Casualty Catastrophes

Introduction

Definitions

Historic and Future Losses

Current practice and survey results

Conclusions and Comments

Working Party: Justyn Harding (Chairman)

Matt Byrne

Romy Comiter

Jean-Bernard Crozet

Antony Dodson

Clare Edler

Alistair Laird

Chooi Shan Lee

Buu Truong

Cynthia Yuan

With special thanks to Helen Bradley from Guy Carpenter for permission to use their research into possible casualty catastrophe definitions.

1. Introduction

1.1 Objectives of this working party

1.1.1 This working party was formed during GIRO 2008 with the intent to report back to the profession at GIRO 2009. Those involved with the working party had a common aim of wanting to discuss the issues surround casualty catastrophes. We felt that the topic was under-represented in insurance literature as a rule, and yet has caused some of the biggest market losses in history. It was also highlighted that in reference to the buzz word, 'globalisation', casualty catastrophes can only become more pre-eminent in the insurance industry's thinking.

1.1.2 From this point forward, we will simply refer to casualty catastrophes as CCATS. Anything else would start to become very tiring. Property CATs (PCATs) will be specifically labelled as such to avoid confusion.

1.1.3 We asked ourselves in the early meetings some questions to help frame our discussion. Fortunately for us, the questions we came up with seem to match the headings that we had decided to use for this paper. As such, you can think of this paper as our thoughts on the answers to those questions.

- How do we define CCATs? In what ways can we start to categorise them to make the wide ranging ideas slightly more organised?
- What kind of CCATs have we had in the past and what features of them were unique / interesting?
- How relevant is past experience, and what features make modelling these events so hard?
- Do we think that as an industry we understand CCATs and properly allow for them? How do they impact Actuarial work, and how do Actuaries approach CCATs
- What might the CCTAS of the future involve, and what will the knock-on implications of greater understanding of the risks be for business?

1.1.4 We certainly hope that this paper is an easy read. It's relatively short (not sure if by accident or design) and in attempting to answer the questions above, gets to those gritty issues that actuaries really care about. Enjoy.

1.2 The story so far

1.2.1 First, there were PCAT models. Details on the structure and evolution of PCAT models is documented very thoroughly elsewhere, so we won't try to replicate any of this. Needless to say, the Property (re)insurance world has never been the same again.

1.2.2 The sophistication of this new world of modelling software has been widely accepted across the industry as a breakthrough in our understanding of such risks. The improvements in data are marked. The ability to understanding aggregation across large organisation is unprecedented. And the links to capital modelling and tail risk continue to be explored. All in all, most would agree that PCAT models have been a great thing for the insurance industry.

1.2.3 There have, of course, been many failures of PCAT models, and these have generally led to improvements and increasing sophistication. Hurricane Katrina was a particular instance where the credibility of these models was severely shaken. The upshot of this crisis in confidence was the accepted view that models should aid underwriting, but the industry shouldn't be over-reliant on them. This view existed before Katrina, but was more often cited after it. The recent involvement of models in the Banking sector's understanding of aggregation seems to have been fundamentally flawed also, but this could be a paper in itself.

1.2.4 Even now, there are many areas of business that PCAT models do not adequately model e.g. offshore energy, cargo, hull, …

1.2.5 But, the worlds of Property and Casualty CATs are very different. They differ to the extent that methods employed in one just don't apply to the other. The most important issue is that the way in which Property losses are linked in a CAT is much more definable – location and time. Yes, that location may be stretched

across hundreds of miles of coastline, but it is still relatively obvious that those exposures are linked (especially if you throw in an hours clause).

1.2.6 The CCATs we want to discuss in this paper are an entirely different beast; they link in ways that are difficult to predict. Indeed, they may link in a variety of ways, some of which are very hard to predict. One way to consider this problem is imagining you have two very detailed risk profile data sets with underwriting information. One is property and the other casualty. How tangible is the PCAT exposure from that data set? With a proprietary model, you could get a feel for the geographic accumulations fairly quickly. What about the casualty data set though? Lack of off-the-shelf model aside, how comfortable could you be that every dimension of accumulation is considered in your thinking, given that negligence, legal action and hence jurisdiction play such a large part in determining involvement?

1.2.7 Though CCATS have always been important, recent events have made their quantification more of a priority. The elusive nature of this problem has shifted most of the analytical world's development away from it and into the PCAT arena. Has the actuarial profession glossed over this problem (as it's too hard) with a lognormal distribution? In the new world of capital and risk management, regulators and board directors are looking to the actuarial profession to explain to them what events drive their earnings volatility and more importantly their very survival.

