial Officer, PartnerRe
- Mark Kociancic, Group Chief Financial Officer, SCOR
- Robert DeRose, Senior Director, AM Best
- Scott Mangan, Associate Director, AM Best

The experts agreed that, for reinsurers, following the hurricanes and wildfires in 2017 and 2018, (1) the market is likely to be more rational and (2) third-party capital investors have been resilient, because of lower interest rates.

Property Cat: Rates Should Stabilize, If Not Improve, over the Short Term

In December 2018, AM Best revised its outlook on the global reinsurance market from Negative to Stable. Still, Robert DeRose did not sound optimistic about the market, despite the stable outlook. He said, "The reason why we went Stable is not necessarily because we felt the environment had improved substantially, but rather because we felt that, following the events of '17 and '18, pricing was more likely to stabilize, and return metrics probably did bottom out for the sector." Although renewals in June showed more promise than the slight improvements in January, the improvements have been limited to loss-affected areas in the US and Asia.

"I'd say there's a greater emphasis on creating value for your clients, understanding the risks, and emphasizing your scale and having more of a global reach to meet these demands."
Mark Kociancic

Mark Kociancic added that loss severity has increased in the recent years, with risks such as cyber and terrorism adding to the complexity. He stressed the importance of creating value for clients and understanding the risks, and that taking advantage of scale and global reach are necessary to meet the demands of a changing reinsurance market.

Mario Bonaccorso warned that, although the market will become more rational in the short term, it still has to prove itself in the long term. "Short term has been rational," he averred, "but longer term, my view is that the non-life insurance industry is still too fragmented."

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From his perspective, January 1, 2020, renewals should give us a better idea of the strength of pricing, following the rebound in the investment markets in the first half of this year and the entrance of alternative capital in the market.

Third-Party Capital Is Here to Stay

Kociancic opined that alternative capital is likely to play a larger role in the reinsurance market, as lower interest rates lead investment funds to look for higher yields. Property cat provides opportunities for higher yield and is not correlated with the markets, making it a good portfolio diversifier.

"I see a market which is rational in the short term ... following two years of cat losses and risk that were not properly modeled, such as the California wildfire, which had to be expected. Having said that, the ability to withstand the price improvement has to be demonstrated."

Mario Bonaccorso

Alternative capital in the reinsurance market is estimated at $90 billion-$100 billion, focusing primarily on US property catastrophe. DeRose doubted it would expand into longer-tailed classes of business, saying that some traditional reinsurers would like to engage with alternative capital, but the uncertainty of longer tails discourage investors. He added that even the liability duration of short-tail classes surprised some investors. "If they're not comfortable as a result of the impact of these cat losses in '17 and '18 and the tail associated with that experience," he said, "they've got to be questioning, 'Am I really willing to go into really longer-tailed classes of business?'"

Scott Mangan also highlighted that the duration of longer-tailed classes is an estimate and the investors could find their capital locked up in the risk for longer than they originally planned. Bonaccorso agreed, adding that there have been several failed attempts in the past to engage with alternative capital in longer-tailed classes of business. He further added that another difficulty is "an asymmetry of information where the insurer knows more than the third-party capital investor … and so there is skepticism in that."

Kociancic raised another concern—that reliance on alternative capital can create volatility because of collateralization issues and trapped capital, which could hamper a franchise's ability to be a stable source of capacity. DeRose suggested that a rated fronting carrier could ensure the client is being served well.

Cost of Capital: Different Strokes for Different Folks

The panelists agreed that, under current market conditions, 5% above risk-free rates is an acceptable expected rate of return for a well-diversified property catastrophe portfolio. Kociancic added that it would depend on the risk appetite of the investor as well as the time horizon of the risk. These risks are attractive to investors, especially to institutional investors and pension funds as they provide a huge diversification benefit, which results in a smaller capital factor.

Bonaccorso agreed with the return expectations and added that investors could juice their returns by using higher leverage. He also agreed with DeRose that a rated balance sheet could act as a responsible intermediary and decision maker to retain or transform the risk to alternative capital. Bonaccorso cautioned about collateralization risk, since insurance-linked securities typically collateralize for a 1-in-250 event and the reinsurer would have to manage risk of an extreme tail event.

Mangan mentioned that one important effect of alternative capital and the varied return expectations is that the market cycles have become more muted. He added that sound risk management practices have contributed to the dampening of market cycles, but the presence of alternative capital also plays an important part.

Mangan emphasized that, although the downs are not as dramatic as they have been in the past, neither are the ups as correspondingly dramatic as they have been in the past. DeRose agreed and added that, in the event of an outsized catastrophe plus a financial or economic crisis, another hard cycle would not be not out of the question. DeRose also said that although alternative capital is usually seen as a source of competition, it has also benefitted traditional reinsurers in the past few years. Using alternative capital kept the combined ratio of reinsurers lower in 2017 and 2018. Mangan also noted that traditional (re)insurers still maintain a robust capital position and that, according to an exercise on excess capital (an off-shoot of the dedicated reinsurance capital project AM Best conducts with Guy Carpenter), AM Best estimated that, on a consolidated basis, companies had excess capital of just under $250 billion in 2018.

Hybrid Models Are Successful if the Focus Is on Profits—Not Diversification

With regard to the hybrid model, Bonaccorso mentioned that PartnerRe had made a deliberate choice not to be in the primary insurance business, as it takes different skillsets to be a profitable primary insurer. The business model is data-intensive, IT-intensive, claims-intensive, and distribution-intensive. Kociancic agreed that this was consistent with the thinking at SCOR, and added that SCOR did not want to compete with its clients.

DeRose stated that the hybrid model was popular in the early 2000s, but while the hybrid model provided access to risk, the profitability of the reinsurance segment was usually superior to the insurance segment, and if management concludes the lack of profits does not justify the diversification, companies would be better off sticking with their core competencies, like SCOR and PartnerRe have done. Mangan observed that SCOR and PartnerRe were in the minority, as most other reinsurers have a hybrid model.

Bonaccorso also warned about the prospects of entering the primary insurance business: "Basically, I think reinsurance entering the primary insurance sector increases your access to risk. That's a matter of fact. The question is, can you do this profitably, and at which cost, in term of damaging your existing distribution, with your client base with whom you're going to compete?"

Kociancic echoed the concern about competing with your clients, and added, "I think the real issue if you enter the primary side, whether it's personal lines, commercial, or specialty, can you bring any kind of competitive advantage to your business case for it?"

According to DeRose, AM Best thought reinsurers opening a primary branch would be favorable back in 2001 and 2002 when the model became popular. Theoretically, the model would give companies better access to risk, broader distribution capabilities, and a greater geographic spread. In reality, for most of these hybrid companies, the insurance segment has been a drag and the reinsurance segment more profitable. "I do think that there's still a benefit to diversification and having multiple channels of distribution," he added, "but they do have to be profitable."

"Historically, after a huge catastrophe event, it was common for investors to form startup reinsurers, usually in Bermuda. We don't see that happening anymore, and I think the reason being is that investors prefer greater flexibility in terms of committing capital to the sector."

Bob DeRose

New Products and Enhanced Partnerships Necessary for Reinsurers to Stay Relevant

The participants agreed that there is still a significant insurance gap all over the world, including the US. Closing that gap is a difficult endeavor, in Kociancic's opinion. "First of all, the insured has to want to pay for the risk, or the government has to mandate coverage of the risk. That's part one," he said. "Part two, the insurer, the reinsurer, has to have the willingness to underwrite it. You need both of those to coincide in order to create the necessary market."

"Good risk management has reduced the volatility on the downside, and so ... the downs are not as dramatic as they have been in the past, the upswing is correspondingly not as dramatic as it has been in the past."

Scott Mangan

Mangan added that government involvement makes proper pricing difficult. The government is not trying to make a profit on underwriting, but the commercial market wants to make money in the long term. DeRose echoed him, pointing out that even though some government-sponsored pools like the NFIP have been buying traditional reinsurance, it hasn't been profitable for the participants because of the number of losses. "I think that proves the point that the pricing is not adequate and that the government really needs to become more motivated in order to ensure that there is adequate pricing for the risk," he stated. "That would certainly draw the commercial market in, in a more significant way."

Developing products and services for primary insurers is a natural trend for reinsurers, said Kociancic. SCOR has developed covers for cancer survivors in Hong Kong, and for people with risky profiles but healthy lifestyle habits in the United States. These products are beneficial for the clients—and for SCOR itself. "With this kind of micro-targeting, you can get a good risk and properly [price it] and then capture that into your own portfolio," Kociancic said. "Those are examples of ways you can add real value to the market and then capture a risk that meets your own profile." These covers aren't exclusive to the life side, either. In P/C, Kociancic mentioned covers for flood, product warranty, and new home warranties in areas across the globe. "One of the good things is we've been able to take examples of something that's been developed in a Western market, whether it's in Europe or here in the States, and utilize it in emerging markets, whether it's Asia or Latin America," he added.

Bonaccorso highlighted small acquisitions made by PartnerRe and explained that it creates similar products through these smaller companies. "We believe that this entrepreneurship culture is better to have the small company rather than within a large organization like PartnerRe," he averred. He added that PartnerRe gains practical knowledge from these smaller companies that it can then apply across the rest of its portfolio. He emphasized that these acquisitions don't need to be expensive. "These acquisitions for us are [range in price from the] mid- to single-digit million dollars," he said, "but the potential and the know-how they bring to us and our clients is very important. That's a trend that is going to continue for us."

August 29, 2019

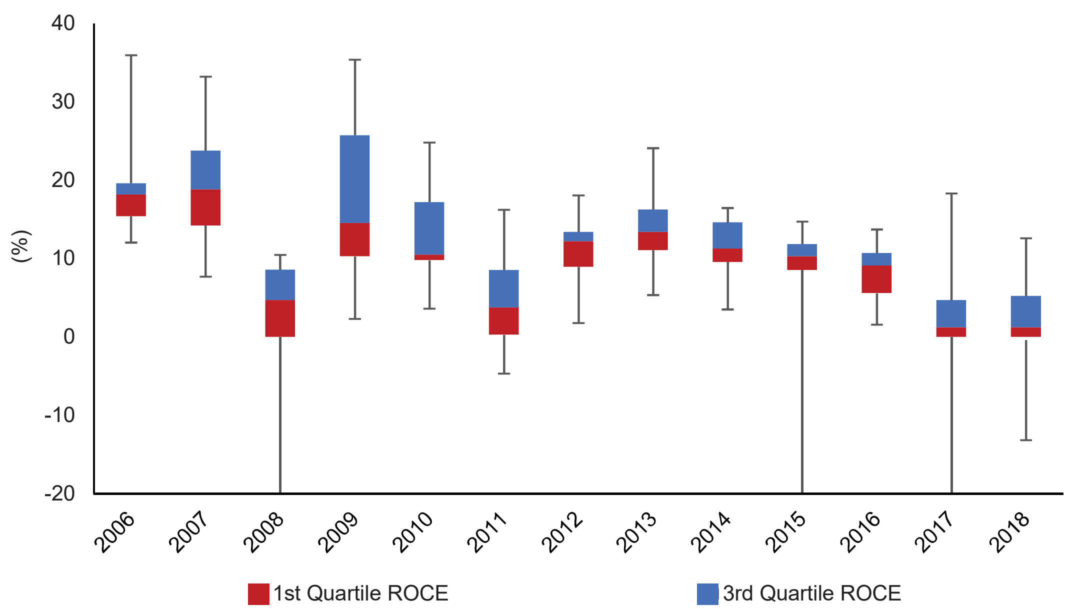
Reinsurers Struggle To Meet Return Expectations

A reinsurer's ability to access and raise capital, and the potential costs of raising capital, especially during times of stress, are important considerations in the ratings process

Reinsurance is a cyclical industry, dictated by the supply of capital. Hard markets (during which the industry earns a return higher than its cost of capital) attract capital from investors who want to share in the industry's profitability. Over time, these hard markets have resulted in excess capital (including third-party capital from non-traditional reinsurers), intensified competition, and higher pressure on pricing and profitability. With technology, risk management and the persistence of alternative capital, the cycles have become muted and more localized but they will exist on a smaller scale

Exhibit 1 shows a significant spread in returns on common equity (ROCE) among reinsurers. Top-quartile performers have distinguished themselves through superior strategies such as enhanced enterprise risk management, underwriting discipline, sophisticated pricing mechanisms, and prudent diversification to earn returns exceeding the cost of capital. Ineffective risk and capital management, growth, and acquisitions without corresponding risk controls have led to shock losses in third-quartile performers. In general, the variance in performance is narrower in years with fewer or less severe catastrophes and wider in years with severe catastrophes. This is a result of portfolio concentrations, risk appetites, and risk management strategies that need to be dynamic and adaptable to emerging risks and market conditions. "Trees that don't bend with the wind, won't last the storm" – insurers need to adapt to changing market conditions.

Exhibit 1
Reinsurers – ROCE Dispersion



Source: Bloomberg

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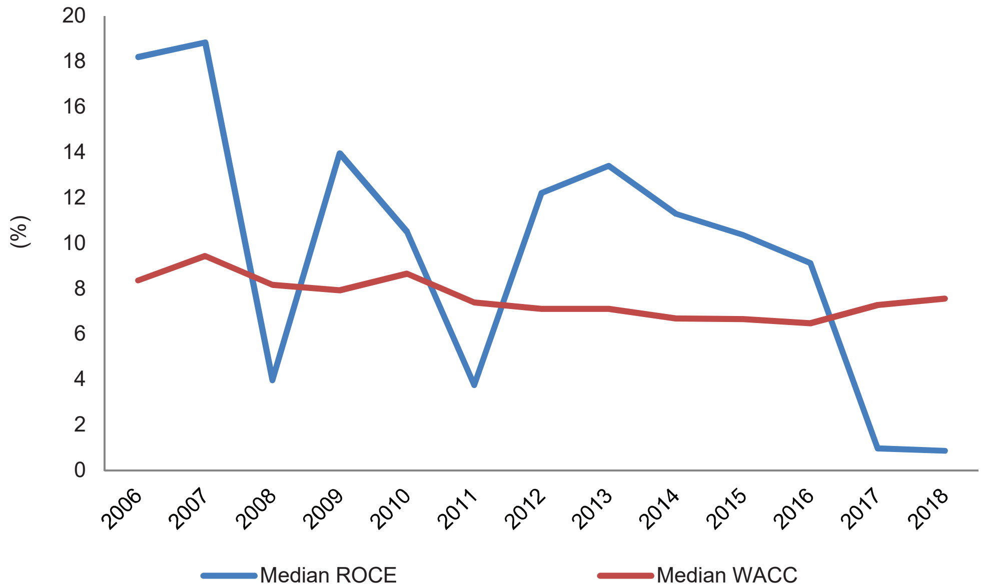
Exhibit 2
Reinsurers' Median ROCE Compared to Median WACC



Source: Bloomberg

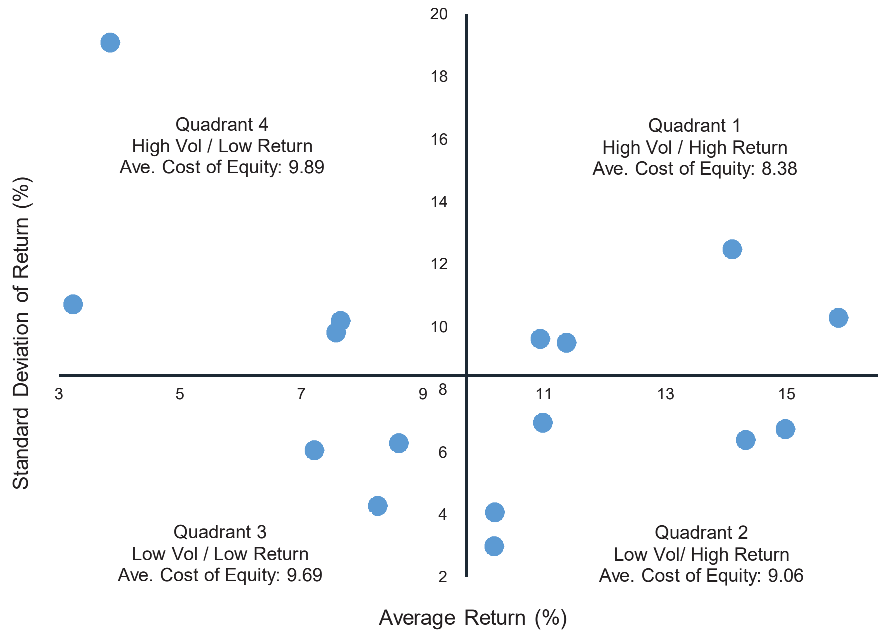
The impact of natural disasters on returns compared to cost of capital is evident while comparing median returns to the median weighted average cost of capital (**Exhibit 2**). Insured losses in 2008 amounted to USD 31 billion, with Hurricane Ike causing extensive damage; the reinsurance industry paid for the bulk of the losses and earned a median ROCE of 4.3%, well below its cost of capital. Nor did the reinsurance segment meet its hurdle rates in 2011 or 2017, and 2018, again due to heavy catastrophe losses.

Returns dipped in 2011 owing to a high aggregate loss year—Hurricane Irene in the US and the Caribbean, the massive tsunami following the Tohoku earthquake in Japan, Thai floods, and earthquakes in the US—with global insured losses from natural catastrophes totaling $105 billion. Similarly, global insured losses totaled $144 billion in 2017 and $76 billion in 2018, a substantial portion of which were due to Typhoon Jebi and the wildfires in California. The initial estimates for 2018 losses have already shown signs of adverse development, attributable mainly to business interruption losses from Typhoon Jebi and loss creep from 2017 Hurricane Irma. One year's results may be unduly positive or negative because of the absence or the presence of severe catastrophes, and therefore, when analyzing reinsurers' performance, AM Best takes a long-term historical, as well as a prospective view.

Despite high volatility, reinsurers have a lower cost of capital, because catastrophe risk is non-correlated with the capital markets. This diversification benefit is, in part, a reason for the growth of insurance-linked securities and third-party capital, owing to uncorrelated yields in a low interest rate environment. The growth of insurance-linked securities and the growing influx of third-party capital have also resulted in pricing pressures, which led to a lower ROCE in recent years.

For reinsurers with larger risk appetites and less than appropriate risk management capabilities, returns are less than average, while volatility is higher than average. These reinsurers, in Quadrant 4, typically have very high costs of equity, as **Exhibit 3** shows. Reinsurers in Quadrant 3 have less than average returns and less than average volatility. This lower volatility, combined with weaker but stable returns, has resulted in a lower cost of equity for reinsurers in Quadrant 3.

Exhibit 3
Average Returns vs. Volatility of Returns



Source: Bloomberg

The cost of capital is lower for reinsurers in Quadrant 2, with investors enjoying better than average returns with lower volatility. Finally, those in Quadrant 1 have the lowest cost of equity because of above-average returns, with slightly greater, but not extraordinary, volatility. In this case, the marginal increase in return appears to offset the marginal increase in risk.

An insurer's ability to access and raise capital and the potential costs of raising capital, especially during times of stress are important considerations in AM Best's ratings. In addition, while measuring operating performance, we may look at an insurer's returns on equity in comparison to peers and vis-à-vis cost of capital, as well as equally important metrics such as return on revenue, combined ratio, return on assets, and underwriting expenses. We also examine the absolute level of these metrics as well as their historic volatility. We evaluate the financial strength of all companies in the context of our building blocks: balance sheet strength, operating performance, business profile, and enterprise risk management.

August 29, 2019

Robust Remedial Actions Expected to Help Improve Lloyd's Performance

Lloyd's new prospectus, *The Future at Lloyd's*, sets out proposals to increase access to the market while trimming the cost

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As a leading underwriter of specialty property and casualty risks, Lloyd's occupies a strong position in the global insurance and reinsurance markets. The collective size of the Lloyd's market and its unique capital structure enable syndicates to compete effectively with large international (re)insurance groups under the well-recognised Lloyd's brand. Its competitive strength derives from a reputation for innovative and flexible underwriting, supported by the pool of underwriting expertise in London.

On July 10, 2019, AM Best affirmed the Best's financial strength rating (FSR) of A (Excellent) and the issuer credit ratings (ICR) of "a+" on the Lloyd's market. The outlook for each rating is Stable. The ratings reflect Lloyd's balance sheet strength, which AM Best assesses as Very Strong, as well as its Strong operating performance, Favourable business profile, and Appropriate enterprise risk management.

Lloyd's has a long-term record of strong technical performance over the underwriting cycle as demonstrated by its 10-year (2009-2018) average combined ratio of 96.6 and return on equity of 7.1%. Underwriting performance, however, is subject to volatility due to the market's exposure to catastrophe and other large losses.

