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Executive Summary: Risk Transfer Value Remains Strong

2020 marked the start of a different trading environment for the industry and the value of risk transfer through reinsurance remains strong as the primary market focuses on growth, digital distribution, capital optimization strategies and a customized, data driven approach to understanding risk. Overall, reinsurance capital remains at a strong position to support primary market risk transfer needs as well as positioning insurers for product line and geographical expansion. Opportunities still exist for reinsurance capacity expansion to support new products in several areas, notably cyber and climate.

Reinsurance capital increased through Q2 ending the period at \$660B driven by increases in both the traditional and alternative markets. Traditional capital at the end of Q2 stood at \$563B, up \$7B compared to year end and recovering from a slight decline at the end of Q1. Alternative capital continued to increase, up an additional \$1B nearing \$100B in total assets and a contribution of more than 15% of total global reinsurance capital.

Catastrophe loss activity in 2021 saw severe weather near average while tropical cyclone and winter weather contributed to above average insured losses to date. Through early Q4, global catastrophe insured loss of \$107B is 13% higher than the average for the last 10 years of \$96B driven primarily by Hurricane Ida (estimated at \$30B) and the European Floods (\$12B).

As we look to January renewals, insurers continue to refine their catastrophe view of risk which may contribute to additional risk transfer as climate change continues to produce increased loss activity. In addition, reviews of long-tail portfolios against capital strategies will likely produce additional risk transfer in long-tail legacy risk.

Note: This reinsurance market outlook report should be read in conjunction with our firm's views on rate on line, capacity and retention changes for each cedent's market. Our professionals are prepared to discuss variations from our market sector outlo ok that apply to individual programs due to established trading relationships, capacity needs, loss experience, exposure management, data quality, model fitness, expiring margins and other factors that may cause variations from our reinsurance market outlook.

Global Reinsurer Capital

Strong Earnings Drive Capital Growth in 1H 2021

Aon estimates that global reinsurer capital totaled \$660B at June 30, 2021, an increase of \$10B relative to the end of 2020, driven by growth in both traditional and alternative capital. This calculation is a broad measure of the capital available for insurers to trade risk.

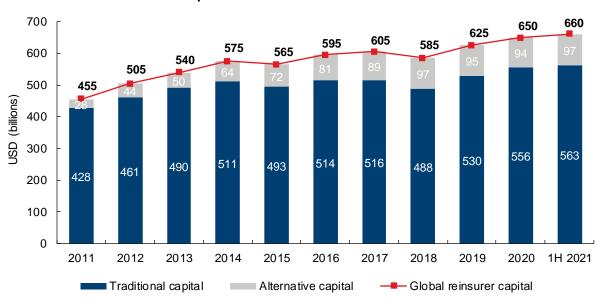


Exhibit 1: Global Reinsurer Capital

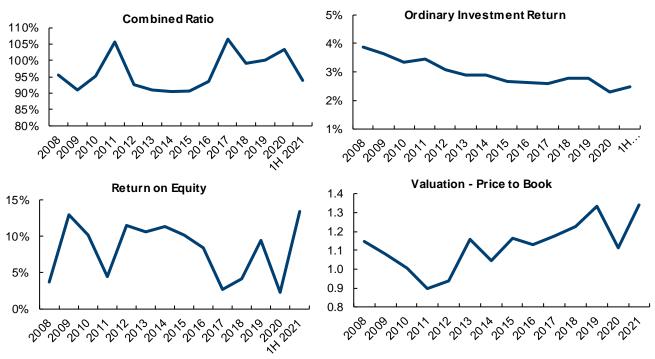
Sources: Company financial statements / Aon Business Intelligence / Aon Securities Inc.

Traditional Capital

Reinsurers generally reported strong earnings for the first half of 2021, despite the impact of the Texas winter storms and the booking of additional losses relating to COVID-19 (mainly relating to life business). Aon estimates the sector non-life combined ratio at 93.9%, with the benefit of previous rate increases now visibly earning through, while the strong performance of stock markets and alternative assets continued to boost investment results. Overall, the annualized return on equity is estimated at 13.4%.