1.2.8 Our survey looks to assess the industries current state of readiness on this front. Our commentary in that section further develops these thoughts.

2. Definitions

2.1 PCATs and CCATs – what are they and how do they differ?

2.1.1 Catastrophic losses (where single or multiple insureds suffer losses from one or more events) can arise in virtually any class of insurance. These events are infrequent and thus hard to predict and model using traditional actuarial techniques. Relatively little attention has been paid to Casualty catastrophes, as Property exposures are easier to model and better understood. Additionally, catastrophes affecting property happen more frequently than those impacting casualty

2.1.2 Property catastrophe models have developed over a substantial period of time and are based on physical sciences using information about a wide range of historic events and scientific theory. This enables a framework to be built around the causes and effects of catastrophic losses. The output is event-specific, probabilistic modelling to quantify risk from specified perils to individual locations and thus into company's portfolios of risks. It can be used for the pricing, reserving and capital modelling of the underlying business.

2.1.3 Property catastrophe models have known parameters – property is fixed to a single location, is subject to a set of known natural perils such as earthquakes, floods, and hurricanes, and historical scenarios are available, so that catastrophe modellers can create exceedence probability loss figures. However, it should be noted that there is still always material uncertainty as to ultimate loss amounts arising from property catastrophes, at least initially after they have occurred.

2.1.4 The term "catastrophe" in the property insurance industry denotes a natural or man-made disaster that is unusually severe. PCS currently define a PCAT as an event that cause $25 million or more in direct insured losses to property and that affect a significant number of policyholders and insurers. Prior to 1997 a trigger point of $5m was used. Others may use definitions with higher trigger points, no requirements for numbers of insureds or insurance companies, and covering a wider variety of loss classes such as business interruption. Even where the

concept is well understood, there are still a large variety of definitions used in the insurance market.

2.1.5 No equivalent approach has been developed for Casualty business as Casualty catastrophes are much more complex to define and model. They can happen virtually anywhere, can arise from almost any human error across almost any Casualty class of business and as a result there has been a general lack of attention paid to CCATs,

2.1.6 The Casualty market is smaller in terms of both premiums and amounts insured than the property market, but the range of perils covered is much wider. The former would imply that a smaller loss size should be used when defining a CCAT, the latter a larger loss size. Additionally, casualty losses by their nature tend to be less frequent but with the potential to be much larger than property losses, again suggesting that a higher threshold should probably be used when defining a catastrophe. To put a number in context, an individual claim for injury from a quadriplegic could cost up to $10m, or the aggregated claims from product liability in respect of a new drug could easily exceed $50m (both excluding any punitive damages). Neither of these would be a catastrophic loss but both would be counted as a large loss.

2.1.7 As casualty insurance tends to be purchased by corporate entities, and involves fewer insurers taking a larger share of the smaller pool of risks, so the requirement for a large number of direct policies and insurance operations to be involved (as in the definition of a PCAT) should not apply in to CCATs to the same extent.

2.1.8 The suggested definition of a CCAT in this paper is thus as an event that causes $100 million or more in direct insured losses from all causes to casualty policies (of all types), with one or more policies and insurers impacted.

2.1.9 Insurance regulators, rating agencies and insurers need a good understanding of the catastrophe exposures faced. This will increase the pressure to define these events formally, and hopefully to improve their modelling despite the issues outlined below, and will probably be a formal requirement under Solvency II.

2.2 What links individual losses to become a CCAT i.e. how do we define an event for an insurer?

2.2.1 Casualty insurance is purchased to protect the insured against legal liability arising from their own negligence. The best way to think about what links individual losses is to use reinsurance speak, and to define an event. In the PCAT world, that event could be a particular named windstorm. In the CCAT world, that event could be the use of Asbestos in just about everything or indeed the systemic and consistent IPO business practice that we now term Laddering.