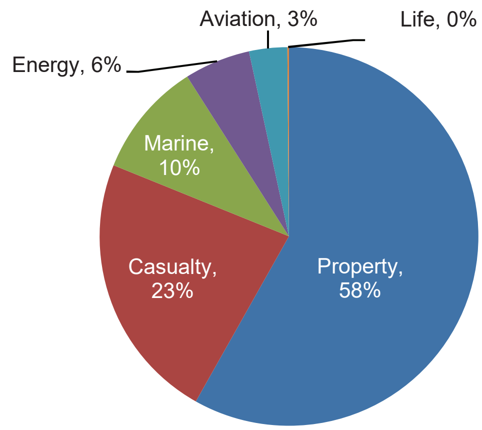
In 2018, the market's performance was affected by a second year of higher than average major claims. Major losses added 11.6 points to the calendar-year combined ratio, compared to the five-year average of 8.2 points. The market's attritional accident-year combined ratio (excluding major claims) improved modestly to 96.8, from 98.4 in the previous year. Adjusted for average catastrophe experience, recent technical performance has been below AM Best's expectations for a Strong assessment. However, AM Best expects robust remedial actions by the Corporation of Lloyd's and individual managing agents to support further incremental improvements in the attritional accident-year performance over the next three years.

Lloyd's has an excellent brand in its core markets, but an increasingly difficult operating environment poses challenges to its competitive position. In particular, the growth of regional (re)insurance hubs, combined with the comparatively high cost of placing business at Lloyd's, is reducing the flow of business into the London market. In May 2019, Lloyd's launched a new prospectus, *The Future at Lloyd's*, which sets out proposals to increase access to the market while trimming the cost. Proposals include a digital platform for complex risks, a risk exchange to handle less-complex business, and more flexible use of capital. If the proposed reforms are successfully implemented, meaningful cost reductions will support profitability. However, the plan is subject to a high degree of execution risk, because it will likely require substantial investment and cultural change. Should the modernisation project be unsuccessful, and peers be able to widen the gap in both efficiency and the ease of doing business, there could be negative implications for Lloyd's business profile.

Lloyd's is a leading player in the global reinsurance market, ranking as the sixth-largest risk carrier by reinsurance gross premium written (GPW) based on 2018 premiums and the fourth-largest when life premiums are excluded. Reinsurance is Lloyd's largest segment, accounting for 31% of GPW in 2018, and comprises property (with property catastrophe excess of loss the largest segment), casualty (primarily non-marine excess of loss and US workers' compensation), and specialty reinsurance (marine, energy, and aviation reinsurance) (see **Exhibit 1**).

In 2018, total reinsurance premiums underwritten by Lloyd's increased by 3% to GBP 11.0 billion. Property reinsurance, which accounts for over half the reinsurance segment, reported a 7.5% increase in GPW, largely attributable to better pricing on property treaty and facultative contracts, particularly on those affected by catastrophe events in 2017.

Exhibit 1
Lloyd's – Reinsurance Premiums, 2018



Source: Lloyd's Annual Report 2018

Despite two consecutive years of above average natural catastrophe losses, reinsurance capacity remains significant. Pricing was up at the January 2019 renewals, but rate increases were generally lower than market participants had expected. In April, a key renewal date for the Japanese market, there were no signs of generalised rate hardening. Instead, reinsurers adopted a rational rating approach, requesting price increases of up to 25%, targeted mainly at loss-affected contracts and programmes. Loss-free classes and programmes generally renewed flat.

Unsurprisingly, the performance of Lloyd's reinsurance segment was loss-making in 2018, due principally to catastrophe losses in the property and marine segments, including those from Hurricane Michael, wildfires in California, and Typhoon Jebi. All three sub-segments (property, casualty, and specialty) reported calendar-year combined ratios above 100. Prior-year reserve movements reduced the sector's overall combined ratio by 5.8 points.

The market's operating expense ratio, at around 40, is high compared to peers. The ratio has been largely stable over the past five years but was notably higher in this period than previously (36 in 2011). An increase in acquisition costs due to a change in business mix, with more business underwritten through coverholders, partly explains the step change in the expense ratio.

Lloyd's use of reinsurance is high when compared to large specialty insurers and reinsurers, due to the nature of the market, which consists of small to medium-sized businesses that purchase reinsurance independently. The market as a whole ceded 27.7% of its GPW in 2018. This amount includes reinsurance from syndicates to their related groups, as well as reinsurance between individual Lloyd's syndicates.

Lloyd's continues to analyse its reinsurance exposure through a range of submitted returns, complemented by the monitoring of Realistic Disaster Scenarios for individual syndicates. The security required by managing agents for their syndicate reinsurance programmes is reviewed regularly, to address any issues that have the potential to affect the financial strength of the overall market. In particular, total outstanding reinsurance recoverables, counterparty concentration risk, and the purchasing trends of individual syndicates are closely monitored.

Trend Review
July 23, 2019

Net Capital Charges Associated with ACIS/CIRT Reinsurance Transactions

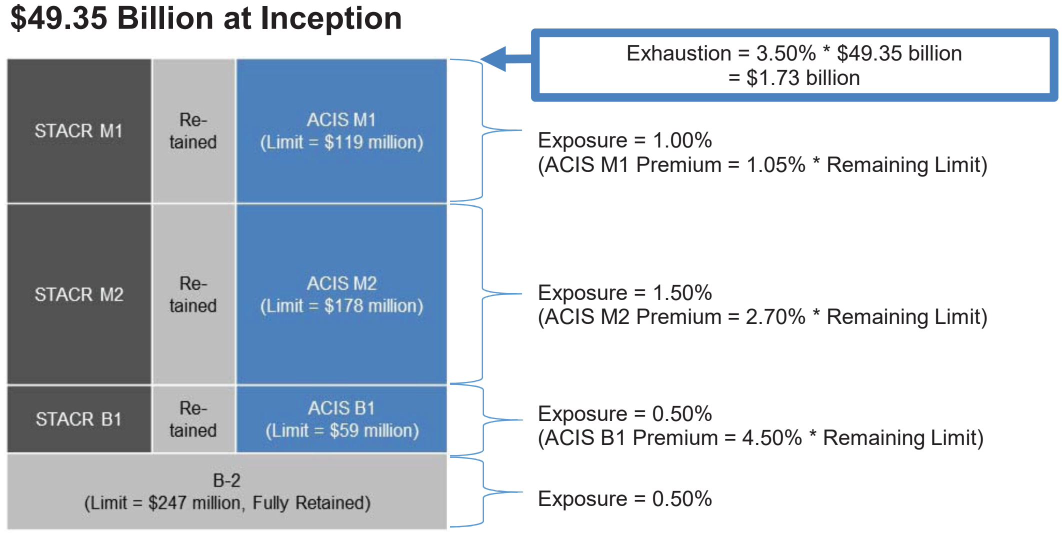
AM Best plans to publish tables of ACIS/CIRT Net Capital Charges semi-annually

As part of its strategic plan for conservatorship of the government-sponsored enterprises (GSEs), Freddie Mac and Fannie Mae, the Federal Housing Finance Agency (FHFA) requires that GSEs de-risk their balance sheets and expand the role of private capital in the mortgage market. Around 2013, Fannie Mae and Freddie Mac began transferring mortgage credit risk to the reinsurance market through their credit risk transfer (CRT) programs: Freddie Mac through the Agency Credit Insurance Structure (ACIS) and Fannie Mae through Credit Insurance Risk Transfer (CIRT).

ACIS and CIRT transactions transfer mortgage credit risk to the reinsurance market through excess of loss reinsurance agreements (see **Exhibits 1** and **2** for simplified examples of risk towers from ACIS and CIRT transactions). Each ACIS transaction transfers multiple layers of risk, while each CIRT transaction transfers only one layer of risk. As **Exhibit 3** shows, reinsurers have significantly expanded their participation in these programs since their inception. As of June 2019, the GSEs had transferred $22.2 billion of initial limits to the reinsurance market.

The primary purpose of this report is to introduce tables of Net Capital Charges (as described in AM Best's criteria procedure, *Evaluating Mortgage Insurance,* February 2018) associated with a select group of ACIS and CIRT transactions. AM Best plans to publish these tables (as shown in the last section of this report) semi-annually, using the most current performance data available from the GSEs' websites. This report also explains how participating in the ACIS and CIRT transactions affects reinsurers' net required capital.

Exhibit 1
Simplified Example: ACIS 2018-DNA2 Reference Pool with a UPB of $49.35 Billion at Inception



UPB = Unpaid Principal Balance
Notes: Not drawn to scale; STACR is the CRT to the capital market.
Source: Freddie Mac

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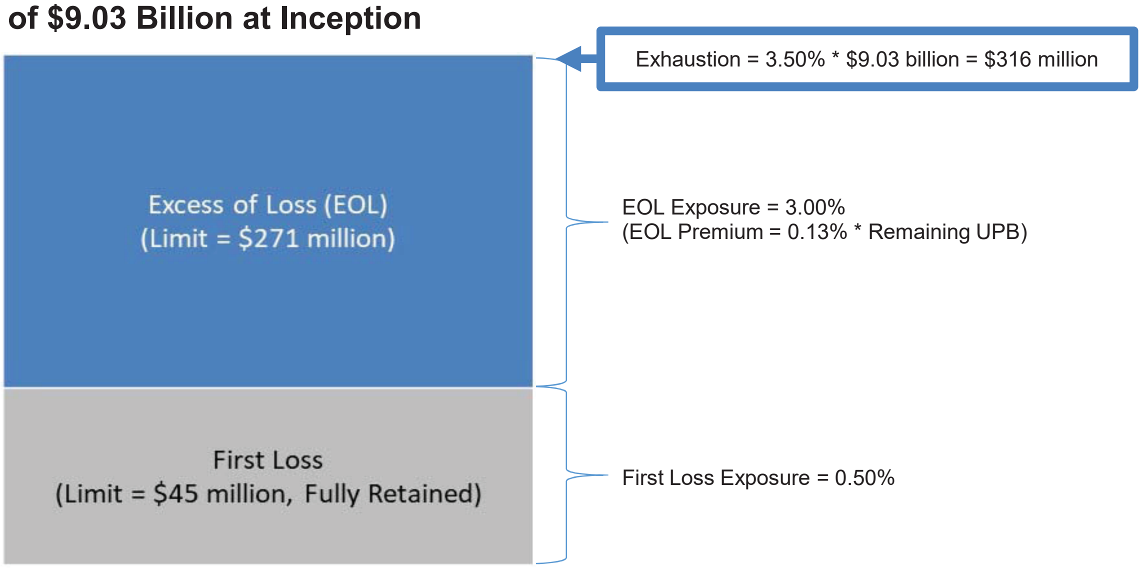
Exhibit 2
Simplified Example: CIRT 2018-2 Reference Pool with a UPB of $9.03 Billion at Inception



UPB = Unpaid Principal Balance
Notes: Not drawn to scale.
Source: Fannie Mae

Exhibit 3
GSE Limit Ceded to Reinsurers, 2013-2019
($ billions)

	Freddie Mac (ACIS)		Fannie Mae (CIRT)		Combined	
	Total Initial Unpaid Principal Balance[1]	Total Initial Limit of Liability	Total Initial Unpaid Principal Balance	Total Initial Limit of Liability	Total Initial Unpaid Principal Balance	Total Initial Limit of Liability
2013	2.9	0.1	0.0	0.0	2.9	0.1
2014	20.4	0.7	6.4	0.2	26.9	0.9
2015	50.8	2.8	40.3	1.0	91.1	3.8
2016	69.1	2.7	77.5	1.9	146.6	4.5
2017	93.6	2.9	100.4	2.3	194.1	5.2
2018	82.1	2.6	90.8	2.6	172.9	5.1
2019[2]	46.5	1.2	43.7	1.4	90.2	2.6
Total	**365.4**	**12.9**	**359.1**	**9.3**	**724.5**	**22.2**

[1] Based on AM Best estimates.
[2] As of July 15, 2019.
Sources: Fannie Mae and Freddie Mac

CRT Net Capital Charge and Its Impact

The overall Net Capital Charge is defined as the amount of net capital charged in Best's Capital Adequacy Ratio (BCAR) model as a percentage of original exposure. It is based on unexpected losses and premiums associated with the GSE CRT programs and takes into account each reinsurer's portfolio of ACIS and CIRT transactions. AM Best's factor-based approach, as described in the criteria procedure, *Evaluating Mortgage Insurance*, is used in the calculation of the Net Capital Charge for each reinsurer.

For ACIS transactions, the Net Capital Charge associated with each risk layer depends on its position in the transaction's risk tower. According to the transaction structure, the rate at which the limits of the top layers of ACIS transactions shrink is relatively high, given that scheduled amortization and prepayments in the loan portfolio are allocated sequentially from the top to the bottom layer to reduce those limits. In a number of cases, Net Capital Charges are less than zero for specific layers of ACIS transactions because (1) losses do not penetrate those layers (given AM Best's Value-at-Risk analyses) or (2) those layers may have been very small to begin with and have paid down completely (according to our assumption of the amortization of the underlying loans) before the losses could pierce such layers.

Once the Net Capital Charges for each layer are calculated, they are aggregated at the transaction level (floored at 5.00% of current exposures) and ultimately at the portfolio level for each reinsurer, before they are captured in the BCAR model. **Exhibit 4** uses exposures in the ACIS 2015-9 transaction to show how the Net Capital Charges are aggregated from the layer level to the transaction level while incorporating the Net Capital Charge floor of 5.00% of total current exposures. (The exhibit shows the exposure information and Net Capital Charges for layers M1, M2, M3, and B of ACIS 2015-9.)

The last row in **Exhibit 4** is the consolidation of the layer-by-layer exposures and Net Capital Charges. Please note that in this example, the exposure associated with the M2 layer is relatively large. Thus, the transaction-level Net Capital Charge (before applying the 5.00% floor) is approximately $1.75 million, or 2.79% of the current exposure (2.79% = $1.75 million/$62.83 million). When the 5.00% floor is applied, the resulting Net Capital Charge is $3.14 million ($3.14 million = 5.00% * $62.83 million). Although the transaction as a whole benefits from the negative Net Capital Charge contributed by the M2 layer, the aggregate Net Capital Charge is still floored by 5.00% of the prevailing exposure at the time of the analysis.

Exhibit 5 shows the average Net Capital Charges at the Value-at-Risk (VaR) 99.6 level associated with each layer for a sample group of ACIS and CIRT transactions that were originated in 2017 and 2018, with similar characteristics. The exhibit assumes equal dollar

Exhibit 4

Layer-by-Layer & Consolidation Results for ACIS 2015-9 (VaR 99.6)

A	B	C	D	E = B * D	F = 5.00% * C[1]	G = max(E, F)[1]
Layer	Original Exposure	Current Exposure	Net Capital Charge (%)	Net Capital Charge ($) Before Application of Floor	Floor for Transaction Net Capital Charge ($)	Transaction Net Capital Charge ($) After Application of Floor
M1	3,000,000	0	0.00	0		
M2	150,000,000	47,856,450	-3.14	-4,708,960		
M3	10,000,000	10,000,000	23.80	2,380,040		
B	5,000,000	4,977,883	81.67	4,083,387		
Total	**168,000,000**	**62,834,333**		**1,754,466**	**3,141,717**	**3,141,717[2]**

[1] Applicable to last row only.

[2] Note that Net Capital Charge is typically expressed as a percentage of the original exposure, so the Net Capital Charge for this transaction is 1.87% (1.87% = $3.14m / $168.00mm).

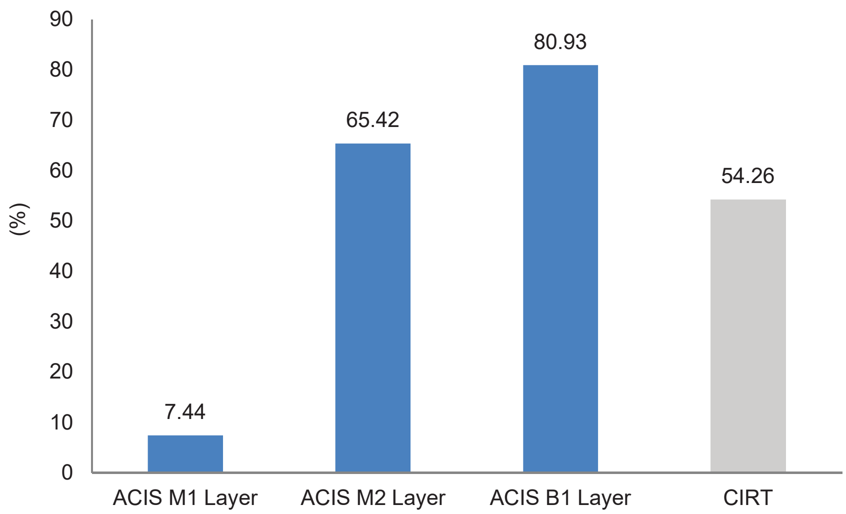
Source: AM Best data and research

exposures in all layers. The ACIS transactions (the first three bars in the exhibit) confirm the escalating risk charges from the top layer (ACIS M1) to the bottom layer (ACIS B1).

The impact of the total Net Capital Charge on a reinsurer due to its portfolio of GSE CRT transactions varies depending on the diversification of the reinsurer's business lines as well as the magnitude of its investment risk. AM Best's Net Required Capital (NRC) formula incorporates a number of risks, B1 through B8, as **Exhibit 6** shows. Please note that in **Exhibit 6**, Net Capital Charge is represented by $B5_m$, the Mortgage-Related Net Loss and LAE Reserves Risk. (Again, for a more complete description of the mortgage-related NRC calculation, please see AM Best's criteria procedure, *Evaluating Mortgage Insurance*.)

Exhibit 5

Average Net Capital Charge as a % of Original Exposure (VaR 99.6)



Notes:
ACIS Transactions in Sample: ACIS 2017-1, ACIS 2017-2, ACIS 2017-3, ACIS 2017-5, ACIS 2017-7, ACIS 2017-8, ACIS 2018-DNA1, ACIS 2018-HQA1 and ACIS 2018-DNA2.
CIRT Transactions in Sample: CIRT 2017-1, CIRT 2017-2, CIRT 2017-3, CIRT 2017-4, CIRT 2017-5, CIRT 2017-6, CIRT 2018-1, CIRT 2018-2 and CIRT 2018-3.
Calculations performed with June 2019 data.
Numbers shown are simple averages.
Source: AM Best data and research

Exhibit 6

Mortgage-Related NRC Formula

$$\text{NRC} = \sqrt{B1^2 + B2^2 + B3^2 + (B1_n + B2_n) * B5_m + (0.5B4)^2 + (0.5B4 + B5)^2 + B6^2 + B8^2} + B7$$

(B1)	Fixed Income Securities Risk
	($B1_n$) Non-affiliated Fixed Income Securities Risk
(B2)	Equity Securities Risk
	($B2_n$) Non-affiliated Equity Securities Risk
(B3)	Interest Rate Risk
(B4)	Credit Risk
(B5)	Net Loss and LAE Reserves Risk (10% correlation applied to $B5_m$ and $B5_{nm}$)
	($B5_m$) Mortgage-related Net Loss and LAE Reserves Risk
	($B5_{nm}$) Non-mortgage-related Net Loss and LAE Reserves Risk
(B6)	Net Premiums Written Risk
(B7)	Business Risk
(B8)	Potential Catastrophe Losses

Source: AM Best's *Evaluating Mortgage Insurance (* February 2018); AM Best data and research

The effect of GSE CRT risk on NRC can be illustrated using three hypothetical reinsurers with the following characteristics:

Hypothetical Reinsurer 1: Large, well-diversified business lines; low-risk investment portfolio
Hypothetical Reinsurer 2: Moderately diversified business lines; high-risk investment portfolio
Hypothetical Reinsurer 3: Covers only mortgage risk; low-risk investment portfolio

The assumptions underlying the mortgage risk that these hypothetical reinsurers undertake follow:

- Calculations are performed at the VaR 99.6 level.
- The GSE mortgage exposure limit is 20% of reported surplus for each reinsurer.
- The Net Capital Charge of 55.4% is based on a portfolio of selected ACIS/CIRT transactions the GSEs offered for which the reinsurers cover the same limit amount for each layer in each transaction.

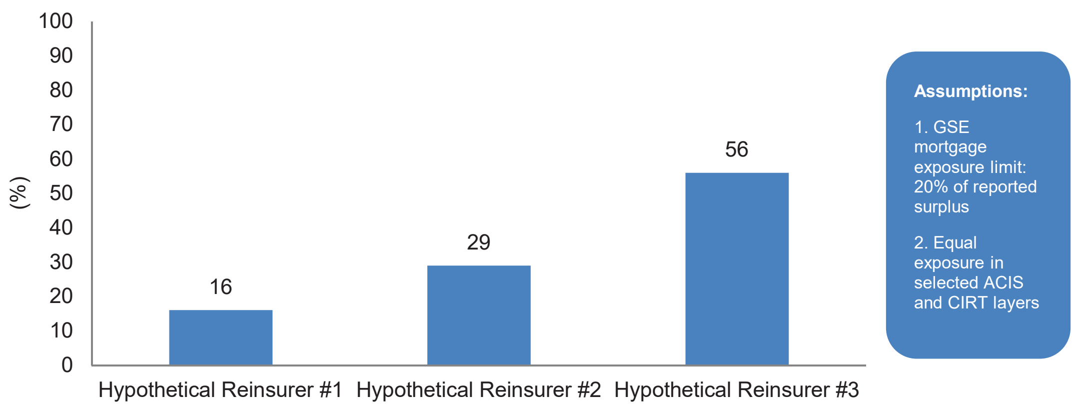
To better understand the effect of GSE CRT-related Net Capital Charge on each of the three hypothetical reinsurers we define the additional term:

Incremental NRC = NRC including GSE risk – NRC excluding GSE risk

Exhibit 7 shows the Incremental NRC for each increase in limit by the three hypothetical reinsurers. Incorporating the additional GSE CRT exposure has the least effect on Hypothetical Reinsurer 1, which experiences an increase of only $16 in NRC for every additional $100 of limit. Hypothetical Reinsurer 2 is more acutely impacted, as it experiences an increase of $29 in NRC for every marginal $100 of limit. The most severe impact is experienced by Hypothetical Reinsurer 3, which covers only mortgage risk and experiences an increase of $56 in NRC for each additional $100 of limit—3.5 times the increase in NRC compared to the NRC increase for Hypothetical Reinsurer 1 (the large, well-diversified reinsurer).