The impact on reported capital positions was muted by the extent of the capital returned to investors in the form of dividends and share buybacks. Additional factors included unrealized losses on bonds taken directly to equity (relating to movements in interest rates) and appreciation of the US dollar. Consequently, Aon estimates that traditional capital rose by \$7B to \$563B at June 30, 2021.

Exhibit 2: Reinsurer Results*



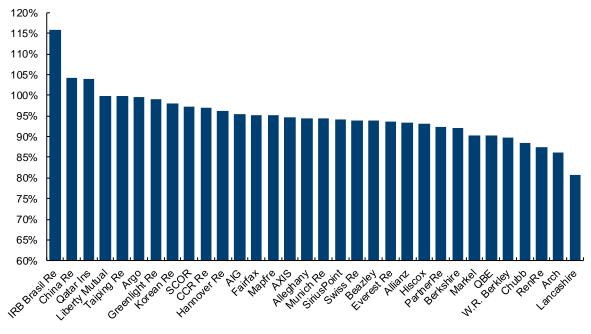
Source: Company financial statements / Aon Business Intelligence

^{*} Based on Aon's Reinsurance Aggregate (Arch, Argo, Aspen, AXIS, Beazley, Everest Re, Fairfax, Hannover Re, Hiscox, Lancashire, Mapfre, Markel, Munich Re, PartnerRe, QBE, Qatar Insurance, RenRe, SCOR, Swiss Re, Sirius Point and W.R. Berkley)

Individual Company Performance in 1H 2021

The reported net combined ratios of selected companies in 1H 2021 are shown in Exhibit 3. The data relates to performance across the entire non-life portfolios (with the exception of Munich Re, where ERGO is excluded).

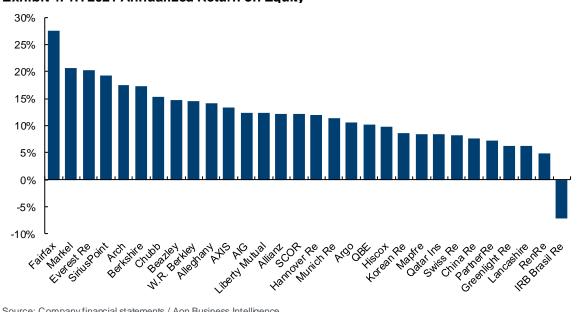
Exhibit 3: 1H 2021 Net Combined Ratios



Source: Company financial statements / Aon Business Intelligence

The annualized return on equity of selected companies in 1H 2021 is shown in Exhibit 4. IRB Brasil Re was the only company to report an overall loss for the period.

Exhibit 4: 1H 2021 Annualized Return on Equity



Source: Company financial statements / Aon Business Intelligence

The growth in equity of selected companies during 1H 2021 is shown in Exhibit 5. The reduction at Swiss Re related to the payment of a sizeable dividend in 2020 and unrealized losses on bonds.

12%
10%
8%
6%
4%
2%
0%
-2%
-4%
-6%
-8%
-10%
-12%
-14%

(content by the content by the both th

Exhibit 5: 1H 2021 Growth in Equity (Original Reporting Currencies)

Source: Company financial statements / Aon Business Intelligence

The share price performance of selected companies since the beginning of 2021 is shown in Exhibit 6. The insurance sector has seen a sustained recovery since the onset of the COVID-19 pandemic but has under-performed relative to most other economic sectors in 2021.