2.2.2 The width of the net that is cast over an event determines the size and complexity of a CCAT, Reinsurance contracts, actuaries, lawyers or insurance companies may all define the same thing all slightly differently. A number of CCAT events of increasing breadth are listed below.

a) Building Collapse e.g. GL and PI claims could result from this event. This is often termed Classic Clash (which may be either vertically or horizontally). The event is then the incident itself.

b) Batch / Products losses e.g. One product, design or manufacturing process, could cause insured losses from a number of consumers. In this case, dependent on the policy wording, the event occurs on the date of the first loss

c) Business disaster e.g. the downfall of one institution such as Enron could lead to numerous losses across the PI and D&O book. In this case, the event would usually be deemed to occur on date of failure, although this may vary between different underlying types of insurance.

d) Systemic event e.g. laddering activities by numerous banks lead to insured losses across an industry. This would often be multiple events due to only having commonality of cause.

2.2.3 To re-iterate the point, the event in its extreme would be the ability for an insurer to group its entire Casualty book as one loss, with the rather ‘loose’ event definition of anything that the treaty subject premium attaches to. Clearly this would be an expensive coverage!

2.2.4 For an individual insurer, an, event could be defined as all damage, injury or loss, covered by one or more policies of insurance or reinsurance, which is a direct consequence of one particular accident, disaster, property catastrophe or casualty and/or which is traceable or attributable to a single act, omission, mistake, error, or series of act, omissions, mistakes or errors (except where classes offer no fault coverage). This definition is usually used when the classes of business involved are on a losses occurring basis.

2.2.5 However for classes like Fidelity, Professional Liability, Director and Officer, Medical Malpractice etc which are generally on a claims made basis, the aggregation is normally based on:

a) The same allegedly injured party or parties and/or

b) Other original insured that have had allegations made against them contributed to the same "central loss".

2.2.6 However when we define the single event, there is usually a time dimension to it. Does the hours clause apply to CCATs? What if the event happened and evolved in a long period time. Do we need to separate and define several events when there were significant changes, in quality and quantity of the claims? Some CCATS are gradual e.g. asbestos, in which cases setting a date of loss is hard and varies on a case by case basis.

2.3 Ways to separate and classify CCATs

2.3.1 Casualty aggregates and events can be classified in a number of different ways. In practice, the classification used tends to depend on the use; for instance we illustrate a couple of possible definitions below, but others are possible.

2.3.1 The Working Party favour the first more generic definitions below as they are simpler to apply, and have little possibility of misclassification, but the Guy Carpenter approach has more market exposure.

2.3.2 GENERIC CATEGORISATION BY TYPE OF OCCURENCE

When considering Casualty Catastrophes it is important to note that the negligent act is not the trigger; the event occurs and the negligence is established (or not). The fact that negligence can vary by state in the USA complicates the picture. The emphasis on negligence assists in establishing the definition, although it is important to note that some classes such as Workers Compensation offer no fault coverage. The following definitions can all have one or many insureds, and apply to one or many classes of insurance:

Single Negligent Occurrence

A single event occurs, and negligence is established e.g. Exxon Valdez oil spillage. The date of loss will usually be clear, although legal action may be required to establish coverage and liability (negligence); as a result costs may be substantial. Reinsurance coverage is usually easy to assess, these events are usually covered by standard reinsurance on a per event basis, direct claims may occur across several years of account.

Single Negligent Industry Practice

This covers multiple unrelated occurrences having the same trigger, which would normally be seen as a number of different events. The negligent act may be the same or similar across all cases. Events of this type could often involve multiple insureds, or sometimes multiple claims against the same insured. The date of loss may be harder to define (first occurrence, date of first claim). Reinsurance would most likely apply on a per event basis, with claims aggregating across events but not covering the whole gamut as one event.

There is an obvious split into two types of occurrence: gradual/latent and sudden. Most of the really large claims fall into the former categorisation, as exposure builds up over time. Recent examples could include the use of asbestos and as an example of a sudden loss the various accounting scandals.

Multiple Unrelated Negligent Events with a Common Trigger

This is really a catch all to pick up other types of event where there is an overall defining trigger but no other link. Claims arise from negligence by a variety of assureds in a variety of different ways, with only a single crystallising event e.g. Hurricane Katrina resulted in claims

from relatives of those abandoned in nursing homes, pollution claims from onshore refineries, and claims from mobile rigs hitting bridges and dragging anchors across pipelines.

In theory all claims would be aggregated for reinsurance purposes; in most cases the event would involve an hours clause which would still allow aggregation, however the classes of business affected are often covered by very different types of insurer or at least different business areas within a single insurer. As a result even if there is no theoretical issue with aggregation within an insurer, in practice it would not happen as each business unit will tend to buy their own protections except possibly the very high level whole account covers..