The various types of reinsurers illustrate the effect that business line diversification and the risk of their investment portfolios have on Incremental NRC. Adding mortgage exposure has a far more muted effect on the incremental NRC (due to the assumed 10% correlation between

Exhibit 7
Incremental NRC as a % of Limit, by Business Profile and Investment Portfolio



Source: AM Best data and research

mortgage reserves risk and non-mortgage reserves risk) for a well-diversified reinsurer than for a reinsurer covering only mortgage risks. Furthermore, due to the assumed 50% correlation between mortgage reserves risk and investment risk, the riskier the investment portfolio, the greater the impact of the additional mortgage risk on the NRC.

Published Net Capital Charges ($B5_m$) of a Representative Sample of CRT Transactions

AM Best has selected approximately half of the 87 transactions effective through June 2019 to highlight some of the key components of the factor-based method used to calculate Net Capital Charges associated with individual layers of the GSE CRT transactions. **Exhibits 8** and **9** show the characteristics of each ACIS and CIRT transaction in the selected representative sample.

The representative sample was selected based on the following factors:

- GSE Diversity—i.e., Freddie Mac, Fannie Mae
- Mortgage Products—i.e., >20-year maturities, ≤20 maturities; FRM, ARM
- Retention Level
- Loan to Value Characteristics—i.e., low (60-80 LTV), high (80-97 LTV), mix (60-97 LTV)
- Origination Type—i.e., front-end, back-end

Exhibit 8

Characteristics of Freddie Mac Transactions in Representative Sample

Transaction	Products	Retention (%)	LTV	Origination Type
ACIS 2013-1	>20-year FRM	0.30	Low	Back-end
ACIS 2014-1	>20-year FRM	0.30	Low	Back-end
ACIS 2014-2	>20-year FRM	0.30	Low	Back-end
ACIS 2015-1	>20-year FRM	0.60	High	Back-end
ACIS 2015-2	>20-year FRM	0.40	Low	Back-end
ACIS 2015-8	>20-year FRM	0.00	Low	Back-end
ACIS 2015-9	>20-year FRM	0.00	High	Back-end
ACIS 2016-4	>20-year FRM	0.00	Low	Back-end
ACIS 2016-5	>20-year FRM	0.00	High	Back-end
ACIS 2016-8	>20-year FRM	0.00	Low	Back-end
ACIS 2016-9	>20-year FRM	0.00	High	Back-end
ACIS 2017-1	>20-year FRM	0.50	Low	Back-end
ACIS 2017-2	>20-year FRM	0.50	High	Back-end
ACIS 2018-DNA1	>20-year FRM	0.50	Low	Back-end
ACIS 2018-HQA1	>20-year FRM	0.50	High	Back-end
ACIS 2018-HQA2	>20-year FRM	0.10	High	Back-end
ACIS 2018-DNA3	>20-year FRM	0.10	Low	Back-end
ACIS 2019-DNA1	>20-year FRM	0.10	Low	Back-end
ACIS 2019-DNA2	>20-year FRM	0.10	Low	Back-end
ACIS 2019-HQA1	>20-year FRM	0.10	High	Back-end

Source: Freddie Mac

Exhibit 9

Characteristics of Fannie Mae Transactions in Representative Sample

Transaction	Products	Retention (%)	LTV	Origination Type
CIRT 2014-1	>20-year FRM	0.50	Mix	Back-end
CIRT 2015-1	>20-year FRM	0.50	Low	Back-end
CIRT 2015-4	>20-year FRM	0.50	High	Back-end
CIRT 2015-6	Fixed Period ARM	0.50	Mix	Back-end
CIRT 2016-2	>20-year FRM	0.50	Low	Back-end
CIRT 2016-3	>20-year FRM	0.50	Low	Back-end
CIRT 2016-9	≤20-year FRM	0.35	Mix	Back-end
CIRT 2016 FE-1	>20-year FRM	0.35	High	Front-end
CIRT 2017-1	>20-year FRM	0.50	Low	Back-end
CIRT 2017-3	>20-year FRM	0.50	High	Back-end
CIRT 2017-7	≤20-year FRM	0.25	Mix	Back-end
CIRT 2017 FE-1	>20-year FRM	0.50	Low	Front-end
CIRT 2017 FE-2	>20-year FRM	0.50	High	Front-end
CIRT 2018-5	>20-year FRM	0.60	Low	Back-end
CIRT 2018-6	>20-year FRM	0.60	High	Back-end
CIRT 2018-8	≤20-year FRM	0.35	Mix	Back-end
CIRT 2018 FE-1	>20-year FRM	0.50	Low	Front-end
CIRT 2018 FE-2	>20-year FRM	0.50	High	Front-end
CIRT 2019-1	>20-year FRM	0.60	Low	Back-end
CIRT 2019-2	>20-year FRM	0.60	High	Back-end

Source: Fannie Mae

Exhibits 10 and **11** show the layer-by-layer calculations of the Net Capital Charges for the representative sample of ACIS and CIRT transactions, using performance data provided by the GSEs in June 2019. The capitalized terms used in this section of the report are fully explained in *Evaluating Mortgage Insurance*. The elements in the columns of **Exhibits 10** and **11** follow:

A. Transaction: The specific name given to each transaction by Fannie Mae or Freddie Mac
B. Layer: The layer associated with each transaction (note for CIRT there is only one layer)
C. Credit Enhancement: The percentage of the original unpaid principal balance (UPB) at which point losses will attach to the specified layer
D. Initial Limit: The initial size of the layer as a percentage of the original UPB
E. Premium Rate: The rate applied to the remaining limit (for ACIS) or the Remaining UPB (for CIRT) paid to the reinsurer
F. Total Realized Loss: The cumulative losses from transaction inception to the time of the analysis as a percentage of original UPB (in bps). The Total Realized Loss is 0 at the beginning of the transaction; as the transaction ages, the Total Realized Loss will grow.
G. Years Since Inception: The number of years from the effective date of the transaction and the reporting date for the data
H. Remaining UPB: The percentage of the original UPB remaining in the reference pool
I. Current Limit: The size of the layer (as a percentage of original UPB) at the time of this current analysis
J. Seasoning Factor: The factor representing the change in aggregate risk of default as pools of mortgages age; based on years since inception
K. Ultimate Loss: The last element of the Cumulative Loss Vector for each transaction (at the time of the evaluation) at the VaR 99.6 level
L. Gross Capital Charge (calculated as a percentage of original exposure): The loss that accrues to the layer before considering premiums at the VaR 99.6 level
M. Premium Credit (calculated as a percentage of original exposure): The premium that accrues to the layer at the VaR 99.6 level
N. Net Capital Charge: The Gross Capital Charge minus the Premium Credit (for each of the VaR levels); this is $B5_m$ in the NRC formula

Exhibit 10
Net Capital Charges ($B5_m$) for ACIS Transactions in Representative Sample

(%)

A	B	C	D	E	F	G	H	I	J	K	L	M	N			
Transaction	Layer	Credit En-hance-ment	Initial Limit	Pre-mium Rate	Total Real-ized Loss (bps)	Years Since Incep-tion	Re-main-ing UPB	Cur-rent Limit	Sea-son-ing Factor	Ultimate Loss (99.6%)	Gross Capital Charge (99.6%)	Pre-mium Credit (99.6%)	Net Capital Charge (95%)	Net Capital Charge (99%)	Net Capital Charge (99.5%)	Net Capital Charge (99.6%)
ACIS 2013-1	M1	1.65	1.35	2.35	3.7	5.8	50	0.00	88	1.08	0.00	0.00	0.00	0.00	0.00	0.00
ACIS 2013-1	M2	0.30	1.35	5.35	3.7	5.8	50	1.24	88	1.08	51.05	17.03	-14.03	17.79	30.77	34.02
ACIS 2014-1	M1	1.95	1.05	1.36	3.5	5.0	56	0.00	94	1.35	0.00	0.00	0.00	0.00	0.00	0.00
ACIS 2014-1	M2	0.30	1.65	4.12	3.5	5.0	56	1.41	94	1.35	55.61	11.85	-4.70	27.50	40.50	43.76
ACIS 2014-2	M1	3.50	1.00	0.75	3.8	4.9	55	0.00	95	1.43	0.00	0.00	0.00	0.00	0.00	0.00
ACIS 2014-2	M2	2.00	1.50	1.35	3.8	4.9	55	0.80	95	1.43	0.00	3.11	-3.11	-3.11	-3.11	-3.11
ACIS 2014-2	M3	0.30	1.70	2.61	3.8	4.9	55	1.70	95	1.43	57.98	11.14	-0.71	30.89	43.62	46.84
ACIS 2015-1	M1	4.10	2.00	1.25	3.9	4.3	49	0.00	100	1.77	0.00	0.00	0.00	0.00	0.00	0.00
ACIS 2015-1	M2	2.25	1.85	2.25	3.9	4.3	49	1.06	100	1.77	0.00	6.14	-6.14	-6.14	-6.14	-6.14
ACIS 2015-1	M3	0.60	1.65	4.00	3.9	4.3	49	1.65	100	1.77	59.96	18.87	-20.13	20.02	36.81	41.08
ACIS 2015-2	M1	3.60	1.00	1.25	5.4	4.3	36	0.00	100	1.18	0.00	0.00	0.00	0.00	0.00	0.00
ACIS 2015-2	M2	2.40	1.20	2.25	5.4	4.3	36	0.00	100	1.18	0.00	0.00	0.00	0.00	0.00	0.00
ACIS 2015-2	M3	0.40	2.00	4.00	5.4	4.3	36	1.48	100	1.18	33.07	13.06	-13.11	8.63	17.71	20.00
ACIS 2015-8	M1	4.85	1.00	1.10	0.7	3.5	56	0.00	105	1.85	0.00	0.00	0.00	0.00	0.00	0.00
ACIS 2015-8	M2	2.65	2.20	2.50	0.7	3.5	56	0.91	105	1.85	0.00	4.68	-4.68	-4.68	-4.68	-4.68
ACIS 2015-8	M3	1.00	1.65	4.00	0.7	3.5	56	1.65	105	1.85	41.19	24.51	-29.05	-4.42	12.37	16.68
ACIS 2015-8	B	0.00	1.00	8.35	0.7	3.5	56	0.99	105	1.85	92.86	13.75	28.94	73.99	78.32	79.10
ACIS 2015-9	M1	5.40	1.00	1.10	0.4	3.4	54	0.00	106	2.20	0.00	0.00	0.00	0.00	0.00	0.00
ACIS 2015-9	M2	2.95	2.45	2.50	0.4	3.4	54	0.78	106	2.20	0.00	3.14	-3.14	-3.14	-3.14	-3.14
ACIS 2015-9	M3	1.00	1.95	4.50	0.4	3.4	54	1.95	106	2.20	49.77	25.97	-32.92	1.64	19.31	23.80
ACIS 2015-9	B	0.00	1.00	8.95	0.4	3.4	54	1.00	106	2.20	94.09	12.43	43.14	77.03	80.90	81.67
ACIS 2016-4	M1	4.15	0.85	1.20	0.6	2.9	62	0.00	108	2.26	0.00	0.00	0.00	0.00	0.00	0.00
ACIS 2016-4	M2	3.25	0.90	2.30	0.6	2.9	62	0.18	108	2.26	0.00	0.58	-0.58	-0.58	-0.58	-0.58
ACIS 2016-4	M3	1.00	2.25	4.00	0.6	2.9	62	2.25	108	2.26	44.95	22.17	-28.10	3.34	18.89	22.78
ACIS 2016-4	B	0.00	1.00	8.95	0.6	2.9	62	0.99	108	2.26	93.62	13.21	43.60	75.85	79.50	80.41
ACIS 2016-5	M1	4.50	1.00	1.10	0.2	2.9	63	0.00	108	2.69	0.00	0.00	0.00	0.00	0.00	0.00
ACIS 2016-5	M2	3.00	1.50	2.30	0.2	2.9	63	0.81	108	2.69	0.00	5.12	-5.12	-5.12	-5.12	-5.12
ACIS 2016-5	M3	1.00	2.00	4.50	0.2	2.9	63	2.00	108	2.69	68.61	23.39	-31.70	18.12	39.75	45.22
ACIS 2016-5	B	0.00	1.00	9.50	0.2	2.9	63	1.00	108	2.69	94.71	12.27	57.20	78.68	81.86	82.44
ACIS 2016-8	M1	4.00	1.00	0.90	0.2	2.6	69	0.00	108	2.57	0.00	0.00	0.00	0.00	0.00	0.00
ACIS 2016-8	M2	3.00	1.00	1.85	0.2	2.6	69	0.78	108	2.57	0.00	5.85	-5.85	-5.85	-5.85	-5.85
ACIS 2016-8	M3	1.00	2.00	3.75	0.2	2.6	69	2.00	108	2.57	63.45	20.77	-28.25	17.68	37.58	42.68
ACIS 2016-8	B	0.00	1.00	8.75	0.2	2.6	69	1.00	108	2.57	94.22	12.37	56.14	77.77	81.36	81.85
ACIS 2016-9	M1	4.28	1.23	0.90	0.3	2.5	71	0.00	109	3.10	0.00	0.00	0.00	0.00	0.00	0.00
ACIS 2016-9	M2	3.05	1.23	2.00	0.3	2.5	71	1.20	109	3.10	2.90	9.85	-9.87	-9.87	-9.87	-6.95
ACIS 2016-9	M3	1.00	2.05	4.05	0.3	2.5	71	2.05	109	3.10	81.73	18.85	-22.74	34.31	58.57	62.88
ACIS 2016-9	B	0.00	1.00	9.15	0.3	2.5	71	1.00	109	3.10	94.83	11.41	62.46	80.48	82.83	83.42
ACIS 2017-1	M1	2.55	1.20	1.20	0.1	2.2	77	0.70	109	2.84	0.41	3.00	-3.00	-3.00	-2.59	-2.59
ACIS 2017-1	M2	1.00	1.55	3.25	0.1	2.2	77	1.55	109	2.84	81.88	15.00	-19.98	45.48	65.23	66.87
ACIS 2017-1	B1	0.50	0.50	5.25	0.1	2.2	77	0.50	109	2.84	91.97	10.72	55.46	76.69	80.78	81.25
ACIS 2017-2	M1	3.25	1.00	1.20	0.2	2.2	79	0.51	109	3.47	0.00	1.78	-1.78	-1.78	-1.78	-1.78
ACIS 2017-2	M2	1.00	2.25	3.50	0.2	2.2	79	2.25	109	3.47	76.00	15.64	-13.96	43.77	56.35	60.36
ACIS 2017-2	B1	0.50	0.50	5.00	0.2	2.2	79	0.50	109	3.47	93.07	8.81	64.89	81.53	83.72	84.27
ACIS 2018-DNA1	M1	3.10	0.90	0.85	0.0	1.2	86	0.80	106	3.38	0.00	3.23	-3.23	-3.23	-3.23	-3.23
ACIS 2018-DNA1	M2	1.00	2.10	2.70	0.0	1.2	86	2.10	106	3.38	77.58	14.01	-11.07	45.50	61.18	63.58
ACIS 2018-DNA1	B1	0.50	0.50	4.50	0.0	1.2	86	0.50	106	3.38	90.05	11.40	60.18	75.92	78.10	78.65
ACIS 2018-HQA1	M1	3.20	0.80	0.85	0.0	1.1	90	0.66	106	4.03	0.00	2.64	-2.64	-2.64	-2.64	-2.64
ACIS 2018-HQA1	M2	1.00	2.20	2.90	0.0	1.1	90	2.20	106	4.03	81.49	13.36	-3.33	55.18	66.20	68.13
ACIS 2018-HQA1	B1	0.50	0.50	4.75	0.0	1.1	90	0.50	106	4.03	90.81	11.11	63.97	76.90	79.37	79.69
ACIS 2018-HQA2	M1	3.00	1.00	1.05	0.0	0.5	94	1.00	102	4.10	70.06	8.01	-9.75	8.99	56.20	62.05
ACIS 2018-HQA2	M2	1.15	1.85	2.90	0.0	0.5	94	1.85	102	4.10	80.43	14.46	-7.07	59.73	65.01	65.97
ACIS 2018-HQA2	B1	0.65	0.50	4.85	0.0	0.5	94	0.50	102	4.10	87.71	15.18	53.94	69.38	72.08	72.53
ACIS 2018-HQA2	B2	0.10	0.55	13.00	0.0	0.5	94	0.55	102	4.10	91.87	26.88	46.63	61.51	64.67	65.00
ACIS 2018-DNA3	M1	3.00	1.00	1.05	0.1	0.5	92	0.95	103	3.55	37.54	8.59	-9.18	-9.18	18.84	28.95
ACIS 2018-DNA3	M2	1.10	1.90	2.70	0.1	0.5	92	1.90	103	3.55	78.68	14.66	-12.63	51.27	62.75	64.02
ACIS 2018-DNA3	B1	0.60	0.50	4.50	0.1	0.5	92	0.50	103	3.55	87.66	14.14	53.48	69.83	73.11	73.52
ACIS 2018-DNA3	B2	0.10	0.50	9.90	0.1	0.5	92	0.50	103	3.55	91.91	20.37	55.87	68.57	71.27	71.54
ACIS 2019-DNA1	M1	3.00	1.25	1.05	0.0	0.2	93	1.25	101	3.49	25.95	9.55	-9.92	-9.92	8.58	16.40
ACIS 2019-DNA1	M2	1.10	1.90	2.60	0.0	0.2	93	1.90	101	3.49	77.31	15.03	-13.53	47.73	61.14	62.27
ACIS 2019-DNA1	B1	0.60	0.50	4.55	0.0	0.2	93	0.50	101	3.49	86.24	15.94	49.90	67.52	69.75	70.31
ACIS 2019-DNA1	B2	0.10	0.50	10.70	0.0	0.2	93	0.50	101	3.49	90.45	26.00	48.77	60.95	63.75	64.45
ACIS 2019-DNA2	M1	3.50	0.75	0.95	0.0	0.0	94	0.75	100	3.44	0.00	9.07	-9.07	-9.07	-9.07	-9.07
ACIS 2019-DNA2	M2	1.10	2.40	2.45	0.0	0.0	94	2.40	100	3.44	72.62	16.13	-15.38	31.69	51.51	56.49
ACIS 2019-DNA2	B1	0.60	0.50	4.50	0.0	0.0	94	0.50	100	3.44	85.62	16.48	48.66	66.14	68.64	69.14
ACIS 2019-DNA2	B2	0.10	0.50	10.75	0.0	0.0	94	0.50	100	3.44	89.52	28.68	45.87	58.26	60.28	60.84
ACIS 2019-HQA1	M1	3.60	0.90	1.05	0.0	0.1	95	0.90	101	4.10	36.25	9.53	-9.97	-9.97	14.29	26.72
ACIS 2019-HQA1	M2	1.50	2.10	2.50	0.0	0.1	95	2.10	101	4.10	76.08	15.24	-19.35	43.30	59.49	60.84
ACIS 2019-HQA1	B1	0.60	0.90	4.50	0.0	0.1	95	0.90	101	4.10	85.62	16.48	47.39	65.92	68.80	69.15
ACIS 2019-HQA1	B2	0.10	0.50	13.00	0.0	0.1	95	0.50	101	4.10	90.78	30.50	43.49	55.94	59.41	60.28

Notes: In transactions ACIS 2013-1 through ACIS 2015-8, the Total Realized Loss is based on a severity formula. In transactions ACIS 2018-HQA2 through ACIS 2019-HQA1, new rules for allocating principal payments were put into place causing the limits of all layers to remain unchanged under AM Best stress scenarios.