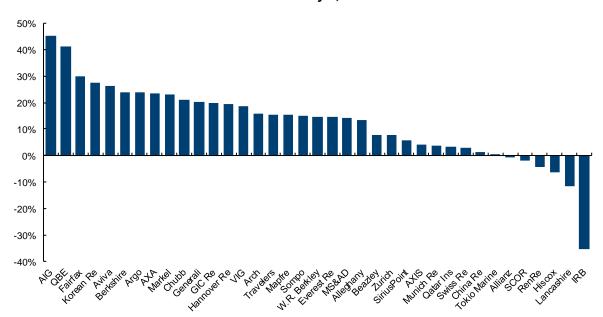


Exhibit 6: Share Price Performance Since January 1, 2021

Source: Bloomberg, as of August 27, 2021

Alternative Capital

In 2021 the alternative capital market grew by approximately 3%. Increased volatility in the reinsurance market shifted some focus towards the relative safety of the bond market as catastrophe bonds saw a 6% increase in the 2021 total outstanding (despite a year of record bond maturities). Fund managers are messaging favorable cash position and they continue to actively pursue new inflows. Managers are attracting additional capital from a combination of new investors, existing investors topping up their positions and some reshuffling of mandates between managers (the latter two being more prevalent). Healthy pipelines and inflows continue to signal a favorable bond market environment. Additionally, we expect to see some opportunistic entrants access the market to take advantage of more distressed opportunities in certain segments of the market.

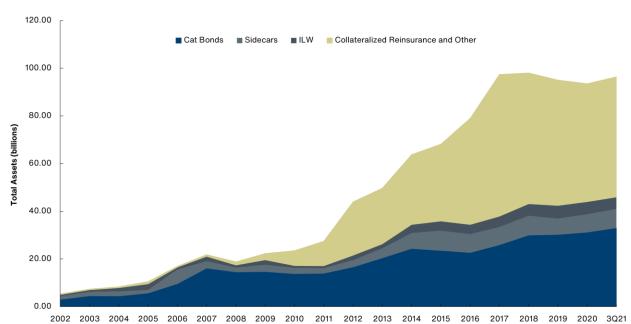


Exhibit 7: Alternative Capital Deployment

Source: Aon Securities Inc.

Primary Rate Increases Continue

Rate increases fell slightly from Q1 2021 across all lines of business and many lines were down from the peak of rate increases reported in 2020. Umbrella maintained an increase above 20% again for Q2 2021 while commercial property fell to 12% on average, and both commercial auto and general liability were near 7% for the quarter. Workers' compensation held on to slight increases of near 1% on average.

2016

2017

Commercial Property ——General Liability ——Umbrella —

2018

2020

Workers' Comp

2019

2021

Exhibit 8: U.S. Rate Change by Line of Business

Source: Council of Insurance Agents and Brokers

Commercial Auto =

2013

-10%

2012

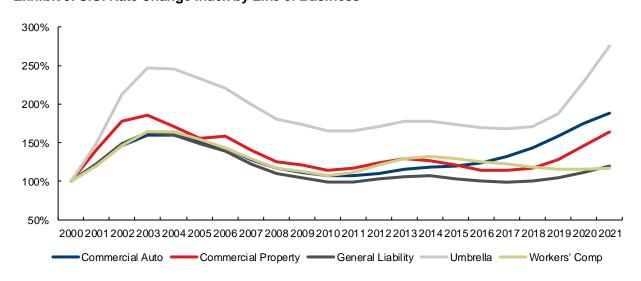


Exhibit 9: U.S. Rate Change Index by Line of Business

2014

2015

Source: Council of Insurance Agents and Brokers

A Bespoke View of Risk Considering Market Conditions and Insights from Claims Data

The insurance industry largely relies on catastrophe models to provide a robust method of risk accumulation to quantify extreme, yet plausible loss potential from catastrophic events. Key metrics are relied upon by insurers and regulators, and modeled expected loss and volatility estimates are common currency in catastrophe risk transfer discussions. There is no question that catastrophe models provide valuable insights. As model usage expands, it is important stakeholders who rely on models to support risk management decisions have an informed view of risk that goes beyond 'out of box' model vendor outputs.

The development and implementation of a customized, informed view of risk can take on many forms. Some insurers develop bespoke models and have teams focused on sophisticated model evaluation. Given the specialized knowledge and considerable effort involved there is a meaningful investment required in addition to model vendor license fees, making this approach unrealistic for most insurers to tackle independently. For many, a more practical approach is to leverage bespoke data and insights that complement and build upon what is currently captured within the catastrophe models. A simple example is to add a load for loss adjustment expenses based on experience from prior events, as catastrophe models typically do not consider loss adjustment expenses. Similarly, adjustments can be made for sources of loss not modeled well or to more specialized types of business. In general, insurers can implement adjustments for market fluctuations more quickly than model vendors would integrate updates into their models, if at all.

