The Reinsurance Industry's increased resilience to Catastrophic Events from a Financial Security Perspective

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1. INTRODUCTION

One of the key steps in understanding the drivers behind the research topic in question is to first come to terms with what reinsurance is and equally the definition of financial security and why this is essential in today's reinsurance market.

1.1 What is Reinsurance?

Reinsurance can be described very simply as "insurance for insurance companies". It is a means of transferring some of the financial risk taken on by insurance companies such as the insurance of cars, homes and buildings to another insurance company, the reinsurer. Indeed insurers buy reinsurance similarly to individuals that buy insurance, in order to protect themselves against large financial losses in the event of a disaster. Most homeowners do not have the funds to rebuild their homes if it was destroyed in a fire for example. Hence they transfer this risk to an insurance company by paying a premium for the insurance company to do so. If the insurer does not wish to attain the risk then they might in turn transfer it to a reinsurer or several reinsurers. (Gastel, R., 2004, p1)

The ability for an insurer to transfer risk to a reinsurer benefits the insurers in a number of ways. Firstly, it enables an insurer to increase its capacity, which is the amount of business underwritten by an insurer. Indeed regulators restrict the amount of risk an insurance company can assume relative to their capital, however if they purchase reinsurance, they effectively transfer this risk meaning they can underwrite more insurance. In the United States, the amount of business written is restricted for each risk and also the total amount of risk underwritten in relation to the policyholder surplus which is defined as assets minus liabilities. Secondly, reinsurance promotes the law of large numbers, the probability theory upon which insurance is based. This means that if an insurance company writes more policies of the same type, which reinsurance enables it to do so, it allows the insurance company to better assess the statistical probability of loss which leads to more accurate pricing of the risk. Another benefit of reinsurance is the risk diversification benefits. Reinsurance spreads the risk of loss worldwide over many entities. Reinsurers also buy reinsurance from other reinsurers known as retrocessionaires, in order to protect themselves from large losses such as catastrophes. Hence the risk is spread around a number of reinsurers; thus if an event occurs, each reinsurers loss is minimised to their involvement. (Gastel, R., p2, 3)

Reinsurance also stabilises underwriting results as an insurance company can smooth out their bottom line by purchasing reinsurance to control losses over a period of time, i.e. the insurer decides how much of an individual policy they can afford to retain (its self retention) and "cedes" or transfers everything above that limit. (Gastel, R., 2004, p2, 3)

1.2 Reinsurer Financial Security

The financial security of reinsurers has become increasingly important in recent years with both reinsurance brokers and reinsurance companies establishing security departments with link ups to rating agencies such as Standard and Poor's, AM Best Company and Moody's Investor Services. Indeed Standard and Poor's is the leading rating agency in respect of reinsurers and insurers worldwide apart from the USA and Bermuda. Indeed AM Best would be the leader in respect of the USA and Bermuda. Moody's covers fewer entities than either S&P or AM Best. Usually these security teams will not allow business to be placed with a reinsurer that has a rating below a certain threshold. These rating agencies analyse the financial statements of reinsurers and meet with the management teams and assign insurance financial strength ratings to these reinsurers for a fee. It is almost impossible to operate in the reinsurance market without a strong financial strength rating (usually an S&P rating of A or higher) as insurers will not place business with a reinsurer that is not financially strong to ensure of their claims paying ability.

Let's take a closer look at Standard and Poor's Rating Definitions. "A Standard & Poor's insurer financial strength rating is a current opinion of the financial security characteristics of an insurance organisation with respect to its ability to pay under its insurance policies and contracts in accordance with their terms" (S&P 2006, p.4).

Rating	Explanation
AAA	"Extremely strong" financial security characteristics, the highest rating assigned by S&P
AA	"Very strong" financial security characteristics, differing only slightly from those rated higher
A	"Strong" financial security characteristics but is somewhat more likely to be affected by adverse business conditions than insurers with higher ratings
BBB	"Good" financial security characteristics, but is more likely to be affected by adverse business conditions than higher rated insurers
BB	"Marginal" financial security characteristics. Positive attributes exist, but adverse business conditions could lead to insufficient ability to meet financial commitments
B	"Weak" financial security characteristics. Adverse business conditions will likely impair its ability to meet financial commitments
CCC	" Very weak" financial security characteristics, and is dependent upon on favourable business conditions to meet financial commitments
CC	"Extremely weak" financial security characteristics and is likely not to meet some of its financial commitments
R	This insurer has experienced regulatory action regarding insolvency.

Table 1.2.1 (S&P, 2006, p4, 5)

Table 1.2.1 provides an explanation of what each rating means in order of strongest to weakest. Indeed an insurer/reinsurer rated BBB or higher is considered an investment grade security and is likely to meet financial commitments where as BB and lower is regarded as having vulnerable characteristics that may outweigh its strengths. Plus or minus can also be added to the rating to show where the reinsurer stands in that rating category.

How does S&P decide on a rating? S&P use a variety of quantitative and qualitative information. They take into account industry risk, competitive position, management and corporate strategy, operating performance, investments, liquidity, capital adequacy and financial flexibility in devising a rating.

1.3 The Reinsurance Cycle- Hard Market & Soft Market

The Global Reinsurance Market may be described as a relatively free and unregulated field of business activity. It demonstrates the laws of supply and demand and epitomizes capitalism. There have been many changes produced by competition which demonstrated the Reinsurance Industry's cyclical nature as seen in the past forty years. The hard market may be defined as a scarcity of a product or service for purchase, as opposed to a soft market, in which the product or service readily available and easy to buy. In reinsurance a hard market is characterised by prudent underwriting and adequate pricing, whereas a soft market reflects sloppy underwriting and deficient pricing. (Strain, R. 1997, p474)

During the most recent cycle, reinsurance pricing among the majority of lines of business fell persistently between 1995 and 2000 as a result of price competition (a soft market). This competition was due to an apparent benign claims environment (a false premise demonstrated by the subsequent reserve additions relating to the latter part of this period) and also as a result of cheap capital which was readily available in the late 1990's due to booming stock markets. In the beginning of 2001, a patchy recovery began when reinsurers realised that the current level of pricing was unsustainable. This recovery was accelerated following the Sept 11, 2001 loss and falling stock markets in 2003 and continued into early 2004. It was thought that 2004 marked the top of the cycle however the US Hurricanes of 2005 helped to maintain the hard market at least in those lines of business affected. The current hard market is expected to remain into the 2007 renewal.

1.4 Catastrophe Reinsurance

(Carter, R.L., Lucas, L.D. and Ralph, N, 2000, p523) believe that property reinsurance in most parts of the world is dominated by catastrophe coverage from natural perils like earthquake and windstorm. Furthermore it has been found that the monitoring of catastrophe losses shows that insured losses are increasing worldwide and that average catastrophe losses have at least doubled each decade for the past half a century. The frequency and severity of natural hazards turning into major losses is increasing. This recognition has had wide-ranging implications for the reinsurance industry and has brought to prominence new techniques of risk management, an entry of new capital and a new class of reinsurance operation and a growing role for the capital markets in the transfer of catastrophe risk.

(Snyder, A., 2005, p1) on behalf of AM Best Rating agency considers that catastrophic loss, both natural and man-made to be the number one threat to the financial strength and credit quality of reinsurers doe to the significant, rapid and unexpected impact that can occur. Although many other exposures can affect solvency, no single event can affect policyholder security more instantaneously than catastrophes.

Hence many believe that the increasing levels of catastrophes will have significant impacts on the financial strength of reinsurers over time. The author will seek to discover whether this has been true in recent years with a particular focus on the US Hurricanes of 2005.

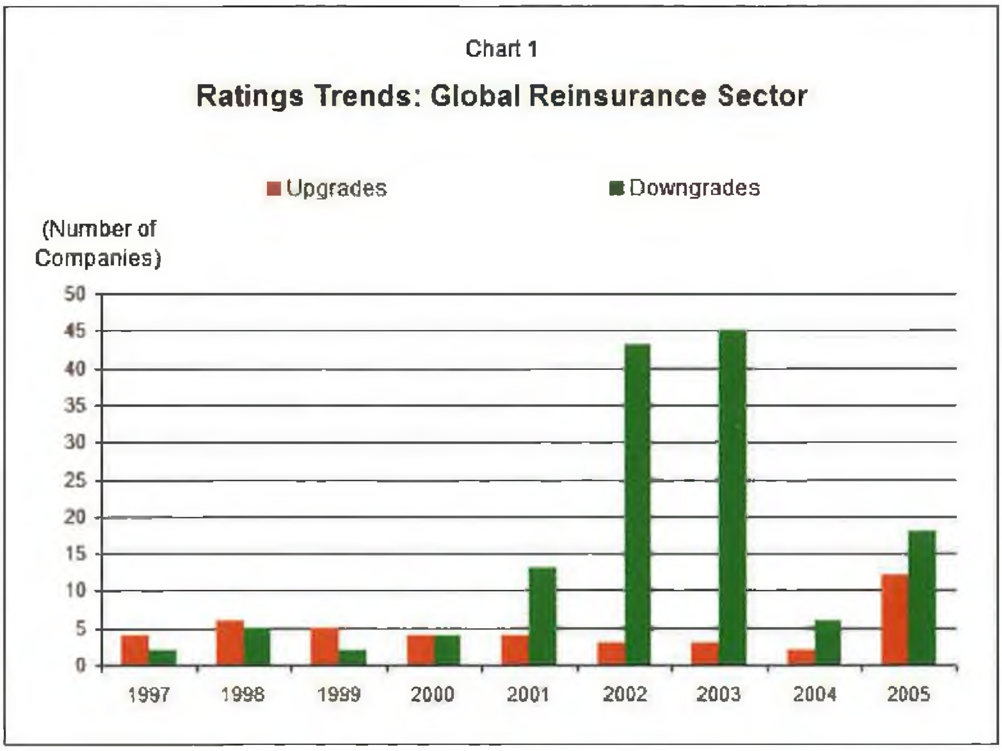

Figure 1.4.1 (Carvalho, L. 2005, p1)

Figure 1.4.1 shows the S&P rating trends from 1997 – 2005.