Sources: Information and figures in columns A through E are from Freddie Mac; AM Best data and research

Exhibit 11
Net Capital Charges ($B5_m$) for CIRT Transactions in Representative Sample

(%)

A	B	C	D	E	F	G	H	I	J	K	L	M	N			
Transaction	Layer	Credit Enhance-ment	Initial Limit	Pre-mium Rate	Total Real-ized Loss (bps)	Years Since Incep-tion	Re-maining UPB	Current Limit	Season-ing Factor	Ultimate Loss (99.6%)	Gross Capital Charge (99.6%)	Pre-mium Credit (99.6%)	Net Capital Charge (95%)	Net Capital Charge (99%)	Net Capital Charge (99.5%)	Net Capital Charge (99.6%)
CIRT 2014-1	Tranche	0.50	3.00	0.14	1.42	4.5	36	1.36	99	1.26	21.37	7.18	-6.84	6.98	12.75	14.19
CIRT 2015-1	Tranche	0.50	2.50	0.13	1.19	3.9	47	1.31	103	1.58	36.44	11.40	-7.05	14.16	22.85	25.04
CIRT 2015-4	Tranche	0.50	2.50	0.14	0.99	3.5	46	1.24	105	1.93	42.68	12.36	-3.64	22.43	29.95	30.33
CIRT 2015-6	Tranche	0.50	2.50	0.14	0.18	3.5	36	1.07	105	1.12	20.05	9.78	-9.78	2.76	8.74	10.27
CIRT 2016-2	Tranche	0.50	2.50	0.13	0.27	3.2	58	1.48	107	2.06	50.04	15.13	-4.94	22.89	34.25	34.91
CIRT 2016-3	Tranche	0.50	2.50	0.13	0.21	3.1	63	1.62	107	2.23	54.82	16.79	-4.32	26.00	37.52	38.03
CIRT 2016-9	Tranche	0.35	1.75	0.11	0.28	2.5	62	1.19	112	1.78	61.44	13.19	4.63	41.00	47.96	48.25
CIRT 2016 FE-1	Tranche	0.35	2.65	0.25	0.03	2.5	82	2.20	109	3.76	74.15	34.70	-4.12	31.72	39.07	39.45
CIRT 2017-1	Tranche	0.50	2.50	0.13	0.14	2.2	77	1.99	109	2.94	67.70	21.77	-0.42	38.95	45.43	45.93
CIRT 2017-3	Tranche	0.50	2.75	0.14	0.04	2.0	81	2.23	109	3.75	70.54	21.08	5.95	44.88	49.03	49.46
CIRT 2017-7	Tranche	0.25	1.25	0.09	0.03	1.5	81	1.25	112	1.90	89.25	22.35	10.90	63.04	65.16	66.90
CIRT 2017 FE-1	Tranche	0.50	2.50	0.17	0.06	2.3	84	2.50	109	3.39	85.12	30.51	-3.06	42.73	53.95	54.62
CIRT 2017 FE-2	Tranche	0.50	2.65	0.20	0.00	2.0	88	2.65	109	4.25	87.02	34.60	-1.16	46.25	51.91	52.42
CIRT 2018-5	Tranche	0.60	3.00	0.13	0.00	0.9	92	3.00	105	3.66	79.43	24.12	-2.28	36.94	52.78	55.31
CIRT 2018-6	Tranche	0.60	3.00	0.14	0.00	0.7	95	3.00	104	4.34	81.70	26.35	2.04	48.50	54.80	55.35
CIRT 2018-8	Tranche	0.35	1.50	0.09	0.00	0.6	93	1.50	105	2.17	85.39	24.06	4.06	52.96	60.89	61.33
CIRT 2018 FE-1	Tranche	0.50	3.25	0.15	0.00	1.1	94	3.25	106	3.81	80.52	26.11	-1.67	36.50	51.81	54.41
CIRT 2018 FE-2	Tranche	0.50	3.25	0.17	0.00	1.1	95	3.25	106	4.51	83.24	29.82	1.62	46.93	52.82	53.42
CIRT 2019-1	Tranche	0.60	3.25	0.15	0.00	0.2	96	3.25	101	3.70	73.56	27.39	-7.43	28.24	42.58	46.17
CIRT 2019-2	Tranche	0.60	3.25	0.15	0.00	0.2	97	3.25	101	4.36	79.25	28.48	-2.18	39.97	50.13	50.77

Sources: Information and figures in columns A through E are from Fannie Mae; AM Best data and research

Disclaimer

At its sole discretion, AM Best may discontinue the publication of the Net Capital Charges ($B5_m$), change the frequency of the publication of the Net Capital Charges, or change the transaction selection criteria associated with the Net Capital Charges. The publication of the Net Capital Charges is also dependent on the continued timely availability of the ACIS/CIRT data from the GSEs.

The Net Capital Charges in this report are meant to approximate the Net Capital Charges to be used in the determination of Net Required Capital in the BCAR. Readers may not be able to precisely replicate the Net Capital Charges in this report because of assumptions related to seasoning, evaluation cut-off date, transaction effective date, and interpolation methodology. In addition, the GSEs may revise or update data associated with the ACIS/CIRT transactions after AM Best has downloaded such data for the current Net Capital Charge calculations. The changes by the GSEs, as well as any changes or corrections AM Best makes to the Net Capital Charge calculations, will be reflected in subsequent reports produced by AM Best.

If AM Best is rating a reinsurer that engages in GSE CRT transactions, we will share a more precise Net Capital Charge for each layer or transaction after incorporating any applicable Net Capital Charge floors. Please see AM Best's criteria procedure, *Evaluating Mortgage Insurance* for a detailed explanation of the calculations.

August 29, 2019

The Changing Landscape of the Collateralized Reinsurance Market

Collateralized reinsurance market is the fastest-growing ILS segment

Despite challenges, collateralized reinsurance remains a viable segment of the Insurance-Linked Securities market. The growth of this market has been propelled by ILS funds seeking to provide tailored coverage for ceding companies and coverage for risks that may not be suited for, or available from, other ILS instruments. This market segment faced considerable challenges with investor losses from catastrophe events in 2017-2018 but continues to weather the storm.

The collateralized reinsurance market has maintained its growth but it clearly differs from that of traditional reinsurance because the ceding company is generally exposed to the tail risk associated with these reinsurance programs. The growth in volume and value of collateralized reinsurance transactions will undoubtedly create collateral and credit risks. We note that there have been improvements meant to reduce collateral risk but this risk still remains and is a critical component of AM Best's rating considerations. Moreover, the use of fronting arrangements and guarantees by (re)insurers exposes the ceding company to the credit risk of the fronting carrier. Collateral and credit risk issues have the potential for creating systemic risk owing to major catastrophic losses or financial market distress in the future. AM Best anticipates further regulation in these markets as recourse is usually limited to funds that have been allocated in trust accounts.

Rapidly Growing Market

The collateralized reinsurance market has been the fastest-growing ILS market, driven mainly by the desire of ILS funds to provide tailored coverage to ceding companies that take on risk not covered by other ILS instruments. At year-end 2018, the market capitalization of the collateralized reinsurance market was around $56 billion, out of an approximately $95 billion ILS market.

The 2017-2018 insured losses from major catastrophe events, including hurricanes Harvey, Irma, Maria, and Michael, along with California wildfires, severe thunderstorms, and two Category 5 typhoons—Jebi and Trami—have increased attention on the collateralized reinsurance market, as it has borne a substantial amount of these losses. Additionally, the impact of locked collateral and ongoing adverse loss development is a drag on returns in the collateralized reinsurance market.

Parties to the Collateralized Reinsurance Transaction

The typical structure of a collateralized reinsurance agreement involves a reinsurance contract whereby the risk-bearing entity—i.e., a segregated account company (SAC)/transformer—posts collateral to cover its maximum liability in the event of a loss under the contract. The acceptable collateral posted can be either a letter of credit for the benefit of the ceding company, or assets placed in a trust with the ceding company as beneficiary, pursuant to a trust agreement.

In general, there are five key parties to a collateralized reinsurance transaction. These are shown in **Exhibit 1**, *Representative Collateralized Reinsurance Diagram*, and **Exhibit 2**, *Features of Collateralized Reinsurance*:

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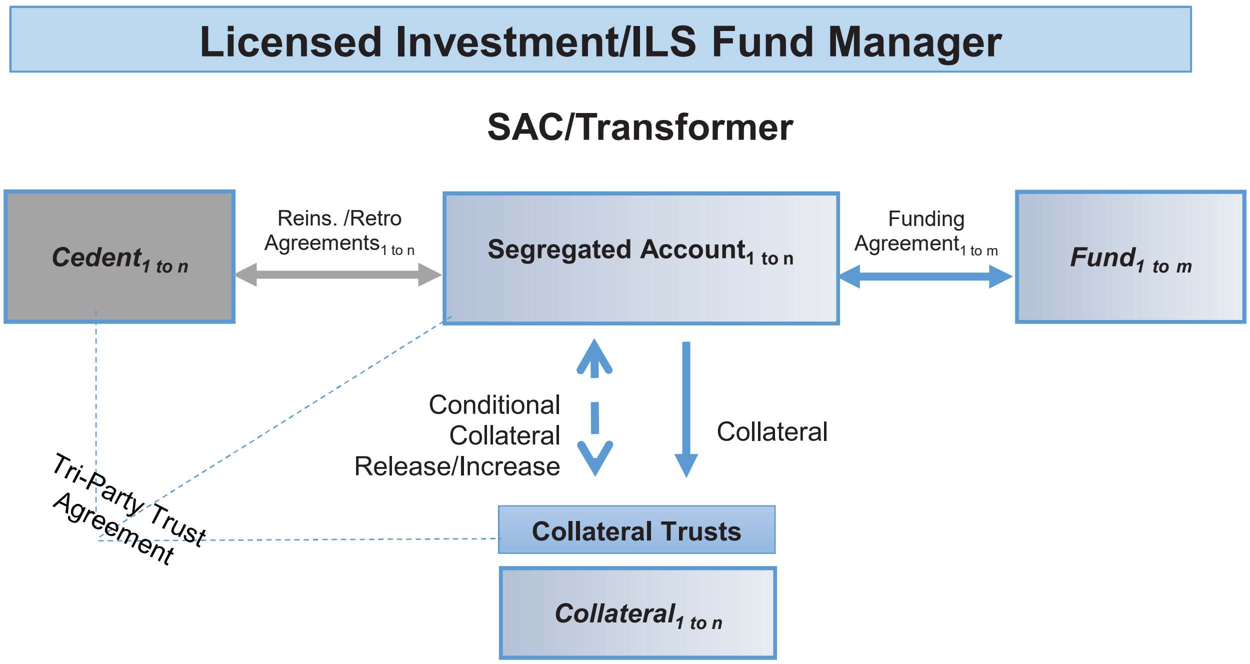
Exhibit 1
Representative Collateralized Reinsurance Diagram



Source: AM Best data and research

Exhibit 2
Features of Collateralized Reinsurance

• A funding arrangement is created, generally through a trust account at the inception of the collateralized reinsurance transaction.
• Funds/assets are held in a trust account or letters of credit equivalent to the amount of the limit, or to the level agreed to by the ceding company and the ILS fund manager, minus certain specified deductions.
• A funding mechanism provides the ceding company easy access to the fund in the event of loss.
• Funds/assets are segregated from other assets, even in the case of insolvency.
• Funds or assets are released if there are no losses or according to the buffer loss factor table in case of a loss.

Source: AM Best data and research

- The **cedent** is the entity that transfers the risk.
- **Risk-bearing entities (i.e., segregated account companies/transformers)** are the counterparties to the reinsurance transactions and may include various classes of Bermuda (re)insurers (such as Special Purpose Insurers [SPIs], Class 3, 3A, or 3B), segregated account companies, and, in some cases, fronting companies.
- **ILS funds** (i.e., third-party investors) provide collateral to support the transaction. Their relationship with the transformer is governed by individual funding agreements.
- A licensed **investment/ILS fund manager** provides a link between risk-bearing entities and investors to negotiate the reinsurance transaction with the ceding company.
- **Collateral trusts** are generally single beneficiary trusts funded at the inception of the reinsurance agreement and function similarly to a NY Regulation 114 trust. They are governed by the trust agreement covering the cedent (beneficiary), SAC/transformer (grantor), and bank (trustee), and are used in place of an LOC.

Exhibit 3
Sample Buffer Loss Factor Table

Months Since Date of Loss Occurrence	Period	Buffer Loss Factor	Buffer Loss Amount	Net Buffer Loss Amount
(1)	(2)	(3)	(4) = (3) x Gross Loss Amount	(5) = Minimum (5 million Buffer Loss Amount minus Retention)
0 to 3	1/1/2017 - 02/28/2017	200	25,000,000	5,000,000
> 3 to 6	3/1/2017 - 05/31/2017	150	18,750,000	5,000,000
> 6 to 9	6/1/2017 - 08/31/2017	125	15,625,000	5,000,000
> 9 to 12	9/1/2017 - 11/30/2017	110	13,750,000	3,750,000
Thereafter	12/1/2018 & thereafter	100	12,500,000	2,500,000

Assumptions:

- Coverage from 01/01/2016 to 12/31/2016
- Reinsurance cover: $5 million excess of $10 million
- Primary insurer retention = $10 million
- Collateral held at the beginning = $5 million
- Initial gross loss amount (including IBNR) = $12.5 million
- Loss date of 12/1/2016
- No loss payment yet

Source: AM Best data and research

If fronting companies are involved, the collateralized reinsurance cover is transformed into a traditional reinsurance program. This means that the ceding company relies on the fronting carrier's claims-paying resources and is thus dependent on the credit risk of the fronting company.

Collateral Funding

The posted collateral can be either LOCs or assets placed in a single beneficiary trust.

- LOCs issued by a financial institution are typically required to be non-cancelable (except by agreement of both parties), clean, and unconditional (i.e., no contingencies on drawdowns).
- Single beneficiary trusts involve three parties: the beneficiary of the trust (i.e., ceding company), the grantor of the trust (i.e., the SAC/transformer), and the trustee, which is generally a US financial institution. The trust's investment guidelines require high-quality liquid assets, and the ceding company has access to the funds in the trust to pay claims.

Collateral Release Mechanism and Buffer Loss Factor Table

Most collateralized reinsurance agreements specify conditions for the release of the posted collateral after the contract period. Generally, if no loss that may result in a claim has occurred, the ceding company agrees to release the collateral as soon as practicable. In the case of loss events under the reinsurance agreement, the collateral release is usually governed by a buffer loss factor table. The buffer loss factor table outlines when the collateral can be released and provides an additional amount above the estimated loss amount that can be held as collateral (to cover potential loss development), based on the type of loss and the number of months that have elapsed since the date of loss. **Exhibit 3,** ***Sample Buffer Loss Factor Table*****,** illustrates how much collateral (shown in column 5) is held after a loss event, based on a hypothetical buffer loss factor table.

Exhibit 3 demonstrates the following:

- The full collateral is held through the contract period, unless reduced by losses.
- After the contract period, collateral is released according to the buffer loss factor table when a loss calculation is submitted to the risk-bearing entity.
- The release of the collateral has a direct impact on the available coverage provided by the risk-bearing entity to the ceding company.

Limited Recourse Provisions for Cedents

The buffer loss factor table is very important in situations in which the release of the collateral leads to a corresponding removal of the reinsurer's limits of liability. Generally, the ceding company has limited recourse once the assets in a collateral account have been released to the risk-bearing entity. The release of collateral does not necessarily mean the obligation is extinguished unless there is an executed commutation agreement. In certain jurisdictions where the use of segregated accounts is prevalent, the obligations of the risk-bearing entity may end once the collateral is released.

AM Best's View on Tail Risk of Collateralized Reinsurers

One critical component of collateralized reinsurance transactions is the notion of tail risk, which may ultimately be borne by the ceding company if the collateral amount posted is not sufficient to cover losses under a reinsurance agreement. AM Best has identified four main types of tail risk:

- **Posted collateral versus loss amounts**: Tail risk associated with the amount of collateral posted pursuant to the reinsurance agreement compared to AM Best's specified Value-at-Risk loss amounts is derived as the Max (0, PML VaR Level minus the Posted Collateral). This tail risk directly reduces the ceding company's Available Capital in AM Best's Capital Adequacy Ratio (BCAR) model.
- **Claims development**: Tail risk associated with the limited claims development period relates to the early collateral release before the full development of claims pursuant to the buffer loss factor table or commutation agreements. Loss creep accrues to the ceding company unless there are clawback provisions between the ceding company and the collateralized reinsurer.
- **Reinstatements**: Tail risk due to reinstatement premium exposures will emerge, especially with collateralized reinsurers operating as segregated account structures.
- **Rollover risk**: Tail risk associated with rollover risk is due to the untimely posting of collateral pursuant to the reinsurance agreement between the ceding company and the collateral reinsurer as allowed under some regulatory jurisdictions.

Clear provisions and measures should be in place to prevent the ceding company from being at the short end of these collateralized reinsurance transactions owing to inadequate collateral.

Recent Market Developments

The catastrophe events of 2017-2018 have highlighted the issue of trapped collateral in the collateralized reinsurance market, as well as issues such as adverse loss development, loss creep of insured losses, efficacy of the buffer loss table, and corresponding clawback provisions after collateral releases. Adding to this market turmoil were investors' losses and an uncertain fronting market, with the sale of Tokio Millennium Re (announced October 2018, closed March 2019) to RenaissanceRe. According to company announcements, RenaissanceRe will not maintain Tokio Millennium Re's fronting business.

Trapped Collateral

Hurricane Irma highlighted the problem of trapped collateral. The industry found it difficult to determine the ultimate loss amount as loss estimates changed over time. This tied up investors' collateral, which could not be released until risk-bearing entities' obligations were satisfied, based on contract provisions and the ceding companies' expectations.

Despite short-term settlement patterns for some catastrophe losses, large catastrophe losses generally are by nature slow to develop. These catastrophe losses are driven by not only changes in the composition and size of losses, but also the nature of damages that can drive potential loss creep. Inadequate reserve setting practices in the Florida market, for example, have contributed to this problem.

Collateral lockup can create a significant drag on the results of collateralized reinsurance transactions owing to the opportunity cost of investors' collateral tied-up in expired contracts. The drag on investment returns from locked-up collateral can run as high as 20%. Thus, the impact of trapped capital is becoming a more important consideration in the risk pricing of collateralized reinsurance contracts.

Adverse Loss Development and Loss Creep

The steep increase in Hurricane Irma losses brought attention to the mechanism used to release collateral. Irma loss creep left some market participants short in reinsurance coverage after the release of collateral. Loss creep was also driven by increases in the loss adjustment expenses from settling Irma claims, as well as the impact of the Assignment of Benefits (AOB) in Florida. Further industry impact has been felt as the loss creep from September 2018's Typhoon Jebi has resulted in this storm becoming Japan's costliest on record nearly a year after making landfall.

Collateralized reinsurance with a limited claims development period and a commutation clause cannot offer any relief for cedents once assets are released from the trust and the risk-bearing entity's liability is extinguished. A notable example is ILS fund manager Securis Investment Partners' dispute with its cedent, Lloyd's Syndicate 4242. Securis claimed that the contractual wording implied that it had no obligation to make payments on approximately $13 million in reinsurance recoverables. Unless a contract has automatic commutation provisions stating that assets released from the trust extinguish the reinsurer's liability, cedents may expect to be covered for losses that develop after collateral has been released.

Collateralized Reinsurers Wary of Ceding Companies

Collateralized reinsurers and ILS funds, as they continue to develop a measured approach toward providing reinsurance coverage, have become increasingly discerning of ceding companies. Pricing is differentiated based on historical loss experience, the accuracy of prior loss estimates, long-term performance, and a willingness to work as partners. As collateralized reinsurers enter into reinsurance agreements to contain the potential of future loss creep, they are paying closer attention to the quality of cedents. Going forward, high-quality cedents are likely to be rewarded with better pricing, terms, and conditions.

Efficacy of the Buffer Loss Factor Table

The buffer loss factor table is typically part of a reinsurance agreement and has a direct impact on the coverage provided to cedents. It is important in determining the legal liability of the risk-bearing entity and the collateral release amount. More conservative buffer loss factors, which would be applied to the undiscounted loss amount, would provide an additional buffer above the loss amount for future adverse claims development and the collateral amount held for the ceding company. Accurate reserve estimates set by cedents may also help this process. Buffer loss factor tables are becoming more conservative, making it more difficult for ILS investors seeking to re-deploy their capital for new collateralized reinsurance contracts.

Fronting Market Uncertainty

The uncertainty in the fronting market following the sale of Tokio Millennium Re to RenaissanceRe Holdings Ltd. has created new opportunities for other entities to enter this market. The current uncertainty limits the ability of ILS fund managers to engage in fronting arrangements, and they will need to find other (re)insurers to provide fronting services or to seek alternative solutions. (Currently, Allianz Risk Transfer and Hannover Re remain major players.) The use of fronting companies in collateralized reinsurance transactions generally eliminates the need to negotiate collateral release provisions and trust agreements. It also eliminates the need to provide reinstatement provisions and includes unlimited claims development for the cedent, even though the cedent takes on the credit risk of the fronting entity.

Investor Concerns

ILS investors are taking a closer look at the mechanics of the ILS market, and recent developments have shown that investors have scaled back their positions in ILS funds. Given the continued loss creep, reserve increases, suppressed ILS fund returns, and decline in assets under management for ILS fund managers, investors are looking to differentiate ILS fund managers by their track records and their ability to continue to deliver reasonable returns for the collateralized reinsurance market. The ILS market's valuation models encompass data quality, accurate modeling, and post-loss reporting requirements from ceding companies, all of which remain concerns for ILS investors.

