

TREND WATCH

A large, dark blue magnifying glass graphic is centered on the page. The lens of the magnifying glass is a white circle containing the text. The handle of the magnifying glass extends from the bottom right towards the center. The background behind the magnifying glass consists of several vertical, overlapping rectangular shapes in shades of orange, red, and yellow, creating a stylized bar chart effect.

VOL 1.2

**NATURAL DISASTERS
&
CLIMATE CHANGE**

INTRODUCTION

The ORIC International Trend Watch series provides an in-depth analysis of the key trends affecting the (re)insurance and investment management industries today.



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Covering a range of themes from money laundering to model risk, Trend Watch looks beyond the high level data points to answer the 'So what?' question, carrying out detailed root cause analysis, highlighting common control failings and considering the effects of numerous regulatory, social and economic influences that impact both the frequency and severity of operational risk events.

We hope you find the analysis and insights in this report useful and whilst not designed to be a 'holy grail' for risk management practitioners, we hope this document gives you food for thought to better assess and mitigate operational risks in the future.

TREND IN FOCUS

NATURAL DISASTERS



Natural disasters - A growing trend

The insurance, banking and wider financial services industries have incurred several major losses in the last decade because of natural disasters. It can be argued that not only are natural disasters becoming more frequent and unpredictable because of climate change, but increasing population concentrations, particularly in major cities worldwide, mean that the effects of natural disasters can be far more damaging and costlier than they may have been previously. In fact, of the 10 costliest 'U.S. Atlantic Hurricanes' ever recorded, three have occurred in the last two years (2017-2018). The largest, Hurricane Katrina, made landfall in 2005 at a total estimated cost of \$160bn after accounting for inflation.

Costliest U.S. Atlantic Hurricanes - Top 10

| Hurricane | Year | Damage |
|-----------|------|----------|
| Katrina | 2005 | \$160bn |
| Harvey | 2017 | \$125bn |
| Maria | 2017 | \$90bn |
| Sandy | 2012 | \$70.2bn |
| Irma | 2017 | \$50bn |
| Andrew | 1992 | \$47.8bn |
| Ike | 2008 | \$34.8bn |
| Ivan | 2004 | \$27bn |

Reference: [1] - After accounting for inflation

This trend is creating growing concerns amongst representatives of the financial services industries too. In 2017, a study titled 'Finance's role in Operational Risk Management: CFO Research on building a resilient company' [5] explored the top operational risks experienced by more than 100 CFO's or senior most financial executives at US-based companies. The report concludes that besides system failures and data breaches, natural disasters are considered the third highest concern for CFO's, with more than 66% of respondents citing that they felt ill-prepared to recover from a natural disaster. A similar sentiment was shared as part of the 'Global Risk Report 2019' prepared by the World Economic Forum in partnership with Marsh & McLennan Companies and Zurich Insurance. The paper identified that natural disasters were listed amongst the top three risks by likelihood and within the top five by impact. [7]

\$138bn
worth of insurance claims
paid out by insurers in 2017 as a result of
natural disasters.

Source: Natural catastrophes - 2017 - Munich RE [2]

Whilst increasingly mature and accurate catastrophe modelling has paved the way for insurers to better quantify probability and size of potential loss to customers and the company, risk management still has a pivotal part to play in the challenge and assisted development of a strong disaster recovery strategy for seemingly unpredictable events.

This paper looks to examine the pitfalls and costs of ineffective risk management and discuss the various proactive approaches that can help firms better prepare themselves and their employees ahead of a natural disaster.



*Excludes gains and near misses. Includes data from 2005-Q1 2019.

Pitfalls and costs of ineffective risk management

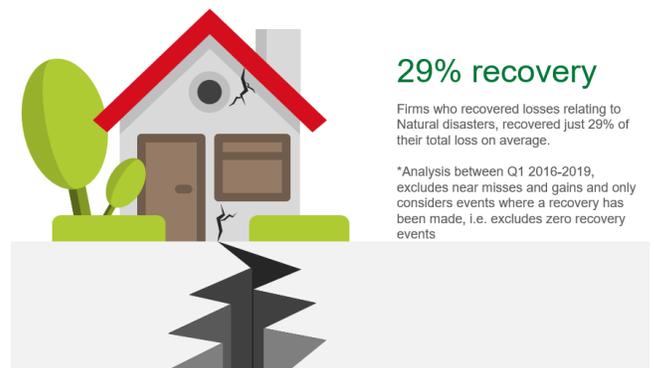
Ultimately, natural disasters and extreme weather incidents are unpreventable and come with varying degrees of warning. Firms with effective risk management and disaster recovery plans are more likely to respond quicker to events and minimise the impacts when they occur.