Despite the fact that major catastrophes have occurred in 2001 and 2005, there have been far more downgrades in 2002 and 2003. The author will seek to discover the reasons for this.

1.5 The Motivation of the Research, Research Questions, Hypothesis and Testing Methodology.

The author seeks to investigate the hypothesis of whether reinsurers have become more resilient to catastrophes from a financial security in recent years with a particular focus on the US Hurricanes of 2005. Through the identification of the research questions of why reinsurers have become more resilient and how they have done so, the author believes that the hypothesis will be addressed. The author believes that qualitative testing is the most appropriate method and the method chosen was structured interviews. The author believes that this method enabled the hypotheses and research questions to be addressed more effectively than quantitative research.

The author's motivation for the chosen topic is the author's role as a Senior Analyst for the Financial Security of Reinsurers for the Allianz Group. The author felt that further research into the chosen topic would be both beneficial to the industry and a feasible study to undertake from an academic perspective.

2. LITERATURE REVIEW

2.1 Introduction

In this chapter the author will review the current body of knowledge on the impact of natural catastrophes upon the financial security of reinsurers to date. The particular focus will be on the most recent findings and hence the most recent events to have taken place namely the US Hurricanes of 2005. We will seek to discover whether the rating agencies agreed that reinsurers were able to sustain the effect of the largest catastrophe ever with a limited impact on their financial strength and why this was so. A large proportion of the articles will be from rating agencies who watched closely to investigate how substantial losses would impact individual reinsurers whom they rate and how the losses would impact ratings, i.e. would a downgrade be necessary. A number or reports have been published by the research departments of industry leaders such as Munich Re and Swiss Re from their perspective, which will also be reviewed. The author will seek to investigate where the gaps lie in order to justify why further research is essential.

2.2 News Articles

1) (Marshall, S. 28/09/05)

This article was issued just after Hurricane Katrina and Rita had struck. At this point in time Standard and Poor's (S&P) assigned a negative outlook to the reinsurance industry meaning that downgrades of rated reinsurers were expected to outnumber upgrades in the remainder of 2005, although the number of downgrades was expected to be modest. So why was such an action taken? The outlook reflected the perceived near- term strains on the financial strength of reinsurers due to the impact of Hurricane Katrina which so far had been reported by reinsurers as the most expensive loss event in the industry's history. It also took into account the uncertainties regarding companies' estimates of losses due to the size and type of the event. Hurricane Rita, although a much smaller event, also reiterated S&P's concerns.

Indeed the impact of Katrina & Rita was expected to be moderately negative as S&P expressed concerns about the operating performance of the industry in 2005 as it was not as good as it should have been despite the continuation of a hard market and attractive market conditions. The financial flexibility (ability to raise capital) for those wishing to raise new capital, the availability of retrocession (basically reinsurance of a reinsurance company) for the remainder of the year and beyond as retrocessionaires may no longer write this risk or push up the prices and the apparent growing frequency of large loss events and the difficulty in pricing (paying or receiving an adequate premium for ceding or taking on the risk; this is usually calculated by actuaries) and modeling (mathematical assumptions used to model risks in order to predict extent of losses) such risks adequately are also concerns highlighted by S&P in this report. A positive factor brought about by Katrina and Rita however was the maintenance of the hard market (the hard market is means that reinsurance pricing will remain high and competition will not hinder pricing). Furthermore underwriting performance should remain strong in 2006 and 2007 leading to underwriting profits for the reinsurer. Also the next cyclical low is expected to be less severe than in the past.

So basically what is this article saying? At the time due to the uncertainty of how reinsurer's financial strength would be impaired and also the extent of the Hurricanes in terms of rising losses or more hurricanes, S&P felt it was necessary to take a prudent approach to the industry as a whole hence the reason for the negative outlook. However what I wish to highlight is that despite the most expensive loss event in the reinsurance industry's history, very few rating downgrades occurred meaning that the financial strength of the majority or reinsurers was maintained at its previous level, thus implying that reinsurers have become increasingly resilient to Catastrophes. Next it is necessary to review what S&P said once things became a little clearer post the Hurricanes.

2) (Marshall, S. 05/04/06)

Some time after the impact of the Hurricanes of 2006 on the reinsurance industry became more visible; S&P revised their outlook on the Global Reinsurance Industry to Stable from Negative. This action was essentially due to what S&P described as the "strong fundamentals" of the industry and the resolution of the short-term uncertainties brought about by the magnitude of losses arising from the 2005 Hurricane season. The stable outlook now implied that there would be little near-term movement in reinsurance company's ratings or outlooks, meaning that the reinsurers are expected to maintain their current ratings and in most cases the ratings prior to the Hurricane Season thus highlighting the resilience of the reinsurance industry's financial strength to this event.

One thing that S&P noted is that diversified reinsurers fared much better in the aftermath of the hurricanes. This means that both European and Bermudan reinsurers with a more diversified book of business in terms of the lines of business written and geographically were not as highly exposed to the Hurricane losses of 2005 as some Bermudan reinsurers which mainly focus on property catastrophe reinsurance in these areas (e.g. PXRE & Montpelier Re were two such companies which were more extensively affected in comparison to peers due to their lack of diversification).

S&P also addressed the resolution of their concerns which were apparent in the previous article such as the financial impact of the storm and the potential constrained financial flexibility of those wishing to raise new capital;

"The financial impact of the hurricanes has indeed been great, but has proved manageable, and a compensating influx of new capital to existing reinsurers has occurred removing fears of the industry's ability to sustain the strength of its balance sheet"

However why is this so? What are the strong fundamentals apparent in the industry that S&P believe have enabled reinsurers to remain financially secure in the face of an increase in unprecedented Catastrophe activity? Firstly S&P believe that profits have begun to emerge from the hard market which offset the increase in losses. Indeed since 2001 there has been an improvement in prices and terms and conditions to those experienced previously. The hard market since 2001 has been maintained and has allowed balance sheets to be strengthened. Indeed the ability to withstand the Hurricanes of 2005 with its financial strength largely intact demonstrates balance sheet strength. Furthermore it was expected that the Hurricanes would help the hard market to be maintained. S&P also believe that highly rated reinsurers such as Swiss Re have begun to be compensated for their superior financial strength. Another fundamental highlighted by S&P is the reduced cyclicality of the industry brought about in light of improved regulation, risk management and transparency. However S&P believe that volatility is inherent to the industry as two major events, namely September 11th and the Hurricanes of 2005 have occurred in the space of five years which may cause investors and policyholders concern. Improvements in modeling and in underwriting and pricing will surely follow in the wake of the catastrophes in 2005 however S&P are unsure of whether this will be sufficient to drive down volatility. Another negative factor is that new reinsurers that have entered the market after the hurricane season may dampen the hard market.

Hence S&P believe that the reinsurance industry was able to withstand the Hurricanes of 2005 with little damage to their financial strength. Indeed this supports the hypothesis in that reinsurers have become increasingly more resilient to catastrophes from a financial perspective. S&P highlighted a number of fundamentals which they believe support this trend as outlined above. Despite the obvious credibility of the top rating agency in the world, I believe that it is necessary to further study these fundamentals to discover whether in fact that industry has become more resilient to these events or in 2006 would the same event significantly impair the industry. Hence primary research is essential in order to discover which fundamental or combination of fundamentals is enabling the reinsurance industry to withstand these events (the research question- why and how?), which in turn will lead us to whether the industry is in fact becoming more resilient, the hypothesis we wish to prove.

3) (Eck, J. November 2005)

As a result of the Hurricanes of 2005 and also the floods in Central Europe in the third quarter of 2005, many Property & Casualty (P&C) Insurers and Reinsurers replenished their capital as losses represented a significant amount of earnings and capital and also in order to have enough capacity in order to take advantage of renewal season due to the maintained hard market. This article is a review Moody's observations of these events in the Bermudan market and how they view the market going forward.

However why is the focus on the Bermudan market and not the global market? Moody's found that the catastrophe events in question caused $50bn in insured losses on an industry wide basis and have significantly impacted the Bermudan market, due to the fact that a large proportion of reinsurers that focus on property catastrophe reinsurance are domiciled here (this is due primarily for tax reasons). The losses for the 14 publicly traded companies in Bermuda included in this study reported over $8.4bn in net after tax catastrophe losses (net of reinsurance – meaning that they will recover some of the losses from fellow reinsurers). On average, the Bermudan companies in Moody's study sustained losses of approximately 19% of shareholders' equity. On average these companies lost over a full year's worth of net income from these events. This was even worse for those companies focusing on property catastrophe reinsurance who would have suffered 2.7 to 3.4 years of net income.