Regulatory Developments

In May 2019, the Bermuda Monetary Authority (BMA) published a Consultation Paper and solicited feedback on a proposed new class of reinsurers. The new class—known as Collateralised Insurers under a new class of Limited Purpose Insurer (LPI)—would be expected to have a more robust underwriting infrastructure than that required of Bermuda's SPI class of insurer. Additionally, Collateralised Insurers would be able to write long-tailed casualty risks while maintaining permanent regulatory capital at a level equal to the maximum of $250,000 or a risk-based capital requirement reflecting operational risk. If adopted, the Collateralised Insurer class of insurers would allow more flexibility for collateralized reinsurance placements.

The BMA is also proposing a 15-day grace period to provide collateral, during which the SPI will not be in violation of its fully funded requirements. However, the reinsurance contract will have to clearly define how the SPI would settle any claims during the grace period. In addition, SPIs will not feature clawback provisions.

The Guernsey Financial Services Commission (GFSC) is proposing a 30-day grace period, during which an ILS or collateralized reinsurance cell would not be considered in breach of its fully funded requirements. This grace period might not serve the interest of cedents as the reinsurance can commence without the full collateral being posted given the time it takes to set up the trust accounts.

April 12, 2019

Global Life Reinsurers Poised for Growth but Mature US Market Still Key

Reinsurers benefiting as active pipeline of legacy life/ annuity blocks of business comes to market

The global life reinsurance business is dominated by the same players that comprise four-fifths of US life reinsurance business, measured by assumed premium. When measured by total insurance in-force, Canada Life moved into first place based on some large non-recurring group life transactions in 2018 (**Exhibit 1**). The US life reinsurance market is mature, so growth is limited. However, it remains a key market for global life reinsurers because the US constitutes the largest life insurance market.

Growth opportunities for the global life reinsurance segment are robust in emerging markets, particularly within the Asia-Pacific region. The Asia-Pacific direct life insurance market continues to grow faster than in developed countries, providing opportunities for life reinsurers to assume more business. Even well-established companies in the US, such as the Reinsurance Group of America, Inc. (RGA), receive approximately one-third of their adjusted operating earnings outside of North America. China's life insurance market is growing rapidly as its middle class grows, with China now representing the world's second largest life insurance market. China's life reinsurance market remains concentrated in domestic carriers such as China Life Re.

The US life reinsurance market, in sharp contrast to the life primary market, is dominated by five carriers, accounting for the vast majority of assumed business. These top tier players

Exhibit 1
Top US Life Reinsurers by Life Insurance in Force, 2018

AMB#	Company Name	Total Amount in Force ($000s)	% of Total Individual	Group
009863	Canada Life Assurance Co USB*	2,943,084,654	9.2	90.8
009080	RGA Reinsurance Co.	1,875,293,276	94.9	5.1
070253	SCOR Life US Group	1,840,027,921	98.2	1.8
007283	Swiss Re Life & Health America Inc.	1,405,276,831	91.7	8.3
006746	Munich American Reassurance Co.	1,354,817,191	72.1	27.9
068031	Hannover Life Reassurance Co. of America	1,307,947,537	99.9	0.1
060237	London Life Reinsurance Co.*	195,567,308	9.1	90.9
006234	General Re Life Corp.	187,945,000	93.4	6.6
006976	Employers Reassurance Corp.	108,918,728	100.0	0.0
060560	Wilton Reassurance Co.	75,429,161	100.0	0.0
008863	Optimum Re Insurance Co.	70,089,090	100.0	0.0
061745	PartnerRe Life Reinsurance Co. of America	58,225,149	100.0	0.0

* Great-West Lifeco Inc. announced on April 3, 2019, that its three Canadian life insurance companies (The Great-West Life Assurance Company, London Life Insurance Company, and The Canada Life Assurance Company) were moving to a single brand, Canada Life. Additionally, subject to board, regulatory, and shareholder approvals, the three organizations and their holding companies (Canada Life Financial Corporation and London Insurance Group Inc.) started the process to formally amalgamate as a single company.

Source: AM Best data and research

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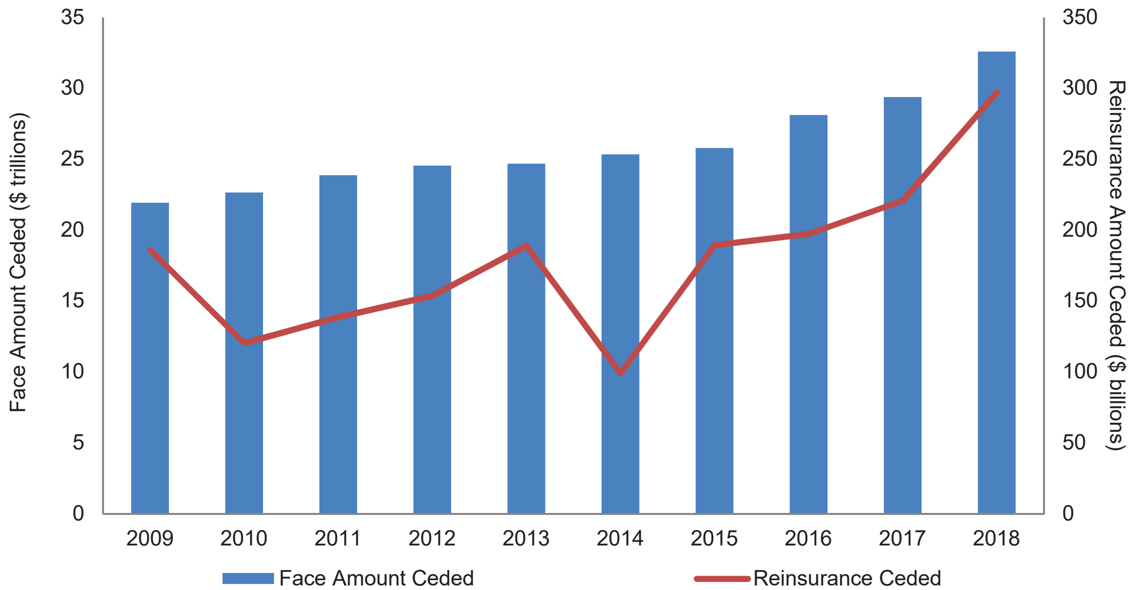
2019-064

have strong capital positions and earnings that reflect disciplined pricing and mortality experience, as well as a stable book of recurring business. Moreover, the US life reinsurance business makes up a significant share of the European-based companies' global life reinsurance premiums.

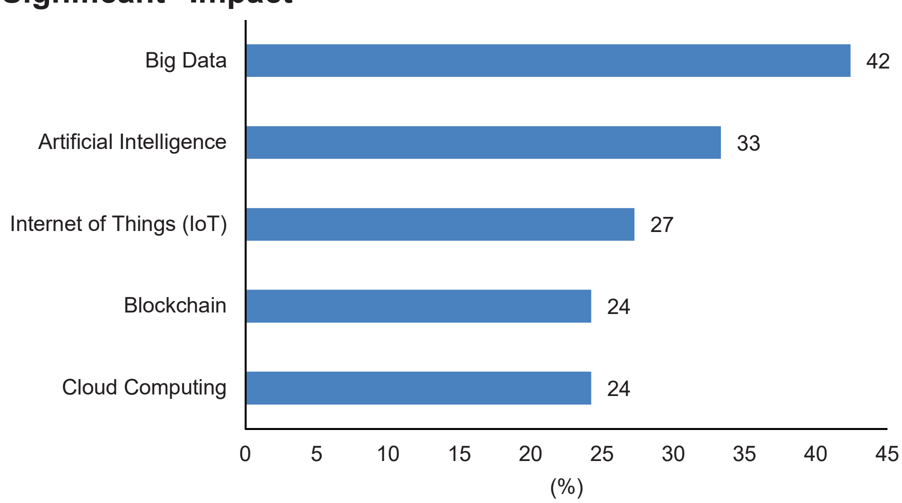
While the US traditional life reinsurance market remains pressured by historically low cession rates, there has been a gradual rise in business ceded over the last few years (**Exhibit 2**). There are several factors driving this trend: the introduction of principle-based reserves, the 2017 CSO table, and the increasing use of automated underwriting (including the reliance on Big Data) (**Exhibit 3**). Reinsurers view underwriting as a key area in which to add value,

Exhibit 2
Reinsurance Ceded



Source: AM Best data and research

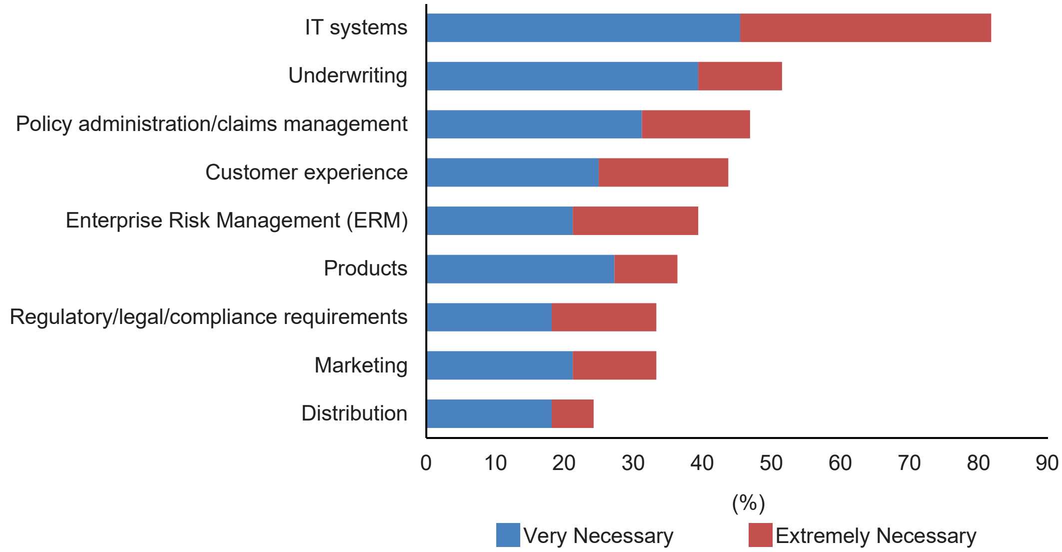
Exhibit 3
Reinsurers — Technologies Expected to Have a "Significant" Impact



Source: AM Best data and research

Exhibit 4

Reinsurers – How necessary is it to innovate in the following areas?



Source: AM Best data and research

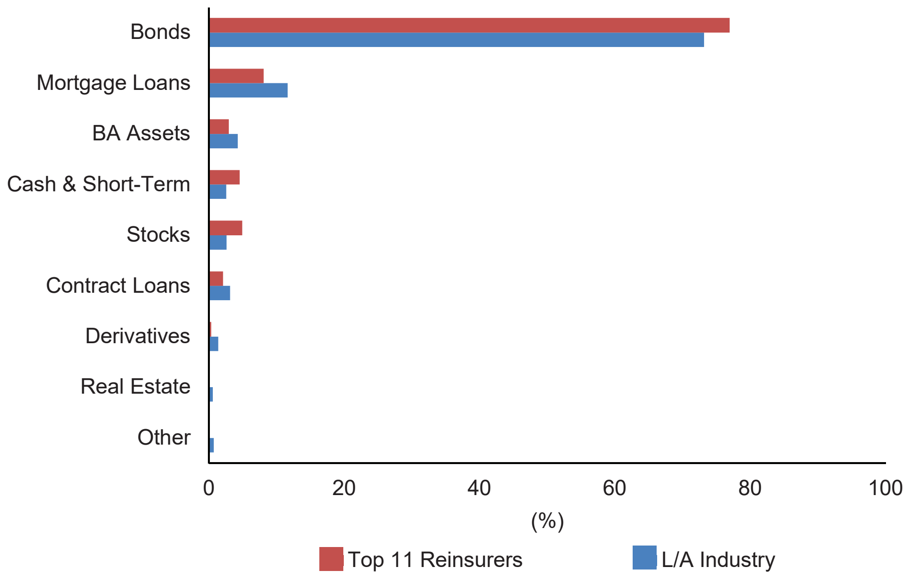
offering underwriting expertise, in addition to affording direct writers an avenue to lay off risk should actual results deviate from pricing as a result of new underwriting processes (**Exhibit 4**).

In addition to opportunities on the traditional side, reinsurers are benefiting from an active pipeline of legacy life and annuity blocks of business coming to market. Competition for block acquisitions is high as many companies, including direct writers and newer entrants, are looking to build scale and deploy capital that has grown in recent years. However, well-known carriers, particularly life reinsurers, have developed a favorable track record for execution and service, enhanced by strong client relationships, remaining at an advantage without competing solely on price.

Meaningful acquisition opportunities for global life reinsurance players are also evidenced by a growing desire to lay off large pension obligations (pension buyout business) outside of North America. This was most recently demonstrated by Canada Life Re's announcement on March 6, 2019 that it had entered into a C$5.5 billion long-term longevity risk reinsurance arrangement with Dutch firm SRLEV N.V. (VIVAT), covering 70% of $C8 billion in-force liabilities. Pension business and other interest-sensitive lines are benefiting from a favorable economic environment with generally rising interest rates and a benign credit environment.

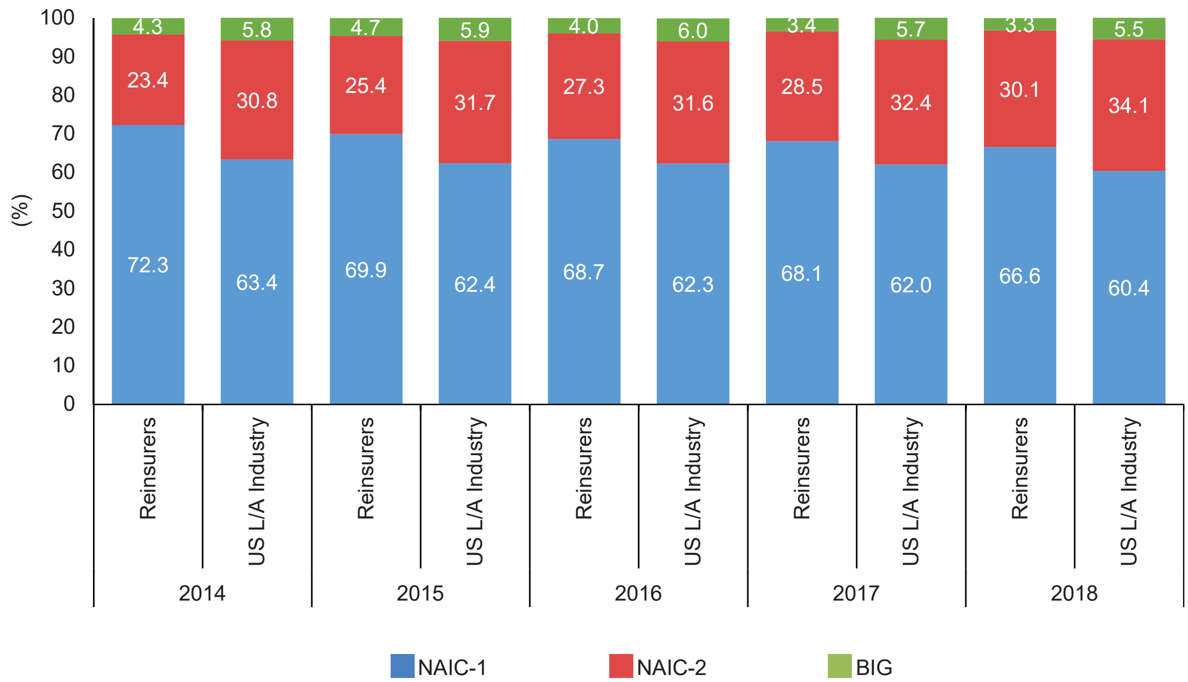
Market dynamics that may negatively affect direct life and annuity players include the low interest rate environment, despite an uptick over the past year, and the potential for rising impairments when and if the credit cycle turns. Although lower rates affect all companies and dampen earnings, life reinsurers in general are somewhat less reliant on investment income to achieve return targets. Reinsurers take more risk on the liability side of the balance sheet and thus tend to accept less investment risk (**Exhibit 5**). In addition to more conservative investment portfolios through higher allocations to bonds, the credit quality of bond portfolios of reinsurers is also of higher quality, with larger allocations to NAIC-1 bonds and fewer rated below investment-grade (**Exhibit 6**). Imbalances from asymmetric monetary policy among the US, Eurozone, and emerging economies, as well as trade disputes, also have negatively affected the overall market.

Exhibit 5
Distribution of Invested Assets



Source: AM Best data and research

Exhibit 6
Bond Portfolio Quality



Source: AM Best data and research

While the rate of mortality improvement has slowed recently across several advanced nations, life reinsurance companies with which AM Best maintains ongoing dialogues believe it is too early to determine if the slowdown is a short-term trend or a permanent shift in mortality. Lifestyle choices such as poor diet and lack of exercise, as well as the increase in deaths related to opioid use and suicides, are contributing factors to the slowdown in mortality improvement.

It also has resulted in a decline in life expectancy in the US for the second time in three years. We are in a period of increased uncertainty regarding decisions on pricing and reserving for new business and primary carriers may want to use reinsurers to offset some of this uncertainty.

Convincing consumers to adopt innovative, wearable technology that may help to identify disease earlier, while promoting healthier lifestyle choices such as improved diet and exercise, will be a key challenge for insurers. Early signs of consumer acceptance are encouraging, suggesting potentially significant growth opportunities for insurers. According to the International Data Corporation, the global market for wearable devices is expected to reach nearly 200 million units by the end of 2019, and nearly 280 million units by year-end 2023. The market share for AppleWatch is expected to reach 27.5% in 2023, according to IDC. Earlier this year, CVS Health launched Attain, a health monitoring and improvement program for Aetna members, developed with Apple. Devices such as AppleWatch can transmit important medical information from consumers to medical professionals, as well as alert those who are wearing the devices of deviations from expected results, a potentially lifesaving feature.

We recently observed that some life reinsurers have been implementing rate increases on older blocks, leading some direct writers to recapture. The need for price increases can be traced back to the late 1990s and early 2000s, a period when reinsurance rates, especially for term business, were considered very favorable. Carriers that remained diligent in pricing new business have not needed to adjust rates significantly.

Block acquisition appetite has afforded direct writers with legacy books or trapped capital a means to sell or reinsure such blocks. This allows direct writers to deploy capital to higher margin businesses. In 2018, a number of sizable block acquisitions have either closed or been announced, including a major deal between Symetra and Resolution Re for the assumption of a legacy block of structured settlements. In addition, a group of private investors acquired Talcott Resolution, The Hartford's run-off life and annuity businesses, in May 2018 for approximately $2 billion. After closing on the deal, the company reinsured approximately $9 billion of its fixed annuity, payout annuity, and structured settlement business to a subsidiary of Global Atlantic Financial Group. As a result, the remaining liabilities are primarily variable annuities.

At the end of 2018, Athene Life Re Ltd. (ALRe) and Lincoln National Life Insurance Company (Lincoln) entered into an agreement in which ALRe agreed to reinsure, on a quota share basis, the majority of a $9.6 billion in-force block of fixed deferred and fixed indexed annuities. In addition, RGA announced a transaction with John Hancock Life Insurance Company to acquire an in-force block of individual payout annuities. A notable trend is that four of the five deals mentioned were done with reinsurers outside the top 5. This highlights the growing importance of second and third tier reinsurers in providing needed competition. Global Atlantic continued with its block acquisition strategy in 2019 as Ameriprise Financial, Inc. announced on March 19th that it had entered into an agreement with the company to reinsure approximately $1.7 billion of fixed annuity policies.

Barriers to entry into the US life reinsurance market are significant, which helps to solidify the market positions of well-established players. Relationships built over the years offer a competitive advantage that new entrants simply do not have. Additionally, reinsurers are often viewed as partners offering underwriting, facultative, and other support. That is not to say that new entrants are non-existent. Despite a highly mature market, cedents continually explore ways to better manage earnings volatility, capital, and counterparty diversification. As a result, opportunities exist for new or non-traditional players, including Aureum Re, Somerset Re, Kuvare Life Re (a subsidiary of Kuvare US Holdings, Inc.), Resolution Re, and, more recently, Langhorne Re.

The common theme for new launches is the ability to provide counterparty diversification, as well as tailored solutions and capacity to clients in need of capital relief for businesses such as annuities and new business strain from increasing life insurance sales. In addition, some entrants backed by private equity or other investor groups are often more focused on interest-sensitive business lines such as annuities. Such companies are often backed by investment managers who have expertise in certain asset classes and have bigger risk appetites. Their business models are predicated on offering attractive prices to buy annuity businesses that may be underperforming or providing an avenue to lay off some risk in light of a potential turn in the credit cycle. Cedents, however, may not be comfortable with more aggressive investment strategies because, in the event of insolvency, the business and the assets supporting that business may revert back to the cedent. When companies do business with unrated carriers, AM Best ensures that certain protections and asset allocation strategies are in place to safeguard the company in case of insolvency that might cause the business to revert back to the cedent.

