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Have We Become Complacent About Managing Catastrophe Risk?

For the past few years, many in the insurance and reinsurance industry have found themselves asking if this year will see an end to the very benign period of U.S. hurricane losses we have witnessed over the past decade. Since 2005, no major hurricane (Category 3 or higher) has made landfall in the U.S.—the longest stretch in recorded history. Have we become complacent about managing hurricane risk—and catastrophe risk in general?

Although the ability of the industry to manage global catastrophe risk over the past 30 years has been a true success story, I think the answer is yes. Many people have joined the industry since 2005 and simply have not experienced a year with severe catastrophe losses. However, there are enough of us in the industry who have battle scars from prior catastrophes, and it is our responsibility to make sure our organizations and our industry is looking at catastrophe risk through the proper lens—before the next major event occurs.

One way to do this is to carefully consider how your catastrophe risk management processes stack up. Key questions that every organization should be asking itself today include:

1. What is the current quality of my exposure data? Is it improving?
2. How have I selected and validated the models I am using?
3. What assumptions am I making when running the analysis?
4. What sources of loss are not covered in my modelling process and how am I adjusting for these?

If you haven't had detailed and probing internal discussions on these issues recently, you might find them enlightening and the findings could help you ensure the next loss is not a rude surprise.

Another way to address complacency is to change how you speak about modelled losses. I am sure that no company operates with a one-year planning horizon, yet in most discussions about catastrophe risk, we do exactly that. When considering the "1-in-100-year return period loss" or the "loss at the 1% exceedance probability," only the likelihood of that size loss or higher occurring the next year is being assessed. When model results are expressed in this way, there is a reflexive tendency to discount such losses. Let's say 10 years is a relevant time horizon for your firm. What sounds more attractive to you—a portfolio with a 1% probability of a USD 200 million loss next year, or a nearly 10% chance of a USD 200 million loss over the next 10 years? If you are not indifferent between the two, you need to examine the lens through which you view risk.

As companies review their catastrophe model results in the coming weeks and months, it is a good opportunity to present losses both in terms of annual probabilities and over a time horizon relevant to your business.

Catastrophe models are excellent tools for helping understand risk in a deeper and more meaningful way; however, just as we can get used to experiencing low hurricane losses in the U.S., we can get used to looking at model results in a routine way without considering them from various perspectives. Starting to discuss model results in terms of probabilities over relevant time horizons can help those in the insurance and reinsurance industry maintain better perspective on the risk they assume.

Bill Churney
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Monte Carlo

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Are You Prepared for the Next Big Supply Chain Disruption?

Events in the last few years, including the 2010 floods in Thailand and the 2011 Tohoku and 2016 Kumamoto earthquakes in Japan, have served as stark reminders that loss of life, property damage, and direct business interruption are only part of the story when measuring the impacts of natural and man-made disasters. These events have also highlighted a more intractable risk that concerns insurers and insureds alike: contingent business interruption (CBI). Risk transfer products and quantitative tools for assessing multi-peril risks to insurance portfolios have thus far been limited in this space.

FRAGILITY AND LACK OF VISIBILITY

Corporations either explicitly or implicitly rely on the "3Rs" to mitigate the potential consequences of CBI: reserves (excess supplies), redundancy (alternative suppliers or equivalent parts), and resilience (response planning, insurance, supplier relocation, or facility retrofits). However, despite these well-known strategies, supply chains remain fragile, in part because of the inadequate application of the 3Rs, but also from a pervasive lack of visibility into the manufacturers that provide essential parts at each tier of the supply chain. In addition, final product manufacturers often do not fully know how or where their suppliers and sub-suppliers manufacture certain parts due to purposeful obfuscation of the supply network by commodities manufacturers in order to protect trade secrets and remain cost-competitive. The absence of visibility also prevents insurers from having sufficient information to price and offer comprehensive supply chain insurance products.