2.3.3 GUY CARPENTER CATEGORISATIONS

Guy Carpenter has defined a way to separate types of CCAT. These definitions are designed with reinsurance contracts in mind to clarify certain situations. Categories are split by "Event Types" While casualty catastrophes can happen virtually anywhere, a number of 'Event types' can be identified. Four basic types of scenarios have been suggested by Guy Carpenter:

A) Traditional Per Event

These have been recognised for decades, and are also called Clash losses. Losses are relatively rare, particularly if the suggested definition of event size is used. Many different types of insurance products may be impacted by the same event, and reinsurance products offer protection for this type of exposure. Losses have historically fallen under three main headings:

1) Single Event – Multiple Insureds – Multiple or Single classes of business

The various liabilities aggregate across assureds and/or classes of business. However different event dates may apply for different classes of business. Reinsurance may either be on a per classes basis, or on a per event basis, or both. Many examples of this type of loss exist: 1) a building collapse, where numerous parties are held responsible, such as the contractor or sub contractors, the architect, engineers or the local authority; 2) a hurricane loss, where, for example, energy, property, auto, crop, cargo, casualty classes may all be impacted, affecting both multiple classes of business and multiple insureds.

2) Single Event – Single Insured – Multiple classes

The casualty aggregate on a per assured basis; reinsurance may either be on a per insured or more usually on a per event basis. Losses can arise where an event triggers claims under several policies held by a single insured, for example, an explosion in a factory causing losses under the owner's Public and Employer's Liability policies. The same comments as made above apply.

3) Extra Contractual Obligations/Excess of Policy Limits losses (ECO/XPL)

In this case the policy limits may be breached, and a loss will become much larger than originally expected. Often the underlying claim may be in dispute, or the insured company is found to be grossly negligent, resulting in punitive awards against the insured. These are more relevant to reinsurance, particularly purchased by US carriers, which have traditionally often covered so called ECO/XPL losses e.g. failure to settle a claim may lead to a Bad Faith action by the insured or by an excess carrier. These have often historically given rise to claims.

B). Single Insured – Series of Losses

These are usually product type losses affecting a single insured. In theory it would be possible to have losses from multiple insureds, in which case these would be picked up under Systemic losses. The accumulation to the carrier arises out of multiple acts of negligence by the insured, which usually happen over a period of time and tend to come to light after loss or damage has been suffered. These are often treated as multiple events for reinsurance and direct policy purposes. Examples of this type of catastrophic loss include:1) a lawyer misinterprets a statute and gives wrong advice to multiple clients;2) Drug companies (hip replacements, breast implants) or automotive manufacturers (seat belts, air bags etc).

C). Business Disaster

Recent years have seen many examples of a single event in the business world leading to litigation against companies and individuals involved in the disaster as well as against professional advisors. 'Business Disaster' was suggested as a separate type of Casualty Catastrophe loss in the Guy Carpenter paper as the trigger i.e. the corporate failure is normally a sudden event. In addition, the negligent acts of the directors or advisors tend to be specific to the circumstances of the business in question, rather than 'Systemic' in the usual sense of the word:

As a result there tends to be a single event, and usually a single insured although multiple insureds could be possible in the case of advisors. Examples of single insured business disasters would include:1) a corporate collapse leads to multiple lawsuits, for example against the directors and officers of the company, their lawyers, accountants and bankers; 2) a failed merger or Initial Public Offering leads to multiple lawsuits.

Corporate failures, such as the failure of Enron, have sometimes been included under 'Systemic' losses on the grounds that the negligent or criminal acts that lead to loss takes place over a period of time. However, the event causing the loss, i.e. the failure, is still a sudden event and it is not felt that the time over which the event occurred is vital to the definition of the event.

D). Systemic

The distinguishing feature of a 'Systemic' Casualty Catastrophe is that the losses forming part of the catastrophe arise out of a common industry process or common practice that is subsequently found to be negligent. Examples exist in Professional Indemnity as well as in Public, Products and Employers' Liability. Identification of a single loss may cause a number of similar type losses to be identified, but each will be treated as a single loss for reinsurance purposes.