Kuvare Holdings, headquartered in Chicago, is an example of a private equity backed new entrant that operates in both the primary insurance and reinsurance businesses, with a focus on the middle market. Kuvare Life Re is its Bermuda-based reinsurance subsidiary, which has been used to complete a number of deals recently, including the assumption of a block of fixed annuities with about $850 million in reserves in late 2017. The deal was the biggest since it was formed in 2016. Industry activity such as activist shareholders and European Solvency II have forced insurers to shed certain business lines in order to free up capital and have thereby created opportunities. In addition, a better alignment between the valuations of buyers and sellers over the past few years has generated more deals.

Langhorne Re was launched by a group of investors, including RGA and RenaissanceRe Holdings Ltd. (both listed on the NYSE), affording the company meaningful access to capital that will support its planned strategy of large in-force life and annuity block reinsurance on a global basis. AM Best expects similar structures to emerge to allow participation in large annuity or life transactions. This underscores the availability of business, notwithstanding the challenges associated with being the successful bidder. These represent actions taken by the larger reinsurers to counter growing competition.

In addition to interest-sensitive transactions, other opportunities exist to assist direct writers saddled with legacy, underperforming books of business to enhance longer-term returns, as well as to remove the stigma that earnings may be pressured by poor performing blocks. The most recent example of such a dynamic is Wilton Re's acquisition of a legacy block of long term care (LTC) business from CNO Financial.

Although not a legacy block of business, Hannover Life Re America has agreed to reinsure a hybrid LTC product underwritten by OneAmerica. As reinsurers continue to explore avenues for diversification and growth, more nontraditional deals may be completed. Price, of course, is the major hurdle faced by cedents as a negative ceding commission is common in order to provide a reasonable return for the buyer/reinsurer.

In addition to newer company formations entering the space, PartnerRe acquired Aurigen Re in 2017, again underscoring the need for additional counterparty diversification as well as a belief that opportunities in the US and Canadian life reinsurance market continue to exist.

Reinsurers remain active in providing financial solutions, including the continued financing of redundant reserves, providing capital management solutions to assist companies working through regulatory and taxation changes, and providing avenues to exit underperforming books. Companies also continue to see growth in the longevity space, especially in the UK. Global life insurers that have capitalized on this growth in the UK are now trying to replicate that success in the US market. There is ample business opportunity both in the US and internationally in the longevity space, as well as other financial solutions business.

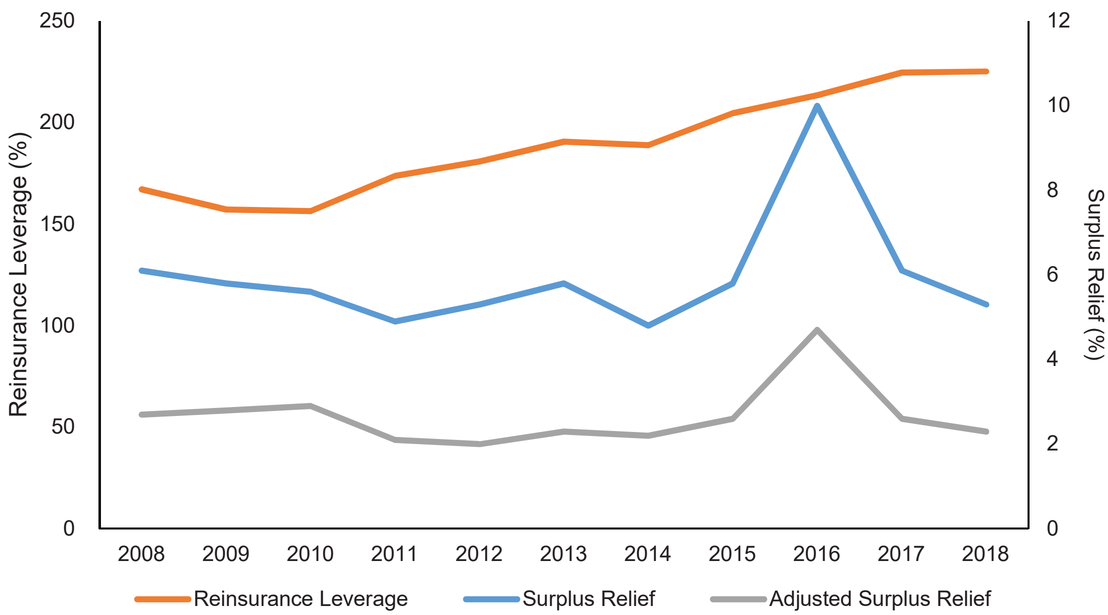
Given the capital-intensive nature of the business and long-tail nature of the liabilities, direct writers will surely continue to be turning to the reinsurance community for both capital support and underwriting assistance. The ratios often used to measure the reliance on reinsurance to support capital needs are reinsurance leverage and surplus relief (**Exhibit 7**). The reinsurance leverage ratio is defined as aggregate reserves ceded plus amounts recoverable and funds held, divided by surplus. The surplus relief ratio, defined as reinsurance commissions and expense allowances on reinsurance ceded (reported as income on the statutory statement) divided by statutory surplus, illustrates the degree to which a company depends on reinsurance to maintain its surplus ratios (e.g., NAIC RBC/AM Best's BCAR). With the exception of 2016, the industry maintains a ratio in a fairly narrow band of 4 to 6 percent. In 2016, several companies had some large cessions that resulted in elevated commission and expenses on reinsurance ceded business, thus raising the surplus relief ratio to roughly twice the longer-term average.

Adjusted surplus relief simply nets out expenses and commissions on reinsurance assumed (recorded as a statutory expense) before dividing by surplus. As a result, the adjusted ratio for the industry is less volatile and reports at an overall lower level. However, 2016 once again shows an elevated ratio reflecting some large ceded transactions without a corresponding large offset in business assumed.

One generally positive development in the global reinsurance industry was the NAIC vote in September 2017 to amend the Credit for Reinsurance program to conform to the Covered

Exhibit 7

L/A Industry - Reinsurance Leverage & Surplus Relief



Source: AM Best data and research

Agreement with the European Union (EU). The Covered Agreement promotes US interests by allowing US insurers with EU operations to avoid burdensome worldwide group capital, governance, and reporting requirements under the EU's "Solvency II", as well as collateral requirements for US reinsurers. The Covered Agreement also requires the US to eliminate state-based reinsurance collateral requirements for EU reinsurers. One provision of the agreement also addresses the issue that it only applied to EU jurisdictions. Other jurisdictions, including Switzerland, Japan, post-Brexit UK, and Bermuda did not fall under the original agreement. Some US insurers feel that international companies now have fewer regulatory hurdles than do US companies. Collateral elimination for EU reinsurers will apply prospectively so they will not see any immediate benefit for existing US business. AM Best believes that while evolving, fewer barriers to entry, or a more level regulatory playing field, should be beneficial as it is expected to increase new business opportunities for US based reinsurers over the longer term.

Life reinsurers, regardless of where they do most of their business, must continually invest in technology to stay competitive in a world that is rapidly changing. New digital solutions and automated underwriting platforms are enhancing the customer experience and enabling companies to maximize the value of their in-force business, thus contributing to the long-term value of the organizations. However, such initiatives come with a need for meaningful investment, including system upgrades and the development of innovative solutions, partnering with technology firms, and harnessing the benefits of predictive modeling. In our 2018 survey on innovation, reinsurers emphasized the importance of Big Data and Artificial Intelligence (AI) leading to more efficient and comprehensive underwriting capabilities. Lastly, investment in people is equally important as companies must ensure that staffing focuses on the skills needed to remain in the forefront.

August 29, 2019

Reinsurance Market in Asia-Pacific Continues to Develop

Singapore and Hong Kong remain the main hubs, but other countries are developing their markets as well

Singapore and Hong Kong: Reinsurance Centres

For decades, Singapore and Hong Kong have had a longstanding—albeit friendly—rivalry, as both cities compete to be the top financial powerhouse in Asia-Pacific (APAC). Naturally, this competition has extended to insurance and reinsurance.

Amid the race to supremacy, the wider geopolitical and macroeconomic landscape in the region continues to change, which will inevitably impact the strategies and growth of the two hubs. AM Best considers it imperative for reinsurers serving cedents in these markets to stay abreast of and adapt to ongoing developments.

ILS Strategy

The frequency and severity of natural catastrophe events in Asia-Pacific in recent years have been increasing. Insurance regulators have made clarion calls, urging the industry to employ alternative risk transfer (ART) solutions not only as a means of narrowing the protection gap, but also as a way of diversifying exposures to the capital market.

Regulators in Singapore and Hong Kong are acutely aware that a viable marketplace for the development of ART solutions, particularly insurance-linked securities (ILS), is fast becoming a crucial feature in their pursuit to become the undisputed reinsurance hub of the region. In this vein, both the Monetary Authority of Singapore (MAS) and Hong Kong's Insurance Authority (IA) have announced plans to speed up ILS activity, albeit in varying stages of progress.

Singapore has set up corporate and tax frameworks to facilitate ILS issuance; the regulator has announced that ILS instruments may be issued and regulated via its Special Purpose Reinsurance Vehicle (SPRV) regulations, which allow sponsors to readily securitize insurance risk in the market. In addition, the Approved Special Purpose Vehicle (ASPV) scheme—which grants tax concessions to approved asset securitization transactions—provides for tax neutrality.

In January 2018, MAS unveiled an ILS grant scheme that offers 100% funding of the upfront issuance costs of catastrophe bonds in Singapore, up to SGD 2 million. An industry-led ART working group was also introduced to advise MAS on initiatives (including feedback on regulations, tax, and structures) to support the development of the city-state as an ILS domicile. In February 2019, these efforts culminated not only in Singapore's inaugural issuance of an ILS, but also globally, the first Australian dollar-denominated catastrophe bond of AUD 75 million, sponsored by Insurance Australia Group (IAG). To date, three catastrophe bonds have been launched out of Singapore.

Likewise, Hong Kong lawmakers have made the case for the Special Administrative Region to put in place the necessary infrastructure to encourage the development of an ILS ecosystem. In June 2019, a paper on legislative proposals to further insurance market development was tabled for discussion by the legislative council on financial affairs.

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Although ILS falls under the regulatory ambit of the Insurance Ordinance, the nature of ILS instruments sets it apart from traditional (re)insurance business. Instead, a new regulatory regime should be created; applying existing stringent insurance rules to the ILS business would be counterproductive since they may not be fully relevant.

RBC Regime Developments

Hong Kong's Insurance Authority has yet to implement a risk-based capital (RBC) regime, but industry consultations and quantitative impact studies are underway. The proposed RBC framework will introduce solvency controls predicated on three pillars:

- Pillar 1: quantitative requirements, including capital adequacy assessment and valuation
- Pillar 2: qualitative requirements such as corporate governance, own-risk and solvency assessment (ORSA), and enterprise risk management (ERM)
- Pillar 3: public disclosure and insurer capital transparency requirements

Hong Kong's RBC implementation exercise, to be launched in phases, is expected to be completed by 2022; the regulator is expected to conduct a third quantitative impact study for Pillar 1 in mid-2019 before drafting detailed rules for feedback. Draft guidelines on ERM and ORSA (Pillar 2) are expected to be finalized this year, while the IA intends to solicit comments on Pillar 3 of the proposed framework, which addresses public disclosure requirements, by early 2020.

AM Best expects this regulatory move to raise the bar on the Hong Kong insurance industry's ERM culture. For non-life insurers, in addition to Pillar 1, the ORSA will be impetus for management to place deep emphasis and thought on their top risks, quantify its impact, and formulate a comprehensive response plan.

Singapore introduced an RBC regulatory framework in 2004. Since then, MAS has continually sought to enhance the industry's risk management practices, as well as augment its rules, taking into account the revised Insurance Core Principles and standards issued by the International Association of Insurance Supervisors (IAIS).

In 2013, the regulator commenced consultations for a second iteration of its RBC framework. Since then, MAS has been through three rounds of quantitative impact studies with market participants and, in May 2019, shared updated technical specifications for a parallel run of RBC II, based on year-end 2018 financials. (Re)insurers—excluding captives, Lloyd's insurers, and marine mutuals—were required to conduct and share the results of the parallel run with MAS by July 2019.

Under the Offshore Insurance Fund (OIF), licensed reinsurers with branches are exempted from RBC risk charges under RBC II, while locally incorporated reinsurance companies are subject to RBC regulations in varying degrees depending on where their head offices are domiciled.

Although some aspects of the RBC II framework remain subject to refinement, with a further market consultation expected later in 2019, the parallel run gave market participants and MAS clear visibility over the expected model outputs based on current specifications. We believe that MAS is taking a measured approach to making the enhanced regulations meet their purpose and that it is keen to minimise the risk of significant disruption caused by evolving regulations.

Current timelines put the effective date for RBC II implementation in Singapore as 1 January 2020. AM Best views favourably the advances in the risk-based capital framework, which is likely to continue to mark Singapore as a globally comparable hub, supported by its strong regulatory oversight and governance.

For existing reinsurers in Singapore as well as prospective entrants, AM Best expects RBC II to be well-understood and sufficiently prepared for by the time of implementation. As with most advances in regulatory regimes and capital management frameworks, market participants can be expected to go through a process of refining their business strategies (including underwriting, investment, and reinsurance) to accommodate changes in RBC II requirements and to ensure the effective management of their capital positions.

Captive Market Regulations

Singapore's status as an established captive domicile in APAC was a culmination of the government's promotional efforts, which included an attractive tax incentive scheme for organizations to set up single-parent captives (SPC) in the country. MAS withdrew its tax exemption on 31 March 2018, to comply with the OECD minimum base erosion and profit shifting (BEPS) standards related to economic activity and arm's-length commercial arrangements.

On 1 April 2018, the Tax Incentive Scheme for Captive Insurance was subsumed into an insurance business development (IBD) scheme; approved captive insurers under the IBD scheme for captive insurance (IBD-Captive) are granted a concessionary tax rate of 10% for five years.

MAS has also announced that it would explore the introduction of the protected cell company (PCC) structure—albeit potentially to facilitate multiple ILS issuances in one vehicle given that such setups would allow segregation of assets and liabilities. Nonetheless, AM Best considers this a positive impact to—and one that will likely enhance—Singapore's prospects as a captive hub as well, given that SPCs are currently the principal type of captive allowed in Singapore, formed to insure or reinsure the risks of the parent and related companies.

Hong Kong amended its insurance legislation in May 1997 to encourage the establishment of captives in the territory. Although well established as a financial services hub, Hong Kong's performance as a captive insurance market lags its peers in the region. Nonetheless, the IA is committed to increasing the number of captives domiciled in Hong Kong and the government has offered tax incentives in this regard. Aside from insuring or reinsuring the risks of the parent and related companies, the IA made the case for Hong Kong-domiciled captives to underwrite third-party (re)insurance subject to constraints (such as the requirement of a full risk management mandate); to (re)insure related companies that may not be incorporated in Hong Kong; and (re)insure risks of an entity that its parent or related companies have a minority shareholding in, with cession capped at the percentage of the ownership stake.

Reinsurance Market

To encourage the development of the reinsurance industry, the Hong Kong market currently offers a tax incentive of 50% of the prevailing profit tax rate (16.5%) to captive insurance companies and professional reinsurers; the IA is proposing to extend the concession. To keep up with peer jurisdictions and ensure a business environment conducive to (re)insurance companies, the regulator has suggested that the reduced tax rate should cover all reinsurance business conducted by direct insurers, select classes of business (marine and specialty risks), as well as select insurance brokerage businesses.

The Hong Kong non-life reinsurance market experienced remarkable growth in 2018, having benefited not only from the property reinsurance rate hike after Typhoon Hato, but also from the regulatory preferential framework between the local regime and the China Risk Oriented Solvency System (C-ROSS), which was effective from mid-2018 (**Exhibit 1**).

Exhibit 1

Hong Kong – Non-life Reinsurance Results, 2014-2018

(USD millions)

	GPW	Net Claims Incurred	Underwriting Profit/Loss
2014	1,479.3	395.8	95.7
2015	1,434.8	439.9	57.3
2016	1,371.7	446.3	62.7
2017	1,549.2	711.5	-158.5
2018 (Provisional)	1,931.8	837.0	40.4

Note: Figures only include policies issued under Hong Kong insurance ordinance.

Source: Hong Kong Insurance Authority

Exhibit 2

Hong Kong – Non-life Reinsurance Gross Premium Growth by Business Lines, 2014-2018

(USD millions)

Line of Business	2014	2018 (Provisional)	Growth
Accident & Health	67.7	177.5	162%
Motor	117.2	243.8	108%
Aircraft, Damage & Liability	0.7	10.0	1285%
Ships, Damage & Liability	84.4	90.4	7%
Goods in Transit	113.6	95.7	-16%
Property Damage	645.8	630.8	-2%
General Liability	205.2	462.1	125%
Pecuniary Loss	163.4	158.3	-3%
Non-proportional Treaty RI	26.2	19.8	-24%
Proportional Treaty RI	55.3	66.9	21%
Total	**1,479.3**	**1,955.2**	**32%**

Note: Figures only include policies issued under Hong Kong insurance ordinance.

Source: Hong Kong Insurance Authority

The market's underwriting profit is largely supported by the property class of business. As such, the consecutive occurrence of Typhoons Hato and Mangkhut over two years (2017-2018) have had a more substantial impact on Hong Kong's reinsurance market in comparison to its regional peers.

Nonetheless, the industry has made notable strides in the accident and health (A&H) line over the past five years, riding on robust growth in the direct insurance market; reinsurers have been offering value-added services in terms of product design, pricing, and knowledge sharing from other market experience (**Exhibit 2**).

Furthermore, we note that statistics have shown that Hong Kong (re)insurers have sought to expand their business profile, such as in fronting aviation risks to the international specialty market.

Reinsurers operating in the Singapore market are required to establish separate funds for their onshore and offshore businesses—Singapore Insurance Fund (SIF) and Offshore Insurance Fund (OIF)—and are also subject to separate solvency margins for each fund.

The tax rate on SIF business is 17%, but the regulator has introduced concessionary tax rates and exemptions for certain classes of business (specialised risks like agriculture, terrorism, aviation; onshore and offshore marine hull and liability; and reinsurance catastrophe risks among others) to encourage the development of Singapore as a reinsurance hub. This is particularly evident in the property line, which takes the lion's share of total OIF gross premium written, as in 2013, MAS included reinsurance catastrophe risks on its list of offshore specialised business lines eligible for tax exemption. The move was to incentivise reinsurers to underwrite catastrophe risks from Singapore.

Singapore OIF reinsurance premiums grew by an impressive 91% in 2018, from SGD 4.5 billion (USD 3.25 billion) to SGD 8.6 billion. This surge was driven mainly by a global reinsurer, which established its regional office for Asia in Singapore last year. Excluding the premium contribution from this entity (SGD 3.5 billion), the reinsurance OIF posted moderate growth of 7% in 2018, compared to a decline of 8% in 2017.

Nevertheless, the Singapore non-life reinsurance market posted relatively unfavourable results last year, as the loss ratio increased—almost doubling—from 43% in 2017 to 84% in 2018. This in turn drove the combined ratio up to 116%, the highest level in the past five years.

In addition, the OIF incurred a total underwriting loss of SGD 858 million. Overall, the worsened underwriting results can be attributed to a perilous 2018, during which the reinsurance industry grappled with a number of large catastrophes in the developed APAC countries (**Exhibits 3** and **4**).

Exhibit 3

Singapore – Reinsurance Premiums, 2017-2018

(USD millions)

		GPW	Earned Premiums	Net Claims Incurred	Underwriting Profit/Loss	Operating Profit/Loss
2017	SIF	144.1	111.3	48.4	18.2	39.8
	OIF	3,267.3	2,346.8	1,019.0	543.2	564.7
	Total	**3,411.4**	**2,458.1**	**1,067.4**	**561.4**	**604.5**
2018 (Unaudited)	SIF	147.7	110.7	46.7	25.3	31.2
	OIF	5,990.5	3,801.5	3,193.6	-620.3	-539.2
	Total	**6,138.2**	**3,912.2**	**3,240.3**	**-595.0**	**-508.0**

Source: Monetary Authority of Singapore

Exhibit 4

Singapore OIF – Gross Reinsurance Premiums by Line, 2017-2018

(USD millions)

	Cargo	Hull & Liability	Property	Casualty & Others	Total
2017	81.4	153.8	2,241.4	790.6	3,267.3
2018 (Unaudited)	133.3	244.6	3,568.8	2,043.9	5,990.5

Source: Monetary Authority of Singapore

It is also important to note that, particularly in Asia, the territorial scope of reinsurance underwriting varies enormously; thus, the total reinsurance GPW of both Singapore's and Hong Kong's markets is not representative of the entire region.

To Each Its Own

Ultimately, Singapore and Hong Kong remain financial powerhouses in their own right. AM Best is of the view that both cities have inherently unique traits that are suitable and appealing to the different needs of (re)insurers.

Particularly in Hong Kong's case, although the territory appears to be playing catch-up to regional peers, it maintains an upper hand by its geographical proximity to China, one of the largest (re)insurance markets in APAC. The signing of an equivalence assessment framework on solvency regulatory regimes in May 2017 by Hong Kong's IA and the China Banking and Insurance Regulatory Commission, and a subsequent announcement in July 2018 that preferential treatment of Hong Kong-based reinsurers would continue, are further affirmations of the city's appeal as a reinsurance hub to capture the growth opportunities from one of the largest insurance markets in Asia.