Inflation Considerations

Recent inflation in the cost of goods and services is one area that may or may not merit an adjustment to the catastrophe models, depending on an insurer's view of risk. A lot of recent financial press is on the elevated levels of inflation in the economy. As of September, the Consumer Price Index, a widely used measure of inflation, is up 5.3% year-over-year, the highest level seen in many years. This rise in the costs of goods is largely driven by disruptions to patterns of supply and demand due to the COVID-19 pandemic. Consumer demand preferences for things like computer equipment, lumber and cars changed very quickly since the start of 2020. The supply for these materials changes less quickly than demand, pushing prices up. Compounding factors like the computer chip shortage and severe shipping bottlenecks exacerbated the supply and demand imbalance.

As we move into 2022, short term inflation expectations remain elevated. A survey of consumers shows expectations for inflation between 4% and 5% over the next year. Expectations often become reality as anticipation of higher prices may lead consumers to accelerate purchases thus increasing demand and causing prices to rise. Likewise, the Federal Reserve indicated they expect inflation to remain elevated for the next year and will start to curtail some monetary stimulus measures soon. Beyond the next year or two, inflation is expected to return to pre-pandemic levels. Consumer expectations, Federal Reserve statements and Wall Street all indicate inflation over the next five years to return at the historical norm of 2% to 3%.

Even if inflation remains elevated for the next year or two, it can still impact an insurer's business. While the broad Consumer Price Index is up 5.3% year-over-year shown in Exhibit 10, the cost of cars and construction materials increased at a much higher rate. Lumber prices were up over 300% in May before recently falling to near pre-pandemic levels. The Producer Price Index of construction materials is up 35% compared to pre-pandemic and steel prices increased more than 200%. New and used motor vehicle prices are up over 20% since January of 2020. When a claim occurs, these elevated prices will increase the claim costs and supply shortages will likely extend the claims process, especially in large claim events like hurricanes. The demand surge component in the catastrophe models already captures a large portion of this phenomenon, but a detailed analysis of claims and the current inflationary environment might be required to see if the modeled demand surge is adequate.

300% 250% 200% 150% 100% 50% 0% -50% January 2020 July 2020 January 2021 July 2021 PPI: Construction Materials Random Length Lumber Futures CPI - All Items US Domestic Hot Rolled Steel

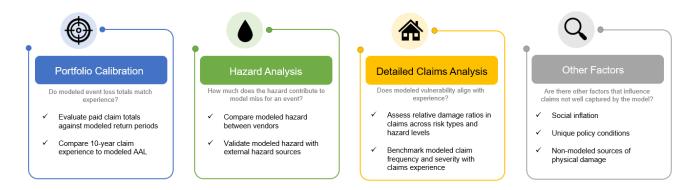
Exhibit 10: Construction Material Price Changes Since January 2020

Source: St. Louis Federal Reserve, Yahoo! Finance, Aon Analytics

Insurers can mitigate some of these inflationary pressures through underwriting and claims strategies. On the claims side, it's important to be conservative in both the initial cost and timeline estimates. A lengthy delay in securing materials and labor will lead to increased prices and potentially increased loss of use indemnification. Managing customer relations is more challenging by having to re-estimate claims or delay repairs due to material and labor shortages. On the underwriting front, values need to be indexed for inflation and care needs to be taken when choosing the metric to index. The Consumer Price Index is a very broad measure of inflation that hides the steep increases in motor vehicle and building materials prices. It's important to get the insured values right so they are reflected in rates, deductibles and any coinsurance. Additionally, percentage deductibles can be used to automatically limit the impact of inflation since they move up and down with insured values.