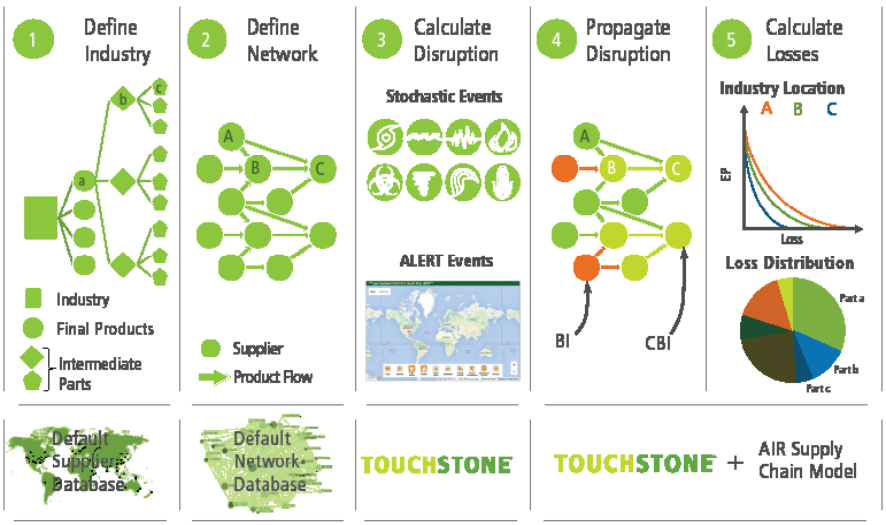
AIR'S FRAMEWORK

To fully understand supply chain risk from disruptive events, corporations need to know the product parts that are expected to be impacted and to have downtime estimates, while insurers need to know how that expected downtime is likely to translate to losses and subsequent claims. In reality, this full spectrum of data is not available, and piecemeal data is typically cobbled together to construct partial risk management strategies and tools.

To build an effective framework to model disruptions, several first-order assumptions must be applied to 1) quantify the parts that are likely affected, which can be accomplished via a comprehensive commodity and material manufacturer exposure database; 2) track the general flow of parts within the supply chain of the affected industry (e.g., petroleum → gaskets → pistons → engines → cars) and how those parts are exchanged between suppliers, both domestically and internationally; 3) estimate the direct business interruption to suppliers resulting from events as they unfold in real time or from stochastically generated potential future event sets; 4) propagate the modelled disruption through each tier of the supply chain and calculate the total disruption experienced by each product manufacturer; and 5) calculate the expected industry losses for final product manufacturers and distribute those losses to individual suppliers, product groups, or affected final product manufacturers.

This methodology, as implemented in the AIR Supply Chain Model, is illustrated below. The AIR framework leverages standard industry definitions and AIR's supply chain industry exposure database to calculate expected financial impacts to product manufacturers.

Available for 17 different broad industry groups (Automotive, Consumer Electronics, Pharmaceutical, Semiconductors, etc.), the output of the model can be used by corporations or insurers to generate expected BI and CBI losses deterministically to rapidly assess disruptions as an event unfolds, or probabilistically to estimate future disruptions. Further applications include detailed corporate analyses, risk optimisations, transportation network disruptions, and risk assessment for non-natural catastrophe perils, to name a few.



The AIR Supply Chain Model framework

New Era for US Flood Insurance

More property damage to homes and businesses is caused by precipitation-induced inland flood than by any other natural hazard. Losses are expected to grow as a result of continued development in flood-prone areas and the potential for more frequent extreme wet-weather events as the climate warms. Nevertheless, fewer than 25% of homes in the Special Flood Hazard Areas designated by the Federal Emergency Management Agency (FEMA) have flood insurance. Most policies are written by the National Flood Insurance Program (NFIP), which covers 5 million properties.

The NFIP was founded after a series of damaging floods in the 1950s and 1960s led most private insurers to stop offering coverage. However, the program has resulted in significant adverse selection, where a few properties are responsible for a disproportionately large number of payouts. To provide "affordable" coverage, the NFIP is not subject to actuarially sound rates, and up to a fifth of its policyholders pay less than half what a private insurer would charge; the program is currently USD 23 billion in debt.

The Biggert-Waters Reform Act of 2012 aimed to decrease the NFIP's mounting debts, but putting many of its measures into practice has proven difficult. One significant hurdle relates to mortgage requirements. People seeking federally backed residential mortgages in certain areas at risk from flooding are required to purchase flood insurance. Mortgage lenders are required to accept policies "similar" to NFIP coverage, but many are hesitant to accept private flood coverage unless policies are written using language virtually identical to NFIP policies; sometimes they simply refuse to accept private policies altogether.