Through November 4, 2005, the companies in question have issued nearly $6bn in equity, debt and hybrid securities since Hurricane Katrina replacing approximately 71% of the catastrophe losses. Moody's point out that while investors have shown their willingness to provide new capital to the Bermuda market following market dislocations brought about by severe catastrophes such as Hurricane Andrew, the events of September 11th, 2001 and Hurricane Katrina and Rita, it should not be assumed that investors will continue to provide capital to firms that suffer large losses. Indeed investors may question why they should provide fresh capital when risk-adjusted returns may not be sufficient given the volatility created by catastrophic events which are becoming all the more frequent.

Moody's also observed at this point in time that a number of new start-up companies were in the process of being formed following the Hurricanes in order to capitalise on future market opportunities. These new companies in total are expected to add more than $5bn in new capacity to the market and are largely being formed by financial investors with short term investment horizons who have partnered with existing players. Moody's expect that premium rates will increase in 2006, particularly in property catastrophe reinsurance, retrocessional reinsurance and energy and marine reinsurance (i.e. those lines most affected by the Hurricanes of 2005). Furthermore terms and conditions will tighten. However the degree to which the market will benefit will be impacted by the amount of capital raised by existing Bermudan companies, Lloyd's Syndicates and the new start-ups of 2005. It is also expected that companies will revisit risk management strategies given the unprecedented level of both loss frequency and severity during 2005.

In conclusion, this article highlights the concentration of reinsurers domiciled in Bermuda and also their focus on lines of business likely to be affected with increased Hurricane Activity. However Moody's have found that to date investors have been willing to provide capital to replenish the losses suffered by reinsurers in Bermuda. However how long can this go on for? Indeed it is essential to carry out primary research in order to explore the answer to this question as without capital, the reinsurers would be unable to cover losses and also have the capacity to benefit from better conditions post catastrophe. Thus this is a major concern in whether reinsurers will remain resilient.

4) (Best Wire Services, 23/01/06)

This news article is about the price increases which were brought about due to the hurricanes in the January renewals. It was thought that the Hurricanes would lead to the hardening of most lines of business in the insurance industry becoming hard again as some softening had recently, however this is not exactly what happened. AM Best reports that brokers found that it was a "tale of two markets", this phrase coming from Grahame Millwater, the CEO of the broker Willis Re. He stated that upon review of the renewal by Willis that those reinsurance lines affected by the US Hurricanes were "in significant turmoil and undergoing major revisions of terms conditions and

structure", these lines included retrocession, marine, energy and US property. However other property/casualty lines were found to be stable not hard. So what were the reasons for this?
Millwater believes the reason for this is because rating agencies are imposing stricter standards for insurers to reserve against major losses; catastrophe models are being improved in order to account for larger losses more frequently; in contrast to Sept 11th, insurers and reinsurers are now in a much stronger capital position and insurers are less likely to risk capital positions for market share.

This article shows that something very different happened after the US hurricanes of 2005 than usual. There was no hard market across all primary lines of business, which one would expect following losses of this magnitude in the insurance industry. Does this mean the industry's is less cyclical as also found by S&P, what impact would this have going forward? Will this play a party in reinsurers' balance sheet strength post catastrophes? It is necessary to carry out primary research to figure out the answers to these questions.

2.3 Publications

1) (Swiss Reinsurance Company *sigma*, 20/01/06)

This publication has been carried out by the second largest reinsurer in the world in terms of gross premium written in 2005, Swiss Re, Switzerland. It is a study of the impact of catastrophes in 2005 upon the world and the insurance industry (please note that this includes the reinsurance industry) and also compares these events to those occurring in the past 20 years. It is interesting to review these events from the perspective of an actual reinsurer.

Swiss Re found that catastrophes claimed over 97,000 lives in 2005, primarily from the earthquake in Kashmir on the 8/10/05 which killed 73,000 people. Floods, storms, shipping and aviation disasters claimed the remainder. In 2005 catastrophes caused directly attributable financial losses of $230bn. A substantial part of these losses took place in industrialised nations, where catastrophes impacted a high concentration of property assets. The main example of this was the series of hurricanes in the US which caused incredible damage with Katrina costing an estimated $135bn, followed by Wilma with $20bn and Rita with $15bn. The remainder occurred in non-industrialised nations such as the earthquake in Kashmir, the floods in October and Hurricane Stan in Central America.

Of the total damage of $230bn caused by catastrophes, approximately a third was covered by insurance and cost insurers worldwide $83bn. Indeed the high windstorm activity and related flooding in the US in 2005 which caused damage to insured property led insurers and reinsurers to deal with losses of an unprecedented scale. In 2004, the insurance industry had already recorded high losses due to a series of hurricanes in the Caribbean and the US aswell as the typhoons in Japan; however in 2005 windstorm damage took on a new dimension. The highest insured losses were as a result of Katrina at $45bn and Wilma and Rita at $10bn each. However manmade catastrophes also played a part and impacted insurers by approximately $5bn. The majority of this relates to large scale fires and explosions in the industrial and energy sectors.

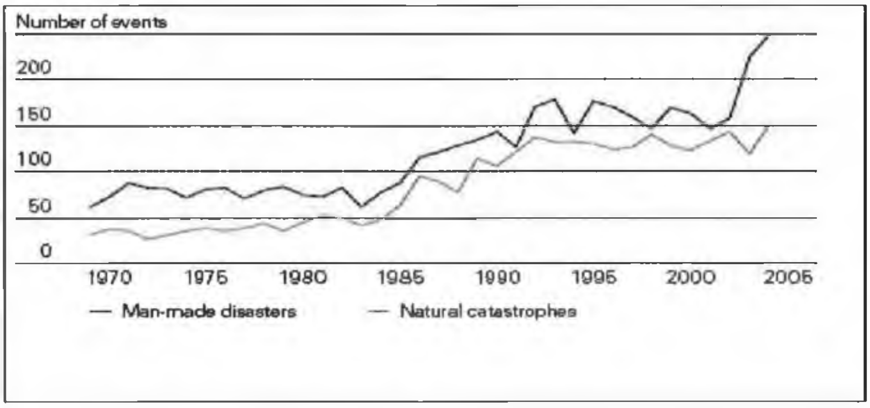

Figure 2.3.1

(Swiss Reinsurance Company, 2006, p.4)

Figure 2.3.1 represents the number of events from 1970-2005 and thus highlights the continuing increase in events.

Let's take a closer look at the reason for the increase in the strength of hurricanes in the North Atlantic. The frequency of strong windstorms is as a result of natural climate fluctuations. "The Atlantic multidecadal oscillation (AMO) is an ongoing series of long-duration changes in the sea surface temperature of the North Atlantic Ocean with a cycle period of 50-70 years" and largely explain the fluctuations in question. The successive cool and warm phases may last for 20-40 years time, with a difference of about 0.6 degree Celsius in annual mean temperatures. As the strength of a windstorm is largely dependent on the sea surface temperature, a lot less strong hurricanes happen during an AMO cool phase (as of 1970 is one such example) that during a warm phase.

The latest AMO warm phase began in 1995 and unsurprisingly there has been a significant increase in the number of severe hurricanes with categories of 4 & 5 on the Saffir- Simpson scale (this means that they had wind speeds of 210km/h and higher).

The increase in the Atlantic surface temperatures and the increase in hurricane activity are attributed both to the AMO warm phase and global warming (caused primarily by human activity). Nevertheless, a precise correlation has yet to be established. The present warm phase is expected to continue for another 10 – 30 years meaning that above average hurricane activity will be probable in this period. Forecasters believe that 2006 will be subject to another very active Hurricane Season in the Atlantic basin.

In conclusion the article states that the hurricane damage made 2005 the most expensive year for property insurers since 1906, when the San Francisco earthquake occurred. Primarily international reinsurers bore the brunt of the losses caused by the Hurricanes however a third was retained by US primary reinsurers. Subsequently property/casualty premiums in these areas increased substantially. Although some reinsurers, primarily domiciled in Bermuda, had to dip into equity to cover these losses, all in all the US primary insurance industry and insurance industry as a whole still managed to amazingly post profits in 2005.

This article supports our argument that indeed reinsurers and the insurance industry as a whole remained financially resilient despite bearing the brunt of the largest Catastrophe of all time. However this article has also highlighted the fact that above average Hurricane Activity is expected for the next 10 – 30 years. Will reinsurers maintain their financial strength if such events occurred for this long a period? This is an important issue that must be addressed through primary research.