This section examines some of the key themes emerging from natural disaster events, including some examples of ineffective risk management and how a different approach may have reduced losses.

Trends in the ORIC International data

Mitigation & Recoveries

Mitigation and recoveries play an important role in reducing the exposure of the risks associated with natural disasters. When analysing 'Disasters and Other Events' in the ORIC International dataset between Q1 2016 and Q1 2019, we discover that firms who managed to recover a loss, recovered on average just 29% of their initial gross loss. This number is the second lowest recovery percentage amongst Basel II - Level 2 - Risk Categories, bettering only Employee Relations at 24%.



So why have recovery amounts been particularly low for disaster events in recent times? One trend which becomes increasingly apparent when carrying out root cause analysis amongst these types of events is ineffective insurance policy coverage. Some insurance policies can be written to cover loss of profits due to system outages or general business disruption and firms should continually assess what risks and exposures exceed the traditional scope of insurance. [3] Catastrophe model financial outputs such as Annual Average Loss and Exceedance Probability curves can also inform maximum probable loss estimates and should be reviewed on an annual basis to better determine policy values and ensure there is appropriate coverage.

Trends in the ORIC International data

Ineffective business continuity

A poor business continuity plan (BCP) and/or an inappropriate disaster recovery plan are often common drivers for inflated loss amounts. In 2015, one firm lost over £45,000 after a government issued terror alert forced employees to work from home. The underlying cause was a lack of awareness of the business continuity process which ultimately hampered productivity and resulted in a loss of business.

An effective crisis management plan should outline clearly the expected implications of an event and identify any support required to resume operations, including any budgetary and time estimates for essential repairs. The same plan should also assess third parties and supply chains by agreeing contracts ahead of time to safeguard against any supplier charges, essential system development work and fixes, recovery of lost data and any other unexpected costs.

If primary office locations are damaged extensively and are no longer fit for purpose, firms should ensure alternate sites, including working from home locations, are adequate and allow employees to resume business operations. Alternate sites should be tested regularly prior to the BCP being invoked.

Climate change and model risk

It is generally accepted amongst the scientific community that the global climate is changing, and the effects of climate change are increasingly observable with severe environmental and social repercussions anticipated in the mid to long term future.

In fact, based on current ocean temperature increase rates, the University of Vermont recently released a report titled 'Sustainable and Resilience Infrastructure' which indicated that the financial losses caused by hurricanes could increase by more than 70% by 2100 [6]. Therefore, how can risk management be comfortable that models using historical data as its basis, are able to accurately forecast future losses and capture emerging trends in climate data? Furthermore, does the model documentation explicitly state the rationale behind some of the key sensitivities and parameters derived particularly in relation to rising sea temperatures and the strength of hurricanes and cyclones? [4]

There is clearly a role for oversight and governance here to ensure that the increasing complexity of the models does not create a disconnect and knowledge gap between model designers/calibrators and model interpreters. It can be argued that interpretation of the results from the model can be just as important as the underlying data and calculations.

The accuracy of all models is an area of concern for risk management and understandably 'model risk' was cited as one of the most material operational risk scenarios by capital allocation in a recent Capital Benchmarking Survey conducted by ORIC International. With more and more models feeding into various processes and decisions including underwriting, reserving, pricing, reinsurance decision making, risk mitigation strategies, risk transfer mechanisms and more, accuracy is paramount.

Conclusion

As climate change continues to play a key role in the frequency and severity of extreme weather and natural disasters, firms more than ever need to employ and challenge proactive approaches to disaster recovery strategy and identify solutions to effectively mitigate risk.

In both instances, this should serve to reduce losses and ensure operations continue seamlessly with a concentrated focus on three key areas, namely the supply chain, employees and the business infrastructure.

Ensuring climate change continues to be appropriately modelled with accurate derivations of the underlying sensitivities will continue to be an ongoing challenge for risk management in the future. Robust governance and oversight is imperative in reducing key knowledge dependency and maintaining suitable documentation to validate the expert judgement employed.

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OUR RESOURCES

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Trend Watch forms part of ORIC International's extensive library of resources, which spans a number of key themes affecting the (re)insurance and investment management industry. In addition to this, ORIC International have a range of thought leadership studies, member-led surveys, working group and forum outputs and industry analysis.



If you are interested in getting access to these resources or have any questions about ORIC International and our services, please contact:



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