Earlier this year, the House of Representatives passed a bill designed to help overcome this challenge, and it is now awaiting Senate approval. The bill makes state insurance commissioners—who understand policy wording and serve to protect policyholders—responsible for determining what coverage is "similar" to the NFIP. Policies written by private companies could be deemed acceptable as long as the insurer is licensed by the state in which the property is located.

When the bill becomes law, as is expected, insurance companies will be able to expand the coverage endorsements acceptable to banks and provide policyholders with the increased level of protection they expect from standard HO3 policies. Endorsement protection or the addition of a new basic peril—rising water flood—will allow privatisation of the NFIP to commence.

Private insurers will, in many cases, be able to offer more comprehensive coverage than the NFIP or may offer comparable coverage at substantially lower rates, as the risk can be spread out over a larger number of policyholders, not all of whom are high risk. The new legislation will provide an opportunity for companies to compete with the NFIP and each other, creating a range of deductible and coverage options from which customers can choose.

The recent availability of probabilistic flood modelling to inform risk-based pricing and accumulation management, both on and off established floodplains, signals a new era for the effective management of a peril that has been avoided by the private market for decades. And customers will benefit from wider choice in the much-needed protection they seek.

Flooding on the Missouri River in the Bismarck-Mandan area of North Dakota, June 8, 2011. (Source: U.S. Army Corps of Engineers)

Does Your Catastrophe Risk Management Belong in the Cloud?

To meet the critical demand for ever-increasing computing and storage resources with strict data security, companies are increasingly considering cloud-based catastrophe modelling solutions, which enable users to perform detailed risk analysis with any internet-capable device from anywhere, at any time. AIR's scalable, flexible, and secure turnkey access to Touchstone® and CATRADER® in the AIR Cloud is now available in the United States. AIR Cloud access will be offered via data centers located in the UK and Germany—in full compliance with the General Data Protection Regulation and all other applicable European Union and UK regulations—later this year.

Read on to find out how to assess whether a cloud environment would benefit you.

TAKE STOCK OF YOUR IN-HOUSE CATASTROPHE MODELLING INFRASTRUCTURE

On-site catastrophe modelling can present many costs and challenges, from infrastructure expenditures to operational oversight. Reviewing your current expenditures for in-house catastrophe modelling computing and storage resources and estimating your future expenditures, with planned upgrades, will help you understand your infrastructure costs. For operational expenses, consider physical security, the need for dedicated employees to maintain and troubleshoot your system, and your disaster recovery protocols.

Other questions to ask include: Would your company benefit from a more *elastic* solution, with the ability to expand to meet your needs? Can your IT team provide the support required to maximize the efficiency of your modelling workflows, as well as keep pace with ongoing technology enhancements? Would you benefit strategically or financially by reducing your current or future on-premises infrastructure?

KNOW WHAT TO LOOK FOR IN A CLOUD ENVIRONMENT

For most users, *security* is paramount and should meet industry best practices. Does the cloud option offer credentialed access that you can easily manage? How comprehensive and dependable are electronic security (firewalls, anti-virus, digital encryption) and physical security (guards, protected facilities, secure entries)?

Scalability, too, can be critical, especially if your computing and storage resource requirements vary or if you expect to require additional resources. Does the cloud solution dynamically adjust to your computing and storage needs?

Next consider *ease of use*. Does the cloud environment smoothly integrate to your business system with APIs? Can all users easily access the system with minimum training? Is file management intuitive? Can you run multiple software versions simultaneously?

Don't overlook *reliability.* Does the Service Level Agreement offer high availability?

Review *maintenance* specifics. Is all maintenance timely and free? Is software and hardware seamlessly upgraded as required, on your schedule?

Although the need for *disaster recovery* is unlikely, you must be prepared for that contingency. Does the cloud solution employ redundant resources to protect your cloud environment if a disaster occurs? How quickly can your environment be rebuilt and your results restored?

Finally, ensure you understand the cost of the cloud solution. Do you have unmetred access to the cloud environment? Are the operational and maintenance expenses fixed or is usage metred, with costs fluctuating at peak usage times? Are the resources dedicated to your cloud environment?

A cloud solution should be a cost-effective improvement over your on-site infrastructure, with all the features you currently rely on. The Software as a Service (SaaS) catastrophe modelling solution offered by the AIR Cloud allows you to spend your time on strategic activities, instead of administering, securing, updating, and maintaining a robust environment on-premises.

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