Insured loss[28] (in USD m, indexed to 2005)	Victims[29]	Date (start)	Event	Country
45000	1326	24.08.2005	Hurricane Katrina; floods, damage to levees and oil rigs	US, Gulf of Mexico, Bahamas, North Atlantic
22274	43	23.08.1992	Hurricane Andrew	US, Bahamas
20716	2982	11.09.2001	Terror attack on WTC, Pentagon and other buildings	US
18450	61	17.01.1994	Northridge earthquake (M 6.6)	US
11684	124	02.09.2004	Hurricane Ivan; damage to oil rigs	US, Caribbean: Barbados et al
10000	34	20.09.2005	Hurricane Rita; floods, damage to oil rigs	US, Gulf of Mexico, Cuba
10000	35	16.10.2005	Hurricane Wilma; torrential rain, floods	US, Mexico, Jamaica, Haiti et al
8272	24	11.08.2004	Hurricane Charley	US, Cuba, Jamaica et al
8097	51	27.09.1991	Typhoon Mireille/No 19	Japan
6864	95	25.01.1990	Winter storm Daria	France, UK, Belgium, NL et al
6802	110	25.12.1999	Winter storm Lothar	Switzerland, UK, France et al
6610	71	15.09.1989	Hurricane Hugo	US, Puerto Rico et al
5170	38	26.08.2004	Hurricane Frances	US, Bahamas
5157	22	15.10.1987	Storm and floods in Europe	France, UK, Netherlands et al
4770	64	25.02.1990	Winter storm Vivian	Europe
4737	26	22.09.1999	Typhoon Bart/No 18	Japan
4230	600	20.09.1998	Hurricane Georges	US, Caribbean
4136	3034	13.09.2004	Hurricane Jeanne; floods, landslides	US, Caribbean: Haiti et al
3707	45	06.09.2004	Typhoon Songda/No 18	Japan, South Korea
3475	41	05.06.2001	Tropical storm Allison; heavy rain, floods	US
3403	45	02.05.2003	Thunderstorms, tornadoes, hail	US
3304	167	06.07.1988	Explosion on platform Piper Alpha	UK
3169	6425	17.01.1995	Great Hanshin earthquake (M 7.2) in Kobe	Japan
2814	45	27.12.1999	Winter storm Martin	Spain, France, Switzerland
2768	70	10.09.1999	Hurricane Floyd; heavy rain, floods	US, Bahamas, Colombia
2692	59	01.10.1995	Hurricane Opal	US, Mexico, Gulf of Mexico
2621	38	06.08.2002	Severe floods	UK, Spain, Germany, Austria et al
2438	26	20.10.1991	Forest fires which spread to urban areas, drought	US
2427	–	06.04.2001	Hail, floods and tornadoes	US
2366	246	10.03.1993	Blizzard, tornadoes	US, Canada, Mexico, Cuba
2233	20	03.12.1999	Winter storm Anatol	Denmark, Sweden, UK et al
2227	4	11.09.1992	Hurricane Iniki	US, North Pacific Ocean
2088	23	23.10.1989	Explosion in petrochemical plant	US
2068	220000	26.12.2004	Earthquake (M_W 9), tsunami in Indian Ocean	Indonesia, Thailand et al
2024	–	29.08.1979	Hurricane Frederic	US
1993	39	05.09.1996	Hurricane Fran	US
1981	2000	18.09.1974	Tropical cyclone Fifi	Honduras
1947	100	04.07.1997	Floods after heavy rain	Poland, Czech Republic, D et al
1923	116	03.09.1995	Hurricane Luis	Caribbean
1887	19	08.01.2005	Winter storm Erwin	Denmark, Sweden, UK et al

Figure 2.3.2

(Swiss Reinsurance Company, 2006, p.35)

Figure 2.3.1 is an analysis of the top 40 most costly insurance losses from 1970-2005.

3. RESEARCH METHODOLOGY

3.1 Introduction

The aim of this chapter is to highlight the research methodology that has been chosen and the reasons for this choice. Indeed the research methodology chosen is deemed as the most appropriate by the author in order to answer the research questions and also investigate whether the hypothesis holds true.

3.2 Research Methodology

Indeed the author believed that the most appropriate research methodology in order to address the research question would be the collection of qualitative data. Considering the fact that the research questions are of a speculative nature and based largely on opinion and although quantitative data does support the theory, the author believed that qualitative data would prove to be more insightful as to the reasons why and how reinsurers have become more resilient to catastrophes something that quantitative data cannot completely tell us. It is fair to say that qualitative research is more open and responsive to its subjects. Furthermore qualitative research allows the subjects to provide their perspectives. "Qualitative implies a direct concern with the experience as it is lived or felt or undergone" (Shermann and Webb 1988, p7). In contrast quantitative research is often considered the opposite to this in that it is indirect and abstract and treats experiences as similar when they may not be.

In respect of the method of collection chosen, the author felt that semi structured interviews would be the most suitable method. This meant that although the author could guide the interviewee in respect of the issues at hand, there was room for discussion and it enabled both the author and interviewee to expand on points which may be vague by using another method such as questionnaires etc. Furthermore, the intimacy of an interview enables the subject to disclose more information and also enables the author to express the importance of the topic and its outcome. It was felt that obtaining views from within the reinsurance industry and also from rating agencies who analyse the financial security of reinsurers would prove to be the most beneficial. It was thought that this would give two different perspectives on the research topic.

3.3 Interviews

The author interviewed Mr Simon Marshall, Director and Specialist in European Reinsurance from the London Office of Standard and Poor's (S&P) by telephone. This interview took place in June 2006 and was tape recorded with permission in advance. The author chose to interview Mr. Marshall based on his extensive knowledge of the Reinsurance industry and its working from a financial security perspective. Mr. Marshall had been the main analyst in providing the reports on the reinsurance industry's rating outlook post the US Hurricanes of 2005 and the author felt that a deeper probe into his thoughts would lead to the research questions at hand. Furthermore S&P is the most well recognised rating agency in Europe and rates over 14,000 companies; hence Simon's input was crucial.

On the other hand the author also thought it would be interesting to investigate the views of the reinsurance industry itself. Although rating agencies gain knowledge from their meetings with reinsurers in the rating process, they are not actually operating within the industry themselves hence an alternative view was also necessary in order to prevent a biased conclusion. Mr Gunter Beck, the Senior Underwriter of Allianz Re Dublin Ltd in charge of the underwriting of internal Allianz Group reinsurance business and also underwriting on behalf of the Allianz AG, Germany in Scandinavia agreed to be interviewed with Mr John Williams, Underwriter in conjunction with Mr Beck and also runoff manager in respect of the run off of an old portfolio of Allianz Australia. The interview took place in June 2006 and was also tape recorded with advance permission.

The same questions were put to all interviewees and were established in order to discover whether reinsurers are believed to have become more resilient to catastrophes from a financial security perspective in recent years and if so why and how and also the alternative. Hence the data collected was intended to answer whether the hypothesis was true and also address the research questions.

The data collected was then analysed, each question was reviewed and similarities and differences were noted.

4. PRESENTATION OF INTERVIEW FINDINGS

4.1 Introduction

This chapter details the findings of the interviews that were carried out with both an analyst from the rating agency S&P and also two experts from the reinsurance industry. The interviews took place in order to address whether reinsurers are believed to have become more resilient to catastrophes from a financial security perspective in recent years with a particular focus on the US Hurricanes of 2005 and if so why and how and also the alternative. The questions are used as headings in this chapter.

4.2 Question 1

Indeed the US Hurricanes of 2005 were the most costly event to the reinsurance industry ever, estimated at $60bn, however despite the unprecedented levels of loss, the majority of reinsurers maintained their ratings (thus reflecting their financial strength) prior to the disaster, why was this?

The interviewees agreed that the main reason for the maintenance of reinsurer's financial strength as reflected in their ratings despite the unprecedented level of losses as a result of the US Hurricanes of 2005 was the hard market since 2001 which created a very positive operating environment in that pricing and terms and conditions were favourable towards reinsurers. This meant that reinsurer's balance sheets were strong and their profits from the previous years could offset the losses. Furthermore many worldwide reinsurers had a largely diversified portfolio as regards lines of business and also geographically so that their exposure to the US Hurricanes would be limited. Also retrocession played a big part in that the level of losses would be shared among the industry and not just impact one particular reinsurer. Also the investment environment has improved in recent years meaning that reinsurers are also benefiting from strong investment income which has also helped to boost operating performance in recent years.

4.3 Question 2

The large diversified European reinsurers seemed to survive the recent events better than the Bermudan property catastrophe focused reinsurers, do you believe that a diversified strategy is a better long term strategy?

The interviewees highlighted that there are indeed three groups of reinsurers that should be taken into account as opposed to two namely, the large European diversified players such as Munich Reinsurance Group, Swiss Reinsurance Group and the Berkshire Hathaway and then the pure Bermudan property catastrophe players such as Montpelier Re, IPC Re and PXRE and lastly the diversified Bermudan reinsurers such as Partner Re, Everest Re, and Transatlantic Re who are mid sized players who are diversified but not as diversified as the large European players. Indeed due to the Hurricanes of 2005, the second group of reinsurers faired a lot worse due to their high exposure to these losses and indeed PXRE has stopped underwriting business as a result. However the others such as Montpelier Re and IPC Re although they were largely affected by these losses and were subsequently downgraded, they have since reduced their aggregate exposure so that they would not be as exposed to a similar event in the future.

Some of the interviewees felt that a diversified strategy was indeed a better and safer long term strategy especially when large CAT events occur. However over the short term property catastrophe focused reinsurers benefit from high rates if there is low loss activity.

4.4 Question 3

The White Mountains Group increased their loss estimate from the Hurricanes just recently, almost nine months after the events, is it a possibility that reinsurers still do not really know the full impact of the damage and we could see widespread reserve strengthening in the near future as a result of the Hurricanes?

There were varying views between the interviewees in respect of this question. The S&P analyst believed that losses were very difficult to quantify originally but now considering that it is over six months since the US Hurricanes of 2005, he does not expect to see widespread reserve revisions at this point in time. Indeed White Mountains was considered to be an exception to the rule. Originally Hurricane Katrina had been an extremely difficult loss to quantify and thus the loss revisions in 2005 could be expected. Shareholders put a tremendous amount of pressure on companies to announce their estimates for these losses. However it was not possible to accurately estimate these losses so soon after the event.

On the other hand, the underwriters believed that claims in respect of Business Interruption coverage in respect of large commercial entities are still ongoing in New Orleans as the city is still not up and running. Therefore it is very difficult for reinsurers to quantify their exposure to this coverage and hence reinsurers may experience further losses that have not been estimated. Also as losses continue to arise, retrocessional coverage and reinsurance coverage may be triggered as the limits are reached which may further expose reinsurers. However considering that the majority of losses relate to property losses and are short tail in nature (i.e. claims relating to a policy arise and are settled within a period of two years after the policy expires), the majority of losses will be evident in the near future. It is thought that the overall losses will be clarified within a timeframe of the next two years.