Progress Check: RBC in the Rest of Asia

India

- Indian insurers still use the Solvency I approach in determining (re)insurers' capital requirements. In their financial sector assessment programme of 2017, the International Monetary Fund and World Bank recommended that the Insurance Regulatory and Development Authority (IRDAI) move towards adopting an RBC supervisory regime to adequately assess the inherent risks in the insurance business.
- IRDAI had plans to introduce an RBC regime by April 2019, but they have been postponed to April 2021. The regulator has set up a 10-member steering committee to accelerate the process and ensure that a transition will be completed by end-March 2021.

Indonesia

- Indonesia implemented an RBC framework in 2013 upon approval of the Ministry of Finance in April 2012.
- On 13 June 2017, the Financial Services Authority (OJK) issued a number of circular letters to provide clarification on regulations that were released in December 2016.
- The circular letters provided guidelines for calculating capital and technical reserves for both conventional and Shari'a insurers and took effect on 1 July 2017. The new minimum risk-based capital (MRBC) was specified, to be calculated as the sum of the risk charges under five specified risk categories, which have been re-categorised from the previous regulations.

Malaysia

- RBC regulations were introduced in late 2007 in parallel with conventional insurers' existing solvency measurement procedures and came into force in January 2009. In 2012, the regulator, Bank Negara Malaysia (BNM), took further steps to enhance the risk and capital framework by introducing the internal capital adequacy assessment process (ICAAP).
- BNM subsequently benchmarked the RBC framework for the takaful segment against the conventional RBC framework and ran the former in parallel with existing takaful regulations, in January 2014. The change was significant for the takaful industry, as the previous solvency regime was formula-based.
- In 2017, BNM initiated a review of its current RBC framework for conventional and takaful operators, which it expects to conduct in phases over the next few years, to reflect the current insurance landscape, as well as to ensure that the standards meet their purpose.

Philippines

- The Philippines formally adopted an RBC regime in 2007 through Insurance Memorandum Circular No. 7-2006, which set out the principal rules for calculating RBC. In December 2016, Circular No. 2016-68 was issued, providing for an amended risk-based capital framework known as RBC 2. It replaced the original RBC framework provided in 2007. RBC 2 is based on a three-pillar approach, which includes quantitative requirements, governance and risk management requirements, and disclosure requirements.
- The Insurance Commission has established an insurance law requiring that new entrants to the Philippines' insurance sector have PHP 1 billion (USD 19.6 million) in paid-up capital. Existing insurers are required to have a minimum net worth of PHP 550 million, which will be raised progressively to PHP 900 million by December 2019 and PHP 1.3 billion by December 2022.
- Since the increase in capital requirements imposed in December 2016, six general insurers have voluntarily exited the business. Five non-life insurers were closed by the regulator after they failed to comply with the Insurance Commission's capital requirements. To meet the increased capital requirement, at least four non-life insurers are expected to merge by the end of 2019.

Thailand

- Thailand launched its RBC Framework in 2008, which was fully implemented by September 2011, and specified capital requirements based on the insurer's risk profile. The RBC framework allowed for greater transparency and comparability of insurers' solvency positions and enabled a more efficient use of insurers' capital.
- Since January 2013, the required minimum capital adequacy ratio under the RBC framework has been raised from 125% to 140%. The Office of Insurance Commission is also in the process of drafting new regulations to implement the second phase of the RBC framework, which is expected to increase the minimum capital adequacy ratio.
- There are also plans to introduce a gradual increase in minimum capital for any company that currently has less than THB 300 million (USD 10.7 million) and raise the minimum capital for all non-life insurers to THB 500 million. As such, insurers with insufficient capital may be forced to seek new business partners. The Office of Insurance Commission has stated that it expects to see more foreign investment or acquisition in Thailand's insurance industry in the future.

August 29, 2019

The Surprise Loss Creep from Typhoon Jebi

Loss creep from residential late reporting due to demand surge, but no indication of capacity withdrawing

The year 2018 was the fourth most costly natural catastrophe year on record, with insured losses estimated at USD 90 billion[1]; this was preceded by 2017, during which the reinsurance industry also picked up a hefty claims bill. Taken together, 2017 and 2018 constituted the most costly two-year period ever for insured Nat CAT losses.

Focus has shifted from the 2017 hurricanes in the Americas to last year's Typhoon Jebi in Japan owing to the surprise losses that crept into the reinsurance and retrocession market. Shortly after the occurrence of Typhoon Jebi, initial losses–referencing catastrophe modelling results –were estimated at USD 3-5 billion. However, the most recent loss estimate has risen to USD 12-13 billion, with some reinsurers bracing for a higher settlement close to USD 15-16 billion.

Typhoon Jebi's loss creep was reported in two stages. The first stage of reporting was carried out shortly after the occurrence of the event to reflect the difference between modelled results and the actual loss experience. The second stage took place several months after the event during which late residential claims were reported, and there were further claim developments due to a surge in demand for surveyors and repair workers–partly complicated by Typhoon Trami which also happened soon after in September.

Japan is one of the largest buyers of Nat CAT capacity outside of the US, and thus plays an influential role in the overall Nat CAT capacity supply and demand. After the occurrence of 2018's major loss events, the bulk of capacity sought by domestic insurers continues to be supplied by large traditional reinsurers, while there has not been any indication of players or capacity withdrawing from the market.

Contributing Factors to the Loss Creep

On 4 September 2018, typhoon Jebi made landfall over the southern part of Tokushima Prefecture at the strength equivalent of a Category 3 hurricane, before striking major urban areas like Kobe and Osaka. It made a second landfall over the Kansai region of Japan. The powerful winds caused the collapse of buildings, toppled power lines, and forced the country's third largest airport, Kansai International Airport, to be completely shut down for days due to flooding and a collision between a tanker from its anchorage and the airport link bridge.

Typhoon Jebi, which had been the strongest typhoon to strike Japan in the last 25 years, led to the most expensive insured typhoon loss in the industry. Compounded with the insured losses from heavy rains in July and typhoon Trami in September, the Nat CAT events of 2018 made it Japan's most costly windstorm/flood year to date.

Days after typhoon Jebi struck, catastrophe modelling companies had pegged insured losses at a range between USD 3 billion and USD 5.5 billion by RMS and between USD 2.3 billion and USD 4.5 billion by AIR. The projected losses were initially focused on property exposures, with

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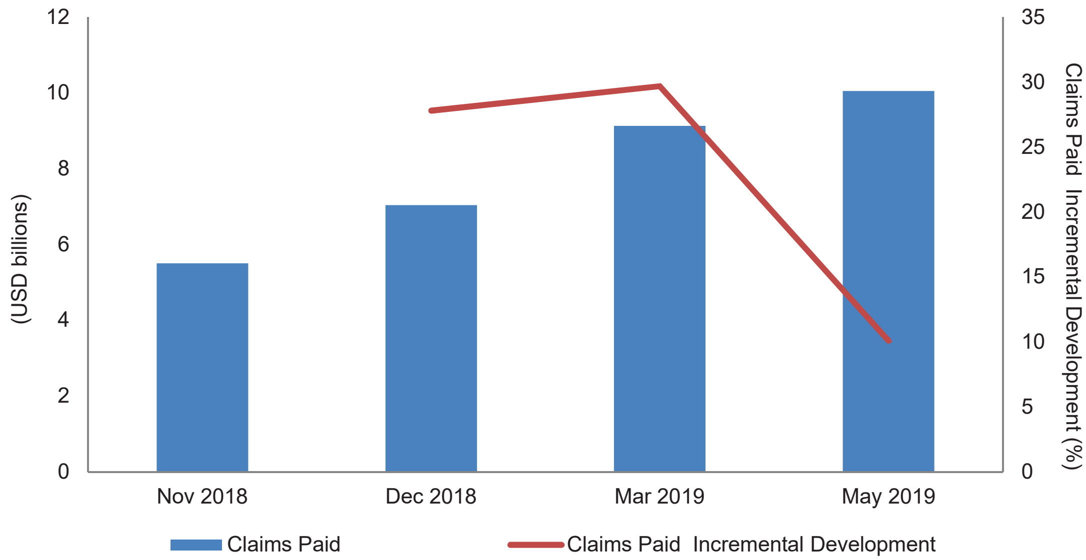
2019-101.6B

[1]Aon's Reinsurance Aggregate, Results for the Year to 31 December 2018

Exhibit 1
Typhoon Jebi Claims Paid Development



Note: The figures include claims paid by GIAJ and FNLIA members
Source: GIAJ

high uncertainties around business interruption losses and contingent business interruption from industrial risks and Kansai Airport, whose closure could disrupt supply chains.

The General Insurance Association of Japan (GIAJ) subsequently published the total volume of claims paid by the industry, which as of November 2018, stood at USD 5.5 billion (**Exhibit 1**); however, AM Best noted that the market still expected further development in the amount. This expectation materialized when the amount of claims paid rose by 66% to USD 9.2 billion in the four months between November 2018 and March 2019 (the financial year end for domestic companies). The occurrence of typhoon Trami shortly after typhoon Jebi and the resulting overlap in claims was one of the major contributing factors to the material development in losses after November 2018. Recovery was further complicated owing to a limited availability in resources to correctly identify and repair the damage caused. Consequently, the surge in demand for repairs and costs (especially from the labour) posed a significant impact to the late reporting and large loss development on residential claims.

Although a number of major reinsurers were caught by surprise and were required to strengthen their reserves in the first quarter of 2019, the GIAJ's published statistics have shown a slower pace of claim development since March.

Impact to Reinsurance Market

The lag in claims reporting to the direct insurers as previously mentioned, compounded by the reporting lag from direct insurers to reinsurers, and thus amplified the unexpected loss creep from the typhoon that struck Japan. As such, the retrocessionaires and the reinsurers participating in the mid-layers of Japan's wind/flood catastrophe excess-of-loss (Wind CAT XOL) programmes were among the most impacted, and might have seen these layers deteriorate from partial losses to total losses due to the loss creep.

Contrary to many reinsurance buyers in Asia who tend to be price-sensitive, reinsurance buyers in Japan firmly believe in maintaining a good and long-term relationship with traditional reinsurance capacity providers, given that Japan is one of the largest buyers of Nat CAT capacity outside of the US. As such, reinsurers have benefitted from the following, some of them as pay-back strategies:

- Purchase of back-up cover post-Typhoon Trami – After Typhoons Jebi and Trami have exhausted some lower Wind CAT XOL layers, some direct insurers have purchased back-up cover at a higher cost to reinforce their lower-layer protection in case of losses from potential snowstorms during winter. These back-up covers were loss free at the end of the contract period.
- A rational 1 April renewal where –
  - Loss-impacted CAT layers recorded a rational double-digit rate increase from 15% to 25%[2] as payback;
  - Overall, renewals on non-property CAT loss-free treaties were flat, thanks to a balanced portfolio payback;
  - There was increased reinsurance protection demand on aggregate coverage and earthquake protection.
- Primary rate hikes across many classes of business, which filtered into the reinsurance market via proportional treaties. However, with the premium rate hike effective in October 2019 for the property line and January 2020 for the voluntary auto line, the full earned premium increase effect will not be realized in the current reinsurance treaty year.
- Anticipated rise in insurance take-up by small- to medium-sized enterprises (SMEs) – Despite the fact that, Japan is one of the largest non-life insurance market in the world, the country's SME insurance take-up rate is low. The SME sector makes up the vast majority of the country's industrial and commercial base. The impact of the huge protection gap–which was evident in the large, uninsured losses–was felt during the series of natural disasters that struck Japan in 2018. In November 2018, following the catastrophes, the country's Small and Medium Enterprise Agency set up the SME Resilience Study group with an aim to foster the resilience of the industry through insurance[3]. Although the increase in risk awareness will help in narrowing the country's protection gap, AM Best believes that the rise in insurance penetration of the Japan SME sector will require some time before material results can be observed.

Nonetheless, the reinsurance companies that suffered substantially from Japan's CAT losses would hope to see the hardened pricing conditions in the market continue for an extended period of time to make up for their losses.

Although there is no accurate prediction as to the continuance of a rate hike in future renewals, AM Best notes that there appear to be no signs of a decrease or withdrawal of reinsurance capacity by major traditional reinsurers over the recent renewal season in April 2019. In addition, oligopolistic buying positions offered significant bargaining power, and reinsurance buyers in particular, would point out that prior to 2018's loss events, there had been large positive profit balances built up by reinsurers over the past 20 years from windstorm treaties[4].

Key Takeaways

Japan's three mega non-life groups (Tokio Marine & Nichido Fire Insurance Co. Ltd., MS&AD Insurance Group Holdings, Inc., and Sompo Japan Nipponkoa Insurance Inc.) are robustly capitalised; in their efforts to diversify risks over the last few years, they have embarked on an accelerated pace of global expansion. Overseas business in each of the groups now accounts

[2] Willis Towers Watson
[3] The Small and Medium Enterprise Agency https://www.chusho.meti.go.jp/keiei/antei/2018/181121kyoujin04.pdf
[4] Toa Re, Japan's Insurance Market 2018

for more than 20% of the group's non-life net premium written (NPW). As such, AM Best notes that the influence of the top three Japanese non-life groups on the global reinsurance market continues to grow.

We expect that the overseas business portfolios will continue to help Japan's three largest non-life insurance companies to expand, in line with their mid-term strategic plans, as well as help them achieve inorganic growth through strategic M&A.

With a broader global footprint and a weaker local CAT reserve position following an active year of catastrophe occurrences in Japan in 2018, AM Best believes that the domestic insurers are likely to take a more conservative approach in their reinsurance strategy and focus on maintaining profit stability.

Nevertheless, insurance management executives of the three Japanese mega groups will require a holistic view of their group's global catastrophe risk management, as well as creativity in designing their reinsurance programmes to improve capital efficiency while ensuring stability of the group's underwriting profits. In particular, aggregate protection will be needed to reduce profit volatility and avoid capital erosion from the increasing catastrophe loss frequency due to a more diversified book of business.

In AM Best's view, although Typhoon Jebi – on a standalone basis – is not a game-changer, it has had a significant impact on Japanese catastrophe pricing. While this appears to have no impact on global reinsurance pricing more broadly, a combination of losses in the two major catastrophe insured regions, Japan and the US, could represent a significant test of the abundant supply of capital to the reinsurance sector.

August 29, 2019

Latin America Reinsurance Segment Still Attractive Despite Soft Market

The market offers significant growth potential, and regulatory frameworks are being strengthened throughout

Latin America remains a profitable diversification prospect for global reinsurers. The economies of Chile, Colombia, and Peru continue to meet or exceed expectations, while those of Brazil, Mexico, and Argentina did not. Despite this mixed economic environment, 2018 growth was 1.4% in real terms. A series of natural disasters in 2017 jolted insurers' complacency, but the market remains resistant enough to hardening pricing conditions. Latin America's insurance markets offer solid top-line growth opportunities given low penetration rates of around 2.8% and regulatory trends that aim to strengthen countries' insurance industries. Lower interest rates and protectionism, however, could limit those prospects.

Latin America accounted for around 4.6% of global reinsurance premiums in 2018. The region has seen a slowdown in primary insurance in real terms since 2012, with a contraction in 2018 of 1.7%, while the global markets reported a 1.5% real growth rate. These results were skewed by Argentina and Brazil—when discounting for these two countries, the region's weighted average real premium growth, in US dollar terms, would have been 2.6%.

Although Latin America is prone to natural catastrophes, no significant market-hardening events have occurred since 2013. The biggest insured loss—USD 5.1 billion—in 2017, was due mostly to Hurricanes Irma and Maria in Puerto Rico. Insured losses in 2018 came to a below average USD 1.3 billion, according to Swiss Re. Thus far in 2019, the region's insured losses have amounted to less than USD 1 billion.

In 2018, capacity in some markets diminished. However, Willis Re reported that in the first half of 2019, major brokers in the region reported flat renewal terms in programs without losses and proportional reinsurance appears to be the preferred reinsurance mechanism to mitigate catastrophe risk. Lloyd's has maintained a steady presence in the Americas the last four years, accounting for around 7% of its gross written premium on average.

Countering the positive conditions for growth are growing concerns about protectionism in a number of countries, which could limit the flow of capital, entrance to the markets, or business with government-related insurance companies. Additionally, the prospect of interest rate cuts could bolster capital capacity, mostly through traditional reinsurance channels, as alternative risk transfer vehicles are still limited and used mostly by sovereigns through parametric bonds to protect infrastructure.

Insurance regulators in some Latin American countries have shown an interest in developing a framework similar to Solvency II, which in most cases favors the use of diversified and well-rated reinsurance to free up capital. Additionally, requirements to register as foreign reinsurers in certain countries have been strengthened, imposing minimum capital requirements, as in Argentina, and potentially, Panama. In Colombia, adjustments to catastrophe models in 2019 could lead to reshaped reinsurance programs.

Demand for reinsurance could increase during the initial stages of the strengthening of solvency regulations, although the introduction of new corporate governance structures,

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regulatory capital requirements, and reserve standards could result in an additional capital burden for small and medium-sized companies in some lines of business. AM Best believes that the strengthening of the regulatory framework could result in opportunities for market consolidation in the small and medium-sized participant segments, which would affect overall demand for reinsurance in these markets.

Latin American Reinsurers Looking to Diversify Internationally

Over the past few years, some of the region's reinsurers have diversified by expanding into Europe, the Middle East, North Africa, and Asia, through vehicles like Lloyd's syndicates or by setting up their own operations. However, the experience has not been entirely positive, as implementation costs and loss experience have not met participants' projections.

Additionally, global development institutions have been active in terms of due diligence throughout Latin America and may constitute an extra resource to support the growth and expansion of Latin American companies into new territories. The companies that will try to expand overseas will be ones that perceive themselves to have excess capital. Ironically, given the limited number of regional participants, the Latin American market remains dominated by global capacity.

Stable Outlook for Reinsurance in Latin America

The region remains attractive owing to its growth potential and strengthening regulatory frameworks, as well as primary companies' profitable risk selection. However, limited economic prospects, potential protectionism, and lower interest rates could limit business opportunities and pricing terms for participants in the region. Insured losses may have been low in recent years, but market participants will be aware of the region's susceptibility to earthquakes. Historic events in Chile, Mexico, and, more recently, Peru and Panama, should be considered as reinsurers estimate their underwriting capacity, pricing, and risk management initiatives in Latin America. In addition, climate change has been increasing weather volatility around the world and Latin America may not be an exception.

August 29, 2019

MENA Reinsurers: Turbulence Creates Opportunity

MENA reinsurers are looking to alter their portfolios in favour of new or less volatile segments and are seeking to diversify their revenue streams

Middle East and North African reinsurers have faced increased turbulence in recent years, creating challenges for some and opportunities for others. The market remains characterised by challenging conditions, overcapacity, and an increase in large loss activity.

The competitive landscape has shifted over the past year, driven largely by the difficulties encountered by two of the region's leading reinsurers: Trust International Insurance and Reinsurance Co. (Trust Re) and Arig Insurance Group (Arig). Trust Re struggled to maintain its credit ratings and subsequently suffered during the 2019 renewal season owing to its inability to issue financial statements. Trust Re's problems also impacted the ratings of its subsidiary, Oman Re. Arig's troubles stemmed from a combination of material fraud and sizeable losses from its Lloyd's operations, which resulted in a decision by the company to enter into run-off. This added to the line of recent run-offs of regional reinsurers, which includes Asia Capital Retakaful MEA (Bahrain), and Emirates Retakaful, and Takaful Re a few years earlier. Additionally, primary carriers such as Doha Insurance/Mena Re and Emirates Insurance, which underwrote facultative reinsurance, have also reduced their offerings.

Trust Re and Arig supplied capacity of USD 600 million (in total shareholders' capital) to the market, and also had reinsurance operations across the world. Therefore, the fallout from their difficulties was felt not just across the MENA region, but beyond. As of July 2019, Kuwait Re was the only MENA-domiciled reinsurer with an AM Best rating above "B++".

As cedents sought to replace Trust Re and Arig on their reinsurance panels, opportunities opened up for existing competitors looking to increase their line size and diversify their cedent base, as well as for newer competitors such as Barents Reinsurance, which entered the market in 2011. This has allowed existing, well-rated reinsurers to be more selective on the risks they underwrite. AM Best notes that the market has also experienced improved premium rates for high-value risks for the first time in many years.

Therefore, despite the withdrawal of capacity, competition continues to remain extremely high. Foreign reinsurers seeking new opportunities and looking to deploy capital more efficiently are providing plenty of capacity. Primary insurers leveraging their ratings and capacity by writing inward facultative business from the region further compound competition but are more cautious in their approach as direct writers have had to absorb significant losses on their inward reinsurance portfolios in recent years.