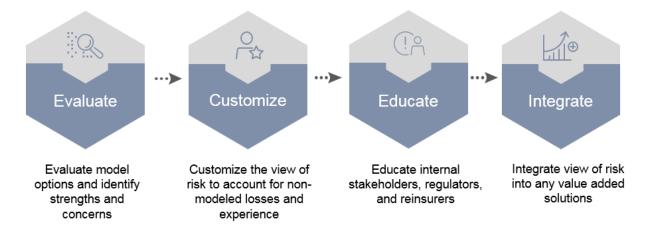
Claims Analysis Can Enhance View of Risk

Models are becoming more sophisticated and detailed, but there are limits on what can reasonably be predicted by a model. Following a major event there are often 'lessons learned' about where models performed well and where they did not, leading to future model enhancements incorporating these findings. Insurers can do some of the same analysis as model vendors post event leveraging their claims data and model vendor indications. While it's not appropriate to calibrate a probabilistic model based on a single event, a claims analysis can provide valuable insights to inform your view of risk.



A claims analysis can enhance an insurer's understanding of their portfolio and how catastrophe models work, leaving clients better prepared to use catastrophe model indications to support the development of a loss estimate in a future event.

Aon engages with clients to customize their view of risk and provides claims analyses post event using multiple model vendors. Our framework can be used to evaluate catastrophe models and develop and operationalize a customized view of risk for clients through these steps: evaluation, customization, education and integration.



2021: Active year for natural perils prompts aboveaverage annual losses

While the number of events remains below average for 2021 YTD, financial loss was costly. Through the early portion of Q4, global natural disasters resulted in an estimated \$107B in insured losses. This covers losses incurred by both public and private insurance entities. The \$107B puts 2021 already 13% higher than the recent decadal average (\$95B) and 26% above the decadal median (\$86B). Two significant and expensive events in Q3 led to a notable increase in industry payouts: Hurricane Ida and the July 2021 European Floods. A preliminary and early estimate for Hurricane Ida has insurance losses exceeding \$30B. The July European Floods are estimated at \$12B. This is on top of the \$15B insured loss that resulted from prolonged cold and wintry weather in the United States during February.

The above-average Atlantic Hurricane Season is beginning to wind down towards its official conclusion on November 30, the expectation for more U.S. landfalls is lessening. With the cascading financial impacts from COVID-19 still apparent, issues surrounding supply chain disruption, higher replacement costs and prolonged loss development persist.

160 140 120 \$B (2021) 100 80 60 40 20 n 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 10 Year 10 Year Median ■ Other ■ Drought ■ Wildfire ■ Winter Weather ■ EU Windstorm ■ Earthquake ■ Flooding ■ Severe Weather ■ Tropical Cyclone

Exhibit 11: Global Insured Losses by Peril

Source: Aon (Catastrophe Insight)

Through early Q4 2021, there have been 15 individual billion-dollar insured loss events. Nine of 15 occurred in the United States, with the rest in Europe (3), APAC (2) and the Americas (1).

This preliminary data is from Aon's Catastrophe Insight group, part of Impact Forecasting. To view the most up-to-date catastrophe loss data, please visit: http://catastropheinsight.aon.com.

"Mega" Catastrophes on the Increase?

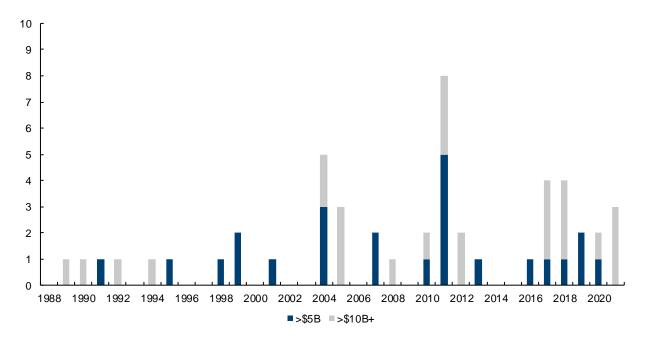
2021: Already 3 events with insured losses > \$10B

Many factors result in a high-cost natural catastrophe event: location, intensity, event length (time) and type of construction. All these factors – and more – are critical when analyzing why some disasters are more expensive than others. The continued influence of climate change on specific weather and climate-related events has only amplified the behavior and unusual nature that individual occurrences continue to exhibit. This means hurricanes are intensifying more rapidly; extreme rain events are dropping more precipitation; wildfires are burning hotter and faster; droughts are more pronounced and prolonged; and the Polar Vortex can affect latitudes not accustomed to any prolonged periods of cold.