4.5 Question 4

What part does reduced cyclicality play? Do you believe that the cyclical nature of the industry will eventually be a thing of the past? Indeed post Katrina we only saw hardening of Lines of Business for those directly affected, why was this? Why is Cycle Management important?

In respect of reduced cyclicality, the interviewees believed that the cyclicality in the industry will remain as in the end of the day insurance is a commodity and is subject to the same supply and demand issues like any other commodity. This was reflected after Katrina when people rushed to the market in respect of both supply and demand. The S&P analyst did state that the magnitude of cyclicality would fall as risk management has improved, the regulation of reinsurers in Europe is set to improve and also there is increased transparency in respect of the way reinsurers do business and their financial information.

Regarding the fact that only lines of business directly affected by the US Hurricanes of 2005 experienced hardening in the renewal, all interviewees agreed that this was something of a surprise. It was expected that all lines of business would benefit including unaffected lines across the world. One suggested reason for this was that reinsurance negotiations are now more rational than in the past and large events do not have the same impact on pricing and terms and conditions as they once had. It is believed that buyers and brokers are more sophisticated and buyers in Europe for example are not willing to pay more as a result of losses that occurred in the Gulf of Mexico. Indeed in Scandinavia, it was affected by its own local Catastrophe, the Erwin storm in January 2005 more so than the events in the US which had a bearing on rate increases in Scandinavia for Cat business. This seems to be a fairer approach than when Hurricane Andrew occurred and the entire market reacted, however it may not be in line with the original idea of and the law of large numbers.

Cycle management is the flexing of exposure according to the attractiveness otherwise of conditions and pricing. The S&P analyst stated that they look favourably upon those companies that decide to reduce their exposures when pricing and terms &

conditions weaken and increase them when conversely they improve. Many reinsurers have been passive to the cycle and in the soft market of the 1990's, many reinsurers simply followed the market down and wrote the same volume of business. Then when the market improved these reinsurers continued to write the same volume of business and did not increase volume in order to benefit from the hard market. S&P believe that it is better to actively manage the cycle and reduce exposure or stop writing business when the price is low and when the cycle turns to get in early before the competition. Indeed S&P look more favourably on the reinsurers who have practised cycle management in the past; indeed the medium sized reinsurers such as Transatlantic Re and Everest Re have a better track record than the large European reinsurers like Munich Re due to the fact that they are more nimble and flexible. Although the majority of reinsurers now claim to manage the cycle, the test will come when the cycle turns again.

Indeed the underwriters also agreed with this, they believed that the large European reinsurers such as Munich Re and Swiss Re look for continuation and hence write the same business regardless of the cycle. The Bermudan specialist reinsurers on the other hand may have a problem when the market softens and they have to take a high liability for a much lower price. Financial backers will not favour this approach and may not make the same returns as in the hard market and may pull out of the market and the capacity in the market may shrink again causing a turn in the cycle due to lack of capacity.

4.6 Question 5

Unsurprisingly after the US Hurricanes, a number of new reinsurers commenced operations in the Bermudan Market; do you believe that investors will continue to provide capital at times of crisis as we have seen after Hurricanes 2005? Are returns on capital sufficient given the volatility created by the occasional or not so occasional large cat loss? Why have they provided so much capital so far- after Hurricane Andrew, Sept 11th and now 2005 Hurricanes?

The S&P analyst pointed out that the environment for start-ups is not as favourable as it was for start-ups after 9/11 and Hurricane Andrew due to the fact that capital requirements are much higher as expected by regulators and rating agencies and also this means that Returns on Equity (ROE's) will be lower (as the denominator will be higher). Therefore it is harder to achieve the ROE's for writing CAT business than in the past due to this tougher environment, implying that investors may not be as keen to invest in reinsurance.

However all interviewees agreed that there were a lot of new entrants into the Reinsurance market at the end of 2005, all of which are domiciled in Bermuda. This reflects a high investor appetite (in particular for hedge fund companies) for exposure to the reinsurance industry. Indeed it is seen by investors as a good method of diversification in their investment portfolios due to the volatile nature of the industry. Usually after a huge loss event like the US hurricanes of 2005, the reinsurance industry can reap the benefits of the hard market and hence the investors will enjoy good returns.

The other interviewees pointed out that in times of crisis, this usually provides an opportunity for investors to get into the market as the market hardens and investors enjoy a good return, hence investors should continue to support the industry. Indeed through time many Lloyd's Syndicates (the Lloyd's market in London is a special insurer and reinsurer made up of 60 Syndicates all of whom underwrite specialty business on a several liability basis meaning they cover their own losses, however Lloyd's do provide a back up Central Fund) have gone bankrupt in the past however there is usually a lot of investors willing to invest in these Syndicates.

4.7 Question 6

Will the new start-ups survive? Will their presence dampen the hard market? Why are they considered not as financially strong as the start-ups of 2002?

The interviewees expressed the difficulty in assessing whether the new start-ups will survive long term. Those with financially strong parents probably have the best advantage as they can provide both financial and operational support in the future. One interviewee felt that the Bermudan Reinsurance market is very much about business connections. Experienced management teams coming from various reinsurance companies set up Bermudan reinsurers in a hard market in order to benefit from the increased rates and are dependent upon their business connections in order to generate new business. However once the market softens they often reduce their exposure or even stop underwriting and keep their profits.

Certainly the new reinsurers will have an impact on pricing and they will reduce the benefit and length of the hard market for established players as there will be increased competition.

4.8 Question 7

Increased Hurricane activity is expected for another 10 – 30 years, are reinsurers strong enough in terms of balance sheet strength to cope or will we start to see the cracks as time goes on? Will pricing be maintained? Will it cover the costs? Will players exit the market? If a Katrina was to occur in 2006, would the reinsurance industry demonstrate the same resilience?

The S&P analyst believes that the Reinsurance Industry will continue to write property Catastrophe business but will insist on higher prices, terms and conditions and will structure the cover in a better way. Indeed the industry is still resilient to these kinds of losses as 2005 showed and the industry should be even more resilient now due to the benefit from the learning experiences of 2005 in terms of what business to write and the dangers of using models too blindly. Therefore, if the US Hurricanes of 2005 occurred again in 2006, the industry would be in a far better position than in 2005 as a result of experience and also because modeling has improved and pricing is higher.

The underwriters agreed that the diversified players would not be badly affected if the US Hurricanes occurred again in 2005 however specialised property catastrophe reinsurers may be financially impacted again.

4.9 Question 8

In respect of reinsurers' Risk Management strategies and Catastrophe Modeling, the Hurricanes highlighted failure in many assumptions, do you agree? How will they be improved? Will this help reinsurers to sustain balance sheet strength and resilience in the future? Nevertheless did better Cat modeling in recent times limit the impact of losses to some extent as a result of the Hurricanes of 2005?

The S&P analyst is of the opinion that the events of 2005 were as a result of operational risk due to the fact that many reinsurers were reliant upon models and quantitative outputs and this reliance was proven to be misplaced as the majority of models failed to quantify this risk. Hence this also highlighted the importance of not been over-reliant on models. However as a result the models have now been recalibrated and are now more conservative. Hence there is now an improvement in the way Catastrophe risk is modelled not just in the Gulf of Mexico but throughout the world. Although modeling did improve as a result of Hurricane Andrew and now since Katrina, it is important to remember that the models are only as good as their assumptions. It is a question of whether models can cope with a combination of losses like Katrina which was a windstorm that resulted in flooding. The underwriters also found that in respect of Katrina many models failed due to this combination of losses, indeed the models ignored these facts. It is likely however that flooding will now be excluded from the policies in New Orleans. However despite the unreliability of models Allianz is likely to continue to underwrite Cat business.

4.10 Question 9

Reinsurers are now believed to be in a much better capital position than at the time of Sept 11th, is this due to a sustained hard market before the US Hurricanes occurred?

All interviewees agreed that the sustained hard market enabled reinsurers to build up capital and improve capital adequacy and hence they were in a financially stronger position when the US Hurricanes of 2005 hit as apposed to the reinsurance market in 2001 that was still soft.

4.11 Question 10

Following the US Hurricanes of 2005 and also post 9/11 we did not see large scale downgrades throughout the reinsurance industry.

In the past 10 years, what do you believe to have been the main driver for reinsurer downgrades? Indeed SCOR and Converium got into financial difficulty as a result of US reserving issues; do you believe that this can have a larger impact than a natural catastrophe on the financial strength of a reinsurer? Also the impact of falling stock markets in 2002 seemed to play a big role in impacting reinsurers' financial strength when AAA ratings ceased to exist- e.g. Munich Re. Furthermore in 2003 a number of reinsurers were downgraded due to their longer term profitability record and prospects.

All interviewees agreed that the main driver in reinsurer downgrades over the past 10 years has been the fall in the investment market of 2000, 2001 and 2002 which eroded capital and impacted investment income as many reinsurers had investments in equity and were dependent on investment income in order to achieve positive operating performance (indeed a reinsurers operating performance is a combination of both underwriting profit and investment income).