Natural Catastrophe Risk Increases

International reinsurers have historically found the MENA market attractive due to its diversification benefits, as well as the perception that the region has limited risk in terms of natural catastrophes. However, this perception has been challenged in recent years, with an increasing level of natural catastrophe losses that have included Cyclone Mekunu in Oman and flood losses in Saudi Arabia and Jordan. In 2018, material flood losses also occurred in Kuwait for the first time in many years.

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Additionally, whilst modelling for earthquake risk has improved, there is limited loss modelling for wind and flood events. With the increasing frequency of flooding in the region, AM Best believes that these risks are not yet sufficiently priced into policies, and the potential severity of these unmodelled risks pose a threat to the market.

Given the high frequency of property losses and the pressure on premium rates experienced across core product lines, regional reinsurers are looking to alter their portfolios tactically in favour of new or less volatile segments and are seeking to diversify their revenue streams into the Asian and African markets (where pricing is perceived to be more attractive). Many MENA reinsurers continue to provide capacity to Lloyd's syndicates to gain exposure to uncorrelated risks. This increases their exposure to catastrophe risk, but in a more controlled manner, unlike the inward retrocession exposure that many took on during the catastrophe years of 2011 and 2012.

Operating Performance Remains Weak for Most Participants

In general, well-established regional reinsurers have shown resilience to the challenging operating environment. Although their performance has lagged that of their global peers, they continue to ride competitive pressures and carve out market niches to support their operations.

The strategies and profiles of the region's reinsurers vary widely; some benefit from compulsory cessions, while others depend on proportional business. AM Best notes that while some are actively shifting to non-proportional portfolios, others have increasingly sought geographical diversification.

Consequently, the historical technical performance of the region's reinsurers differs considerably. Many have demonstrated strong non-life combined ratios below 100; however, some have posted weaker technical performance with combined ratios well over 100 (**Exhibit 1**), driven by volatile loss ratios.

Loss ratios for North African reinsurers have risen steadily over the past three years, driven by changes in their business mix as they seek to supplement their local portfolios with more

Exhibit 1
MENA Reinsurers – Non-Life Underwriting Ratios, 2016-2018

(%)

		Loss Ratio				Combined Ratio			
Company	Country	2016	2017	2018	3yr Avg.	2016	2017	2018	3yr Avg.
Arab Insurance Group (B.S.C.) (C)	Bahrain	61	69	84	72	98	104	118	108
Arab Reinsurance Co. SAL	Lebanon	73	77	70	73	108	107	106	107
Compagnie Centrale de Réassurance	Algeria	51	51	53	52	81	82	83	82
Hannover Re Takaful B.S.C. (c)	Bahrain	70	61	69	66	101	95	102	99
Kuwait Reinsurance Co. K.S.C.P.	Kuwait	65	67	64	65	97	98	96	97
Milli Reasurans Turk Anonim Sirketi	Turkey	75	76	94	81	108	111	129	115
Oman Reinsurance Co. SAOC	Oman	55	62	55	57	104	106	94	100
Saudi Reinsurance Co.	Saudi Arabia	78	67	63	72	98	100	98	99
Société Centrale de Réassurance	Morocco	59	62	51	58	84	95	93	91
Société Tunisienne de Réassurance	Tunisia	53	65	73	64	94	104	112	103
Trust International Insurance & Reinsurance Co. BSC	Bahrain	68	69	n/a	68	98	102	n/a	100

Notes: Excludes companies for whom financial data were not available.

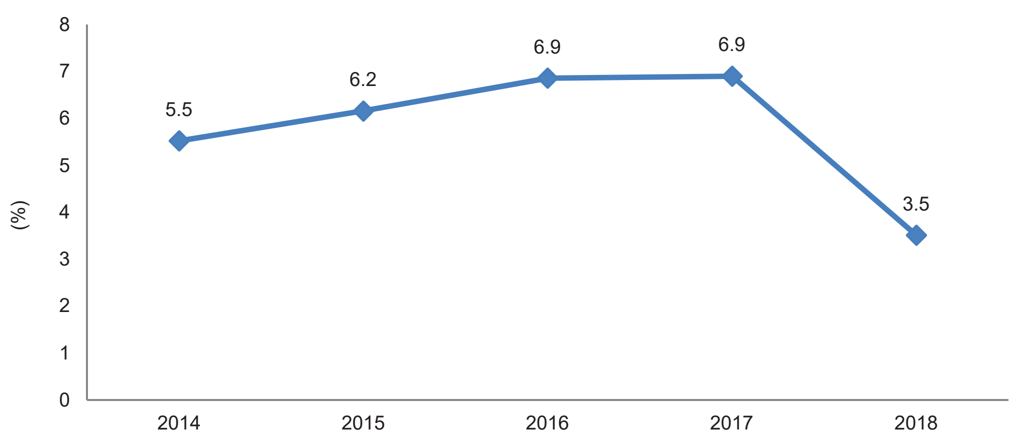
Source: BESTLINK Best's Financial Suite – Global, AM Best data and research

regional and international exposures. Although their domestic operations continue to generate strong returns, the lack of branding and presence in other markets mean they often end up underwriting substandard risks at inadequate prices.

Investment performance for the MENA region remains a key driver of overall operating results and return on equity (ROE) ratios as regional reinsurers face pressures on their technical performance. However, the weak interest rate environment and low-yielding investment markets have resulted in ROE ratios for regional reinsurers remaining in the low single digits. The increase in underlying yields is expected to also dampen bond performance over the medium term. From 2014 to 2018, ROE ratios have varied from between 3.5% and 7% (**Exhibit 2**), below those of global reinsurance groups.

In conclusion, market conditions for MENA reinsurers remain extremely challenging, with additional capacity quickly replacing exiting capacities, which propels reinsurers to seek diversification and reduce potential volatility in earnings. However, in AM Best's view, the long-term trends in credit quality are likely to depend on a reinsurer's ability to successfully execute growth strategies in a highly-competitive market.

Exhibit 2
MENA Reinsurers – Returns on Equity, 2014-2018



Note: Excludes companies for whom financial data were not available
Source: AM Best data and research

Exhibit 3
MENA Reinsurers – AM Best-Rated Entities
Ratings as of July 25, 2019

AMB #	Company	Domicile	Best's Long-Term Issuer Credit Rating (ICR)	Best's Financial Strength Rating (FSR)	ICR & FSR Rating Action	Best's ICR & FSR Outlook	Rating Effective Date
90777	Compagnie Centrale de Réassurance	Algeria	bbb-	B+	Affirmed	Stable	5-Sep-18
85585	Kuwait Reinsurance Co. K.S.C.P.	Kuwait	a-	A-	Affirmed	Stable	29-Apr-19
89190	Arab Reinsurance Co. SAL	Lebanon	bbb-	B+	Affirmed	Negative	19-Dec-18
84052	Société Centrale de Réassurance	Morocco	bbb	B++	Affirmed	Stable	1-Nov-18
83349	Société Tunisienne de Réassurance	Tunisia	bbb-	B+	Affirmed	Stable	24-Jul-19
85454	Milli Reasurans Turk Anonim Sirketi	Turkey	bbb-	B+	Affirmed	Negative	16-Jul-19

Source: BESTLINK Best's Financial Suite – Global, AM Best data and research

Retakaful: Prospects for Growth

Retakaful (Islamic reinsurance) formations in the MENA region have grown significantly over the last two decades. Many of these took the form of greenfield investments, while others were formed by large global reinsurers looking for additional distribution platforms. However, underwriting success has remained elusive. In AM Best's opinion, this has been due to the underperformance and small size of the region's primary takaful market, as well as the pressure on pricing exerted from the conventional reinsurance market.

As a result, a number of "dedicated" retakaful operators such as Takaful Re and Emirates Retakaful (both from the United Arab Emirates) entered into run-off and exited the market, leaving branches or subsidiaries of conventional reinsurers as the only retakaful operators in the region.

That said, AM Best expects interest in retakaful to continue as the primary takaful market grows and its performance improves. However, demand may remain limited as long as Shari'a boards of takaful companies maintain a lax attitude towards enforcing the use of retakaful. Consequently, AM Best does not expect significant new "standalone" entrants to enter the retakaful market, with the conventional market continuing to supply capacity through branches or subsidiaries.

August 29, 2019

Sub-Saharan Africa Remains a Long-Term Opportunity for Reinsurers

Volatile operating environments, with elevated economic and political risks across sub-Saharan Africa continue to pose challenges for domestic and international operators

Primary insurance markets across sub-Saharan Africa are mostly small by global standards, owing largely to different levels of economic development and low insurance penetration in each country. However, they provide an opportunity for diversification and an avenue for growth, and so remain attractive to international reinsurers taking a longer-term view. South Africa, often described as a relatively mature market, is a notable exception with its sizable market and double-digit insurance penetration levels.

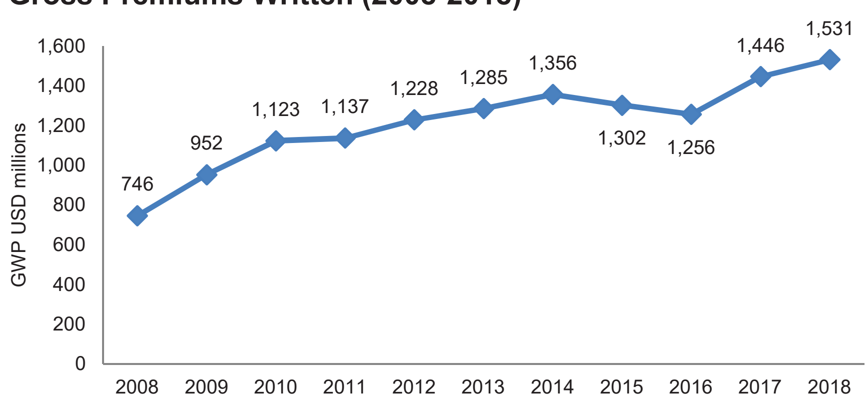
Today, the operating environments across sub-Saharan Africa, particularly in terms of economic and political risks, continue to pose challenges for domestic and international operators, albeit with lessening severity. Most of the region's (re)insurers have faced issues in recent years including inflationary pressure and currency depreciation; for some economies, electoral disputes have contributed to social instability and political uncertainty. Despite these challenges, some countries have been able to prosper, and growth continues in many markets.

The ongoing development and industrialisation of the continent's economies, together with gradual increases in insurance penetration, have contributed to the expansion of the region's reinsurance markets over the longer term, a trend that AM Best expects will continue. Sub-Saharan African reinsurers rated by AM Best have experienced strong growth over the past decade, with a 10-year compound annual growth rate of gross written premiums (GWP) of more than 7% (calculated in US dollars). Increases in GWP have been driven predominately by the non-life insurance segment, with life business at a nascent stage in many countries.

The steady growth in GWP (see **Exhibit 1**) was countered by the depreciation of local currencies against the US dollar, as well as the effects of a recession in 2015 and 2016. These factors have been of particular concern to economies where oil exports are an important contributor to the economy. Although a more stable environment in recent years has helped support a recovery, exchange rate movements and moderate

Exhibit 1

Reinsurance – Sub-Saharan Africa – Gross Premiums Written (2008-2018)



Source: BESTLINK Best's Financial Suite – Global, AM Best data and research

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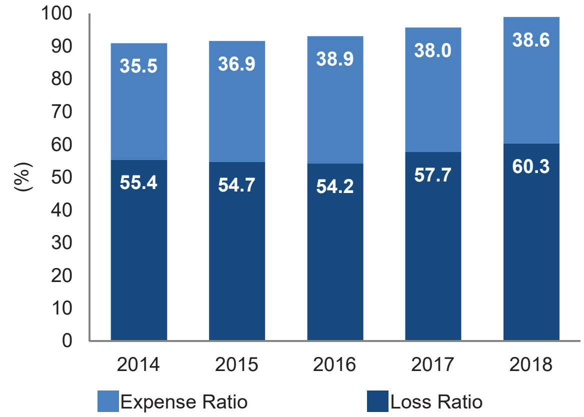
levels of global consumer/commodity demand, along with competitive pricing conditions in global (re)insurance markets, will continue to affect the region's markets.

Exhibit 2

Reinsurance – Sub-Saharan Africa – Loss Ratio and Expense Ratio (2014-2018)



Source: BESTLINK Best's Financial Suite – Global, AM Best data and research

The impact of exchange rate movements is also felt on claims costs, which has contributed to the gradual deterioration of underwriting performance for several African reinsurers. AM Best has observed a deterioration in underwriting performance for the reinsurers in the region that it rates, with the overall composite combined ratio rising steadily to just below 100 in 2018. In the same year, the underwriting results of a number of African reinsurers were negatively impacted by a combination of higher frequency and severity of large losses, with the composite recording a combined ratio of 98.9 (**Exhibit 2**).

Sub-Saharan African reinsurers have tended to focus largely on risks local to the African continent and have therefore not been exposed to global catastrophe losses experienced by the wider reinsurance market. In 2018, the average loss ratio for AM Best-rated reinsurers in the region was 60.3, compared to 70.9 for the 50 largest global reinsurers. Nevertheless, performance remains constrained by efficiency limitations and a lack of economies of scale, with a 38.6 average expense ratio reported in 2018 for the region, versus 30.0 for the 50 largest global reinsurers.

Market Features and Trends

The reinsurance landscape in each country is unique, but there are some similarities across the continent. Often, national or sub-regional reinsurers are privileged with compulsory cessions to compete against other African reinsurers with more diversified or pan-African footings. There will also typically be competition from a relatively small group of more sophisticated global reinsurers, along with a number of smaller regional non-African market participants.

Larger-sized and specialist risks find their way to the London market, including through the active participation from international intermediaries. Established and internationally experienced companies are able to contribute the know-how needed to manage complex risks and offer greater capacity than local market participants. With a few notable exceptions, local and regional reinsurers act as a following market, subscribing to the terms and conditions arranged by the lead reinsurer, and often benefit from compulsory cessions that are mandated by local regulations.

Local primary markets often include a moderate number of small companies with concentrated insurance portfolios. The ability of companies to access a workforce with the talent and experience required to successfully innovate and grow remains a challenge for the industry, particularly for companies that lack scale and opportunity. The gradual strengthening of capital requirements by regulators across the continent will likely encourage industry consolidation and improve the scale of individual insurers, although this may not necessarily address the skills gap.

Barriers to Entry

Barriers to entry remain high in many African reinsurance markets and include protectionist local regulations. The expansive geography of the continent and relatively small market size, coupled with significant cultural and policy position differences, have limited the level of potential interest from global participants. Many of the reinsurers that were classified as national operators a decade ago have managed to position themselves in a pan-African capacity today, sometimes with hubs across the continent that allow them to better access their target markets.

Although the presence of mandatory cessions in some markets may restrict the opportunities available to foreign participants, they play an important role in supporting the underlying insurance markets, with many of the mandatory cession recipients maintaining a mandate that goes beyond a pure commercial existence. Across the continent, governments using the national reinsurer format continue to launch new reinsurance capacity, such as the formation of Empresa Nacional Resseguros de Angola (now in its final stages). AM Best believes that this trend is unlikely to change in the immediate future, but intra-governmental co-operations, such as the recently announced free-trade arrangements, are encouraging signs of momentum towards more pan-regional business which could eventually benefit reinsurers.

Credit Quality

The credit quality of the reinsurance offerings on the African continent is wide-ranging and connected to some of the exacting political, socio-economic, and regulatory conditions under which they operate. African-domiciled reinsurers rated by AM Best collectively underwrite approximately USD 1.5 billion in GWP in the economically active insurance markets (other than South Africa).

Despite uncertain market conditions, the rating fundamentals of the majority of the AM Best-rated African reinsurers have been stable. For all of these entities, risk-adjusted capitalisation remains at the Strongest level, largely as a consequence of their often underutilised capital bases relative to their low underwriting risk exposures. **Exhibit 3** shows the Best's Capital Adequacy Ratio (BCAR) scores of AM Best-rated entities.

Consistent with the decline in combined ratios highlighted above, overall earnings have also been in decline (see **Exhibit 4**). When considering the return on equity for these companies, it is worth noting that most have significant capital surpluses and relatively conservative investment strategies, which tempers this metric. Africa Re is by far the largest company in the composite, and results are therefore skewed by its performance. In 2018, Africa Re's results were negatively impacted by currency exchange rate losses, fair value investment losses, and an unusually high claims experience.

Exhibit 3

Non-Life and Life – Sub-Saharan Africa – Best's Capital Adequacy Ratio (BCAR) Score by Rated Entity

AMB#	Company Name	VaR 95%	VaR 99%	VaR 99.5%	VaR 99.6%	Assessment Effective Date
83411	African Reinsurance Corporation	72.5	62.1	57.9	55.3	20-Dec-18
93852	CICA Re	70.9	60.3	56.0	54.7	31-Jan-19
93641	Continental Reinsurance Plc	59.0	41.5	33.2	30.4	30-Nov-18
77803	East Africa Reinsurance Company Limited	51.6	41.4	37.6	36.3	14-Dec-18
71476	Ghana Reinsurance Company Ltd.	63.0	51.0	46.1	44.8	18-Dec-18
94974	Kenya Reinsurance Corp Ltd	60.1	52.1	45.1	37.5	31-Jan-19
78388	ZEP-RE (PTA Reinsurance Company)	74.8	69.6	67.0	66.3	14-Dec-18

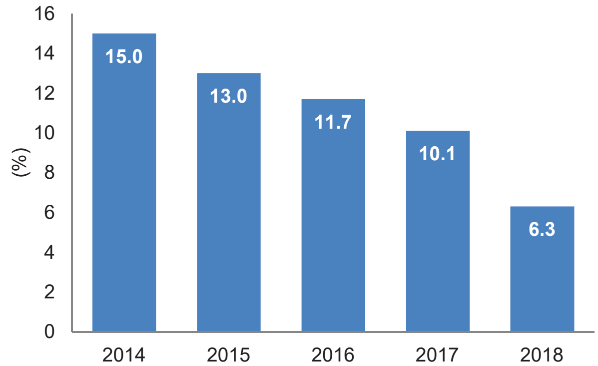
Notes: BCAR scores calculated at the consolidated group level.

Source: BESTLINK Best's Financial Suite – Global, AM Best data and research

Limitations in the strength of sub-Saharan African reinsurers' risk management are an ongoing concern across the region. AM Best's enterprise risk management (ERM) assessment of individual companies (which has typically resulted in Marginal or Weak assessments) takes into account the high risk management requirements for companies operating in environments with high economic, political, and financial system risk—which, in turn, have negative impacts on the final rating outcome.

Exhibit 4

Reinsurance – Sub-Saharan Africa – Return on Equity (2014-2018)



Source: BESTLINK Best's Financial Suite – Global, AM Best data and research

Exhibit 5

Global Reinsurance – Sub-Saharan Africa – AM Best-Rated Reinsurers

Ratings as of July 16, 2019

AMB #	Company Name	Best's Long-Term Issuer Credit Rating (ICR)	Best's Financial Strength Rating (FSR)	Best's ICR & FSR Action	Best's ICR & FSR Outlook	Rating Effective Date
83411	African Reinsurance Corporation	a	A	Affirmed	Stable	20-Dec-18
93852	CICA Re	bb+	B	Affirmed	Stable	31-Jan-19
78723	Continental Reinsurance Plc	bbb-	B+	Affirmed	Stable	30-Nov-18
77803	East Africa Reinsurance Company Limited	bb+	B	Affirmed	Stable	14-Dec-18
86651	General Reinsurance Africa Ltd	aa+	A++	Affirmed	Stable	29-Mar-19
90035	Ghana Reinsurance Company Limited	bb	B	Affirmed	Stable	18-Dec-18
85416	Kenya Reinsurance Corporation Limited	bb+	B	Affirmed	Stable	31-Jan-19
78388	ZEP-RE (PTA Reinsurance Company)	bbb	B++	Affirmed	Stable	14-Dec-18

Source: BESTLINK Best's Financial Suite – Global, AM Best data and research

The African Continental Free Trade Area

The successful development of the African Continental Free Trade Area (AfCFTA), which was launched in July 2019, has the potential to significantly boost trade across Africa and support national markets as they grow. The impact the initiative may have on the African reinsurance segment is unclear, but it may yield some positive benefits due to the inevitable cross-border nature of reinsurance markets.

The African continent already benefits from a number of overlapping free trade zones that include the Economic Community of West African States (ECOWAS), the East Africa Community (EAC), the Southern African Development Community (SADC), and the Common Market for Eastern and Southern Africa (COMESA).

South Africa's Dominance

South Africa is by far the largest single economy in sub-Saharan Africa, with a relatively mature insurance market and established life and non-life segments. The country's economy is sensitive to both internal and external factors, with global matters (such as international trade wars), in addition to local issues such as high unemployment and drought, impacting the local economy in recent years.

South Africa's regulatory landscape is also significantly ahead of many others in the region. Companies now face risk-based capital requirements and must complete Own Risk and Solvency Assessments (ORSA). The country requires that reinsurers be domiciled locally and has thus attracted a pool of domestic reinsurers that are subsidiaries of international insurance groups.

Although South Africa's reinsurance market has gained recognition as more mature than others in the region, its underwriting performance has been significantly worse. In recent years (2016 and 2017), combined ratios for the market have been well above 100, due primarily to a high incidence of large losses.

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