What does this mean?

Natural peril risk grew with time due to the noted weather, climate and human factors (more people and stuff moving into highly vulnerable locations). This directly corresponded with more expensive events on an aggregate and individual basis. For the insurance industry, the frequency of "mega" events – defined as an event with a minimum loss of \$10B on a nominal or inflation-adjusted basis – is increasing. Exhibit 12 shows the first event with at least \$10B in industry losses occurred in 1989 (Hurricane Hugo). Since 1989 these events occur every few years demonstrating the increased frequency. Of the 26 events causing over \$10B in insured loss, 10 were recorded since 2017 (including 3 in 2021). Fifteen of the 26 occurred since 2011.

Exhibit 12: Annual Total Number of Global Insured Loss Events (>\$5B &>\$10B)



Source: Aon (Catastrophe Insight)

Since 1989, another 24 events topped \$5B in insured losses (nominal or inflation-adjusted to 2021 USD). There are two events that occurred before 1989 – the 1906 San Francisco Earthquake and the Great Storm of 1987 (United Kingdom) – which surpass \$5B in today's dollars. Like the "mega" events, the trend is clear. Half of the additional 24 events occurred since 2011.

As the physical risk of natural perils grows more expensive, and more non-traditional events – excluding tropical cyclones or earthquakes – become more dominant in their aggregate or individual event costs, there will be increased pressure by the re/insurance industry to handle the costlier trend. Whether this results in a more active movement into parametric-based insurance products, or more future looking investment strategies around a carbon tax or green bonds, the traditional way of viewing natural peril risks is quickly being forced to change. As concerns around litigation or liability risk grow as natural perils become more intense, this will only further advance the need to invest with a forward-thinking mindset as event behavior and resultant impact types seemingly evolve with each passing day.

2021 Atlantic Hurricane Season Forecasts: A Success Story

The three main hurricane season prognosticators (National Oceanic and Atmospheric Administration (NOAA), Colorado State University (CSU) and Tropical Storm Risk (TSR)) forecast an active and above average 2021 Atlantic Hurricane Season. The season has been busy with several U.S. landfalls. As of late October, the season recorded 20 named storms, 7 hurricanes and 4 major hurricanes (Category 3+). The United States cited 7 landfalls: **Danny** (South Carolina; Tropical Storm); **Elsa** (Florida; Tropical Storm); **Fred** (Florida; Tropical Storm); **Henri** (Rhode Island; Tropical Storm); **Ida** (Louisiana; Category 4 Hurricane); **Mindy** (Florida; Tropical Storm); and **Nicholas** (Texas; Category 1). The U.S. mainland recorded 18 named storm landfalls – including 8 hurricanes (Category 1+) and 3 major hurricanes (Category 3+) – since 2020.

Despite the season nearing its climatological end, it is worth noting that a La Niña re-developed in the central and eastern Pacific Ocean. This led to more favorable atmospheric and oceanic conditions in the Atlantic Ocean's Main Development Region (MDR). This includes above normal sea surface temperatures, below-normal sea level pressure and below-normal trade winds. Such conditions are often conducive for cyclogenesis. Climatology indicates that roughly 67% of Atlantic Hurricane activity occurs after August 20.

Hurricane Grace made landfall along the mainland Mexican coastline as a Category 3 storm. Ida also struck Cuba as a Category 1 hurricane before later striking the U.S.

	Named Storms	Hurricanes	Major Hurricanes
TSR (August 2021)			
2011-2020 Average	17	7	3
2021	18	7	3
CSU (August 2021)			
1991-2020 Average	14	7	3
2021	18	8	4
NOAA (August 2021)			
1991-2020 Average	14	7	3
2021	15-21	7-10	3-5

Source: Tropical Storm Risk (TSR), Colorado State University (CSU), NOAA

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