US Reserving issues also had a large impact on the financial strength of many US Reinsurers (in the case of the European Groups, Converium and SCOR, they had to put their US operations into runoff as a result of reserve strengthening due to business written between 1997- 2001 that had not been reserved for properly and consequently their profits and capital were eroded and their financial strength deteriorated leading to downgrades). Many primary insurers and consequently reinsurers in the US were exposed to Asbestos and Environmental claims which arose from policies that were written back in the 1960's and 1970's. As a result of asbestos in buildings which caused people to develop lung cancer, people were able to track policies back to the time and claim of the insurer who in turn claimed of the reinsurer. Indeed the reinsurers had not been aware of this risk when the policies had been underwritten. This new phenomenon combined with the increased litigation culture in the US meant that many reinsurers were highly exposed to claims and had to increase reserves for these claims and take a hit to their operating performance in recent years. It is thought that the next big claim similar to this is the impact of electronic waves on humans, however this is just speculation.

Industry risk also has an impact on reinsurers in that the reinsurance industry is more prone to uncertainty than primary insurers. Furthermore reinsurers have less market power and ability to drive pricing than primary writers. Indeed it can be difficult to convert financial strength into profitability as buyers do not want to pay more for a higher rating. However the importance of strong financial ratings had begun to shine through as Swiss Re have experienced in their renewal at the start of 2006.

4.12 Question 11

Indeed in the past 5 years we have seen the two largest scale loss events for the reinsurance Industry of all time, however all in all the financial strength of the industry has been maintained. Do you believe that reinsurers are becoming more resilient to catastrophes both natural and man made in recent years?

The interviewees concurred that indeed reinsurers are becoming more resilient to large catastrophes in terms of their financial strength. The S&P analyst highlighted the fact that Hurricane Andrew in 1992 has a much more damaging effect to the financial strength of the reinsurance industry and affected more individual players that either 9/11 or Hurricane Katrina. After 9/11 and the US Hurricanes of 2005, there were isolated examples of ratings being impacted. Despite the fact that PXRE suffered large losses as a result of the US Hurricanes of 2005 based on its focus on property catastrophe business, and was subsequently downgraded and is currently not rated, this company is still paying claims and has not become insolvent. These events tend to attract media attention however they are not the cause of terminal decline in the reinsurance industry.

The underwriters also stated that reinsurers have become more diversified over time and hence are less affected by large CAT events as the losses are shared amongst the industry. Furthermore improvements in reinsurance programme structures are also helping reinsurers to stay resilient to these events.

4.13 Conclusion

So what does this primary research tell us? Has the hypothesis and research questions been addressed? In conclusion, the author can confirm that the hypothesis has indeed been proven as all interviewees agreed that the reinsurance industry has become increasingly resilient to natural catastrophes in terms of its financial strength in the past five years and as most recently witnessed with the US Hurricanes of 2005. The research questions as to why and how this is so and also will the resilience continue has also been addressed through the combination of questions used. Indeed the primary research has shown that the reason for the increased resilience of the financial strength of the reinsurance industry in 2005 despite the unprecedented level of losses as a result of the US Hurricanes has been the combination of a very positive operating environment (hard market) since 2001 meaning that the profits could offset the losses as a result of the Hurricanes. We have also seen that diversification played a big part in limiting the financial impact on individual reinsurers as a large proportion of reinsurers have diversified portfolios both by line of business and geographically. The research also reiterated that a diversified portfolio is a safe option in times of increased Catastrophe activity which we are now facing.

Although it is possible that losses may increase for some reinsurers as time goes on due to business interruption claims etc, all in all we can be assured that the majority have reinsurers have indeed estimated the impact of the US Hurricanes and have proven to maintain their financial strength. The primary research also highlighted that the cyclical nature of the reinsurance industry is expected to remain, meaning that reinsurers will continue to benefit in hard market cycles after large events which is currently happening. However it remains to be seen whether reinsurers will be able to manage the cycle in the future in order to limit their exposure to cat events and also not accept low prices for this type of coverage. Indeed it is apparent that mid sized reinsurers are more flexible and hence may be more profitable as the cycle changes.

It is also clear that investors will continue to invest in the reinsurance industry as a means of diversification and at times of crisis like large catastrophe events. This is good news for the financial strength of reinsurers who suffer from Cat losses in the future and will be able to recapitalise and also good news for new start-ups who wish to take advantage of hardening rates after an event.

In respect of the expected increase in Catastrophe Activity in the future and can the resilience of reinsurer financial strength be maintained, the research confirmed that as a result of the Hurricanes of 2005, the industry has learnt from this event and although will continue to write Cat business, it will seek higher prices and conditions. Also modeling has improved and reinsurers will not be as dependent upon it in the future. Indeed if there was a large Cat activity in this region in 2006, indeed it is thought that reinsurers would be in an even better position financially.

It has also been found that the main drivers for reinsurer rating downgrades over the past ten years has not been the impact of catastrophes but has been more due to the falling investment market, US reserving issues and industry risk. Hence it is fair to say that catastrophes in recent years have not caused the majority of reinsurers' financial strength to be impaired. The increased resilience of the industry has also been evidenced through the fact that in 1992 a lot more reinsurers were individually impacted and downgraded than either after 9/11 or the US Hurricanes of 2005.

Thus it is fair to say that the primary research was worthwhile and met the required research objectives that had not been entirely researched before. Recommendations for further research would be the impact of further catastrophes in the future upon reinsurer's financial strength.

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Appendices

Appendix 1- Structured Interview 1

<u>**Simon Marshall- Director of S&P and Specialist in European Reinsurance**</u>

Q1 Indeed the US Hurricanes of 2005 were the most costly event to the reinsurance industry ever, estimated at $60bn, however despite the unprecedented levels of loss, the majority of reinsurers maintained their ratings (thus reflecting their financial strength) prior to the disaster, why was this?

Because of the very positive operating environment since 2001 in other words the pricing environment and the terms and conditions have been favourable towards reinsurers for the last 4 years so that meant that Balance Sheets were stronger then they might otherwise have been. They could offset the losses from the hurricanes with emerging profits from those years and of course the investment environment has also improved.

Did industry have particularly strong fundamentals at this time and this was the reason for this?

The fact that there have been strong fundamentals for a long time now.

Q2 The large diversified European reinsurers seemed to survive the recent events better than the Bermudan property catastrophe focused reinsurers, do S&P believe that a diversified strategy is a better long term strategy?

There are perhaps 3 groups you should look at rather than 2; the large European diversified players such as Munich and Swiss and Berkshire and the pure property Cat players like Montpelier, IPC Re, PXRE, there's a third group aswell which is the diversified players such as Partner Re, Everest Re, Transatlantic Re and others. These are mid sized players that are diversified but not as diversified as the giants. And the ones as everyone knows that faired really badly were the specialists last year and the ones that did best last year were the more diversified players.

And do you believe that in lets say 2006 a big catastrophe occurred again do you expect the same losses that the focused property cat reinsurers would have again or have they slightly changed their risk management strategies?

It is difficult to generalise some of those pure players disappeared of course, PXRE has disappeared but many of them have reduced the aggregates so that they would not be exposed in the same way again like Montpelier Re and IPC Re. So we wouldn't expect the same all over again, no.

Q3 The White Mountains Group increased their loss estimate from the Hurricanes just recently, almost nine months after the events, is it a possibility that reinsurers still do not really know the full impact of the damage and we could see widespread reserve strengthening in the near future as a result of the Hurricanes?

They were very difficult losses in order to quantify originally but now we are more than 6 months on since those events so I don't expect widespread reserve revisions now. White Mountains will be the exception of the rule. But Katrina especially was a very challenging loss to estimate straight off and with the loss revisions in 2005 were not a great surprise. Shareholders and others put enormous pressure on companies to announce their estimates for their losses and these losses, and it was not possible to announce these losses with any degree of accuracy in a few weeks or even days after the event.

Q4 What part does reduced cyclicality play? Do you believe that the cyclical nature of the industry will eventually be a thing of the past? Indeed post Katrina we only saw hardening of Lines of Business for those directly affected, why was this? Why is Cycle Management important?

I believe that there will be reduced cyclicality but there will still be cyclicality but its magnitude will fall due to the fact that risk management has improved, positive trends in the regulation of reinsurers in Europe are apparent and also reinsurers are more transparent in the way they do business and their disclosure of financial information.

Why were only those lines directly affected and the beneficiary of increased rates? Yeah it is bizarre. At the Monte Carlo Seminar last September everyone thought that all lines would benefit including unaffected lines across the world but it was something of a surprise when that didn't happen. The negotiations are more rational than in the past and big events don't have the same impact on the market as they once had. Buyers and brokers a more and more sophisticated and buyers in Europe for example are not going to be willing to pay for losses in the Gulf of Mexico.

S&P have also said that Cycle Management is very important, what do you mean by this and how are reinsurers implementing it?

Cycle Management is the flexing of exposures according to the attractiveness or otherwise of conditions and pricing in other words we look favourably upon those companies that decide to reduce their exposures when pricing and terms and conditions weaken and increase them when conversely they improve. For many reinsurers to an extent they have been passive in other words when in the soft market here in the 1990's many reinsurers simply followed the market down and wrote the same volume of business they had in the past and then when things got better they weren't able to or decided not to increase their exposures and we look most favourable upon those reinsurers who are actively managing the cycle and are able to stop when the cycle is getting worse and therefore write less business or continue the business with lines that are still profitable but leave those that are not and conversely when the cycle turns up again are able to get in their early before the others. If you like, it's about beating the market rather than following the index of prices.

Could you give me an example of a reinsurer that would be following this cycle management actively?

All reinsurers say they are now become the orthodoxy as to whether they will that's another question. We look more favourable upon those that seem to have done it better in the past because they have a track record and some of the medium sized reinsurers have a better track record in the past of doing this than the giants. So I am talking about Transatlantic, Everest. The mid sized reinsurers have been more nimble and flexible in the past. All the reinsurers including the giants insist that they have cycle management strategies in place but the true test will be when the cycle does turn downwards.

When do you expect that the cycle will turn, is it a matter of if further catastrophes happen it will stay or will it last for 2 or 3 years if there isn't big loss events?

In a sense it is a better question for brokers than rating agency about market conditions but it is likely that the January renewals in 2007 will still represent the hard market. Then of course there are variations across lines of business for different cycles. We talk about the cycle but there are many cycles for each line of business property cat, energy, marine and so on. So it's not quite as simple as it appears. But there's no doubt that we are in a hard market doe most lines of business and that will continue for some time to come. There's probably also the case that property business is the first one into the hard market and out and casualty business is later. The casualty cycle may last longer. And of course there are different cycles depending on whether you talk to European or North American reinsurers. North American business is usually further up the cycle than Europe, meaning it is more advanced along the cycle and it is more likely to soften first.

Q5 Unsurprisingly after the US Hurricanes, a number of new reinsurers commenced operations in the Bermudan Market, do you believe that investors will continue to provide capital at times of crisis as we have seen after Hurricanes 2005? Are returns on capital sufficient given the volatility created by the occasional or not so occasional large cat loss? Why have they provided so much capital so far- after Hurricane Andrew, Sept 11th and now 2005 Hurricanes?

The environment for start-ups is significantly worse now than it was after 9/11 and after Hurricane Andrew in 1992 because capital requirements are much higher and therefore targeted ROEs (Returns on Equity) are going to be lower. In other words, it's harder to achieve the ROEs for writing CAT business than in the past because the off the shelf modelling agents or models and regulators demand more capital per limit of CAT risk than in the past so the environment is tougher.

There were a lot of new entrants who joined the market recently reflecting high investor appetite for exposure to this type of risk. It seems to be a good diversity play and there is nothing else like it for an investment manager who has a portfolio across many different industries and it is a good way of diversifying the risk. So there is still an assumption that after a huge event like this that rates are harder and reinsurers can make money back through hardened rates and better terms and conditions. If there was another major event this year, would there be another lot of interest, I am not sure. There is only so much capacity that the market needs.

Q6 Will the new start-ups survive? Will their presence dampen the hard market? Why are they considered not as financially strong as the start-ups of 2002?

It is difficult to say whether the start-ups will survive long term. Certainly they will have an impact on pricing; they will reduce the benefit of the hard market and the length of the hard market. They are a nuisance to all the established players. Now the Bermudan class of 2001 (the reinsurers that set up in Bermuda after 9/11) see the world differently because five years ago they were the new players and now they are part of the existing market.

Q7 Increased Hurricane activity is expected for another 10 – 30 years, are reinsurers strong enough in terms of balance sheet strength to cope or will we start to see the cracks as time goes on? Will pricing be maintained? Will it cover the costs? Will players exit the market? If a Katrina was to occur in 2006, would the reinsurance industry demonstrate the same resilience?

I believe that the Reinsurance industry will continue to write property Cat business but will insist on higher prices, terms and conditions and structure the cover in a better way for them. Yes, I think the industry is still resilient to these kinds of losses as 2005 showed and the industry should be more resilient now because of it has had the benefit of learning from the experiences of last year in terms of what business to write and where to write it and the dangers of using models too blindly. If the US Hurricanes of 2005 happened all over again this year, I think the industry would be in a far better position than it was last year. Indeed modeling has improved and pricing is higher too.

Q8 In respect of reinsurers' Risk Management strategies and Catastrophe Modeling, the Hurricanes highlighted failure in many assumptions, do you agree? How will they be improved? Will this help reinsurers to sustain balance sheet strength and resilience in the future? Nevertheless did better Cat Modeling in recent times limit the impact of losses to some extent as a result of the Hurricanes of 2005?

You might categorise what happened last year as operational risk in the sense that there was a reliance on models by many reinsurance companies and that reliance was proven to be misplaced and the dangers of quantitative techniques and the dependence on the outcome of such models was shown in this year. The models since have been recalibrated and are now more conservative. Hence, the industry is in a much better position than previously and in respect of all CAT risk not just in the Gulf of Mexico. Modelled risk will be more conservative across the globe and not just the Gulf of Mexico. Models had improved since Hurricane Andrew but have improved again since 2005 but a model is only as good as the assumptions used and it's a question of whether the models can cope with a combination of losses like in Katrina when we saw windstorm losses that resulted in flooding.

Q9 Reinsurers are now believed to be in a much better capital position than at the time of Sept 11th, is this due to a sustained hard market before the US Hurricanes occurred?

Yes.

Q10 Following the US Hurricanes of 2005 and also post 9/11 we did not see large scale downgrades throughout the reinsurance industry.

In the past 10 years, what do you believe to have been the main driver for reinsurer downgrades? Indeed SCOR and Converium got into financial difficulty as a result of US reserving issues; do you believe that this can have a larger impact than a natural catastrophe on the financial strength of a reinsurer? Also the impact of falling stock markets in 2002 seemed to play a big role in impacting reinsurers' financial strength when AAA ratings ceased to exist-e.g. Munich Re. Furthermore in 2003 a number of reinsurers were downgraded due to their longer term profitability record and prospects.

The investment market of 2000, 2001 and 2002 eroded capital and hence caused downgrades and also the CAT losses of 2001 and 2005 to some extent. US reserving issues were also a driver and also industry risk. Reinsurers are operating in an industry that is more prone to uncertainty that primary insurance writers who are more distant from the risk. Furthermore reinsurers underwrite catastrophe business and have less market power in that they have less ability to drive pricing than primary writers. Indeed reinsurers may be offering the same coverage and insurers may not want to pay more for a company rated A+ than rated A-. It can be difficult to convert financial strength into industry leading performance. However this is changing and Swiss Re stated that in the renewal for this year, they benefited from their AA- rating. Indeed over the last 10 years, mid sized companies have faired better e.g. Everest Re's rating has not changed in the last five years.

Q11 Indeed in the past 5 years we have seen the two largest scale loss events for the reinsurance Industry of all time, however all in all the financial strength of the industry has been maintained. Do you believe that reinsurers are becoming more resilient to catastrophes both natural and man made in recent years?

Hurricane Andrew in 1992 was more damaging to the reinsurance industry and affected more individual players than 9/11 or Katrina. After 9/11 and the US Hurricanes of 2005, there were isolated examples of ratings being impacted. However even PXRE, who recently stopped underwriting business as a result of large

US Hurricane losses is still paying claims and has not gone insolvent. Indeed these events catch the media's attention and are newsworthy however they are not the cause of terminal decline in the reinsurance industry.

Appendix 2- Structured Interview 2

<u>Gunter Beck (GB), Senior Underwriter, Allianz Re Dublin Ltd, John Williams (JW), Underwriter and Runoff Manager, Allianz Re Dublin Ltd</u>

Q1 Indeed the US Hurricanes of 2005 were the most costly event to the reinsurance industry ever, estimated at $60bn, however despite the unprecedented levels of loss, the majority of reinsurers maintained their ratings (thus reflecting their financial strength) prior to the disaster, why was this?

JW- One of the reasons for this was the fact that the previous couple of years had been a relatively hard market so therefore a certain amount of capital had been built up at most of the main reinsurers and therefore they were in a reasonable position to meet the claim even though it was of such a severe magnitude. Another reason, leaving aside a lot of the Bermudan reinsurers, was that the main reinsurers worldwide would have a far more diversified portfolio than simply natural catastrophe coverage so the diversification issue would have allowed them to maintain capital adequacy etc. Also I presume that all reinsurers carry out major exposure analysis and they try and limit that exposure to certain classes of risk.

GB- Also I think it important not to forget about retrocession in that the whole thing is split up into very small pieces in that the losses are shared among reinsurers so that it does not have as big an impact on an individual reinsurer's balance sheet or the capital position of the company.

Do you believe there was increased regulation in the industry prior to the US Hurricanes?

JW-I believe regulation increased post 9/11 with regard to solvency margins etc.
GB- Post 9/11, there was a dramatic change in that there was a focus put on the financial security of a reinsurance company. Indeed if a reinsurer has a higher rating they can charge a higher premium for the same coverage as a reinsurer with a lower rating.

JW- Although we are only seeing this slightly in the industry at the moment, I do believe that a reinsurer with a strong financial strength rating should be able to charge more for offering the coverage in the world in which we now live when these major loss events are becoming more frequent. This would give buyers more certainty in the financial strength of their reinsurer but they should have to pay for this certainty. I do believe that we will see this trend a lot more in the future. Also a number of purchasers of reinsurers are placing downgrade clauses in the contracts in that if a reinsurer is downgraded below a certain level that they can cancel the contract. We have seen this been exercised in Scandinavia by a number of purchasers when PXRE got downgraded as a result of severe losses from the Hurricanes of 2005.

GB- Indeed in Scandinanvia, they have seen a lot of reinsurers disappear in the past so that ratings are very important in this market and why Allianz have a good chance of succeeding based on its strong rating of AA-. Twenty years ago, business relationships were a lot more important in reinsurance business and the rating did not mean that much. In Scandinavia, a lot of these reinsurers were exposed to the London market in the 1980's and they did not really understand the business that they were writing which eventually led to their downfall when claims started to arise twenty years later. There is also a question of whether reserves that are supposed to be set up to pay expected claims are really set up. Indeed you must go very deep into a company to prove that they have not set up the necessary reserves. It can be done by an auditor but I do not believe that S&P can do audits on all the companies they rate. Furthermore it could be just one treaty that causes serious reserve issues.

Q2 The large diversified European reinsurers seemed to survive the recent events better than the Bermudan property catastrophe focused reinsurers, do S&P believe that a diversified strategy is a better long term strategy?

JW- Absolutely, it is always best not to put all your eggs in one basket. Indeed the Bermudan reinsurers which are purely focused on property catastrophe business take much more of a gamble with this strategy.

Q3 The White Mountains Group increased their loss estimate from the Hurricanes just recently, almost nine months after the events, is it a possibility that reinsurers still do not really know the full impact of the damage and we

could see widespread reserve strengthening in the near future as a result of the Hurricanes?

JW- I do believe that this is possible in particular in relation to the Business Interruption coverage in New Orleans as no one knows when the city will be up and running again. Hence it is very difficult for a reinsurer to quantify their exposure in respect of this coverage. Also in respect of retrocessional or even reinsurance coverage, this may not have been triggered yet as the limits have not yet been reached in relation to losses however as losses arise, reinsurers could be further exposed. Because of the nature of the losses though which are mainly property losses and hence short tail in nature (i.e. claims arise and are settled within a period of two years after the policy expires) most of the losses will be evident in the near future. GB- The overall losses should be clarified within the next two years.

Q4 What part does reduced cyclicality play? Do you believe that the cyclical nature of the industry will eventually be a thing of the past? Indeed post Katrina we only saw hardening of Lines of Business for those directly affected, why was this? Why is Cycle Management important?

JW- Firstly, the cycle will always be there, insurance is a commodity at the end of the day; it is a supply and demand issue like any other commodity. GB- I agree that it is more or less a law that you will have cycles in this business and that will not change. Indeed after Katrina we saw prices increasing and a lot of people rushing to the market.

In respect of Cycle Management we really have to distinguish between reinsurers, on one hand we have the traditional reinsurers, Munich Re, Swiss Re and on the other side we have the gambling market like Bermudan reinsurers. Munich Re and Swiss Re, they will look for continuation, they will take their shares in policies but the Bermudan market may have a problem when the market softens and they have to take a high liability for a much lower price and the financial backers will also see this. Therefore capital backers may pull out and the capacity in the Bermudan market will shrink again. That means that we will see a more hardening market again because there is less capacity.

JW- Regarding the lines of business just been affected by Katrina that saw an increase in rates, that is definitely correct as even in the renewal this year, the local markets in Europe did not produce any price hikes as a result of the US Hurricanes of 2005. Indeed in Scandinavia, it was affected by its own local Catastrophe, the Erwin Windstorm in January 2005 than anything that went on in the USA and that had a bearing on rate increases in Scandinavia for Cat business. It seems to be a fairer approach then when Andrew occurred and the global market reacted.

GB- However that approach is not line with the original idea of insurance and reinsurance and the law of large numbers, this idea of paying for your own loss is not what insurance is about.

Q5 Unsurprisingly after the US Hurricanes, a number of new reinsurers commenced operations in the Bermudan Market, do you believe that investors will continue to provide capital at times of crisis as we have seen after Hurricanes 2005? Are returns on capital sufficient given the volatility created by the occasional or not so occasional large cat loss? Why have they provided so much capital so far- after Hurricane Andrew, Sept 11th and now 2005 Hurricanes?

JW- If the capital is there to be provided and investors feel that they can get a good enough return on the reinsurance industry, then investors will continue to invest. Another attraction for investors, who are usually hedge fund companies, reinsurance offers a different risk to standard companies and gives a little more diversification to their investment portfolios. Even if there is a large loss and they do take a hit on returns, they are probably still content with the diversification benefits the reinsurance industry offers.

Furthermore in times of crisis, this usually provides the opportunity for investors to get into the market as the market is going to harden for the next renewal and hence the investors get their good return and I cannot see this changing.

GB- In respect of the Lloyd's market, a number of Syndicates have gone bankrupt in the past and the investors lost their money, however this did not hinder people to invest in other Syndicates again. It is human mentality, as long as people have the money to invest it, they will.

Q6 Will the new start-ups survive? Will their presence dampen the hard market? Why are they considered not as financially strong as the start-ups of 2002?

JW- In respect of some of the new start-ups, they are owned by large organisations hence they would probably be financially supported by their parents if necessary so this is a positive point.

GB- Indeed the Bermudan market is very much about business connections. A number of experienced management teams who have set up these reinsurers would come from well known reinsurers and already have connections with both brokers and other reinsurers. The management team also invest their own money to reflect their confidence in the business venture to other investors. Indeed they will tend to stay in the market to benefit from hard rates however as prices soften they will reduce exposure and in my opinion stop underwriting and keep the profits they have earned.

Q7 Increased Hurricane activity is expected for another 10 – 30 years, are reinsurers strong enough in terms of balance sheet strength to cope or will we start to see the cracks as time goes on? Will pricing be maintained? Will it cover the costs? Will players exit the market? If a Katrina was to occur in 2006, would the reinsurance industry demonstrate the same resilience?

GB- In respect of the resilience to another Katrina in 2006, it is necessary to look at the traditional European diversified reinsurers and the Bermudan reinsurers that focus on property catastrophe business separately. Another Katrina would not have too much of an impact on the traditional reinsurers because they have the diversification in their portfolio on one side provided that they have right retrocession programmes in place to protect themselves as Munich Re and Swiss Re showed last year. It would however impact the Bermudan reinsurers that do not have a diversified portfolio and I do not know to what extent they are retroceding their business and if they have not done this properly, some of these reinsurers may go into runoff.

JW- Indeed it is getting more difficult to model as we have seen a number of events recently that were thought to be 1 in 250 year events and now this has been reduced to 1 in 100, you must appreciate that the models are based on very theoretical assumptions. Indeed no one can foresee what the future holds.

Q8 In respect of reinsurers' Risk Management strategies and Catastrophe Modeling, the Hurricanes highlighted failure in many assumptions, do you agree? How will they be improved? Will this help reinsurers to sustain balance sheet strength and resilience in the future? Nevertheless did better Cat Modeling in recent times limit the impact of losses to some extent as a result of the Hurricanes of 2005?

JW- In respect of Katrina, I agree that many of the models failed, it appears that in this case they ignored the facts and did not realise the combination of events that could occur in respect of the windstorm which resulted in the flooding of New Orleans. Similar to the Netherlands, flooding will now be excluded from all policies and the state will more or less have to step in which will reduce the impact to reinsurers somewhat. Indeed Catastrophe bonds will also come into play to limit the exposure of reinsurers to such events.

GB- For Allianz which is a large insurance and reinsurance group, catastrophe business is not really an issue as it is only a small portion of the overall portfolio; hence Allianz will continue to write catastrophe business.

Q9 Reinsurers are now believed to be in a much better capital position than at the time of Sept 11th, is this due to a sustained hard market before the US Hurricanes occurred?

Yes.

Q10 Following the US Hurricanes of 2005 and also post 9/11 we did not see large scale downgrades throughout the reinsurance industry.

In the past 10 years, what do you believe to have been the main driver for reinsurer downgrades? Indeed SCOR and Converium got into financial difficulty as a result of US reserving issues; do you believe that this can have a larger impact than a natural catastrophe on the financial strength of a reinsurer? Also the impact of falling stock markets in 2002 seemed to play a big role in impacting reinsurers' financial strength when AAA ratings ceased to exist-e.g. Munich Re. Furthermore in 2003 a number of reinsurers were downgraded due to their longer term profitability record and prospects.

JW- I believe the main driver in downgrades in the past has been the fall in the equity market; indeed this has had a large impact on the industry as reinsurers and insurers had investments in equity which took a hit and impacted their investment income upon which many reinsurers and insurers are dependent.

US reserving issues have also had a major impact on reinsurer's financial strength. Indeed many reinsurers in the US were exposed to Asbestos and Environmental claims which arose from policies that were written back in the 1960's and 1970's. As a result of buildings been built with asbestos which caused lung cancer many people were affected and were able to track policies back to the time of infection and claim of the reinsurer. Indeed the reinsurance industry had not been aware of this risk when the polices had been underwritten. This combined with the increased litigation culture of the US in recent years, meant that many US reinsurers were highly exposed to these claims and had to increase reserves as a result and take a hit to their operating performance in recent years. I believe that a number of these reinsurers are now over reserved and the actuaries have been too cautious and we will see a release of reserves in the near future. However this issue has now been largely dealt with and we do not to see any more surprises in this respect in the future.
GB- It is thought that the next similar risk to this which reinsurers will be exposed to is electronic waves and the impact that they will have on humans. However we do not know yet if there will be any effect.

Q11 Indeed in the past 5 years we have seen the two largest scale loss events for the reinsurance Industry of all time, however all in all the financial strength of the industry has been maintained. Do you believe that reinsurers are becoming more resilient to catastrophes both natural and man made in recent years?

JW- Reinsurers have become more diversified over time so that they are less affected by large CAT events. Indeed these losses are being shared among the reinsurers and no one reinsurer is baring the brunt of all the claims. Furthermore although there have been more catastrophes there have been no major single losses that have impacted individual reinsurers. GB- Indeed it is the nature of reinsurance and programme structures that are helping reinsurers to stay resilient to these events.