2.3.4 **OTHER POSSIBLE CLASSIFICATIONS**

The following possibilities were identified on top of the definitions above:

a) Considering when the losses occurred and the number of losses. This is particular useful when analysing the historic losses. There are three categories:

- Sudden single loss e.g. pollution following a tanker loss
- Sudden multiple losses e.g. D&O losses
- Gradual loss, many losses e.g. asbestos

b) Another categorisation looked at was groupings by geographical area. The legal environment can vary substantially in different countries and even in different states within

the United States. For example asbestos cases are dealt with at a state level, not at a federal level. Each state has its own court system, and so may be subject to different legislation. By grouping losses by geographical area, the losses can be grouped into categories of losses subject to the same legal environment.

c) As well as changing due to differing legal environments, losses can also change over time. Therefore another useful categorisation is timing. Losses could be grouped based on the accident date, reporting date, accounting date, valuation date or a number of other ways.

d) Similar types of losses could be compared. Grouping losses into categories such as financial, agricultural, product, drugs and so on can improve the understanding of groups of historical losses. There are some difficulties with using these categories though in practice. Losses may fall into several categories or it may be unclear which category it will fall into.

e) The classes of business affected could also be considered. Losses affecting one particular class may have similar characteristics.

2.4 Issues to consider when modelling CCATs and aggregating exposure

The main issues in modelling CCATs and aggregating exposure to these events are:

2.4.1 Frequency of loss tends to be low, so there is relatively little historical experience to draw on, particularly give the wide range of possible events. There are an almost unlimited possible number of scenarios, and losses may spread across the book in different ways depending on which scenario occurs.

2.4.2 Additionally, social, legal, political, economical and technological changes diminish the relevance of historical data and increase the complexity of running loss scenarios.

2.4.3 What constitutes negligence changes over time; nowadays with the very high levels of safety concerns and litigious society, the concept of negligent behaviour may well differ from that used in the past . There may well be past incidents that if they occurred now would cause claims, in some cases possibly substantial ones.

Many medical products launched in the past would no longer get a license, and neither for instance would alcohol.

2.4.4 There are a wide variety of scenarios that can impact a particular policy, and a wide range in classes of casualty insurance that can be involved. Both of these make aggregations very difficult and multidimensional.

2.4.5 Establishment of legal liability through negligence, blame or fault is the one of the main requirements for a claim to form part of a CCAT, unless coverage is on a no fault basis such as Workers Compensation. Liability is usually only established after legal action, which in turn adds uncertainty, cost and delay when estimating figures, and may also restrict the eventual availability of information., Care needs to be taken to consider if policy coverage is costs inclusive or exclusive basis, as costs can be substantial.

2.4.6 Lack of common location can be an issue, masking it harder to determine what policies can be affected. The involvement of different States in the US with different liability regimes can affect whether negligence and/or coverage are established. There are plenty of incidents of deep pocket syndrome where wordings have been interpreted unfavourably towards insurers as they have the largest funds available.

2.4.7 It is often hard to establish when an event occurred, gradual emergence of problems can cause delay in notification. It also makes it harder to establish the date of loss, and this may well vary depending on the type of underlying insurance product. This is particularly the case for latent losses arising under the single negligent industry practice category.

2.4.8 Punitive damages may be awarded in the United States, and depending on the policy wording these may be covered by the insurance policy. The amounts of any punitive damages may dwarf the original settlement e.g. in the case of some tobacco claims. As a result these are nearly always contested right through the US legal system, and introduce another layer of uncertainty as well as substantial delay.

2.4.9 Many of the larger losses have arisen as a result of Courts interpreting wordings in a way that they were not intended to be read when the policy was written. Modern policy wordings may be tighter, but does this really limit the problem?

2.4.10 Are CCATs more or less likely than in the past, and are they likely to be bigger or smaller? Testing procedures are more rigorous, and scientific evaluation of potential problems is far better in the past, so issues may be less likely to occur (but what about nanotechnology etc) so maybe CCATs are less likely or at least the potential for huge accumulations over time will be reduced. Conversely, society is more litigious and products more complex so interactions will be harder to assess, and victims more inclined to make claims.

2.4.11 Insurers are hopefully more aware of the potential for aggregations of claims, and would take steps to deal with issues as soon as possible, and reduce their exposure having seen the problems caused by asbestos. It is noticeable of late that reinsurers in particular have been very quick to limit or withdraw cover for specific issues/industries covered more recently e.g. a couple of years ago alcohol manufacturers involved in Alco pops.

2.4.12 Even if exposures and expected loss amounts can be derived from stress and scenario testing, then what approach can be taken to derive probabilities?

2.4.13 As a result of these issues stochastic modelling is hard, and none of the major catastrophe modelling systems cover casualty claims, even those arising from natural catastrophes. As a result any modelling performed by companies tends to be by using stress and scenario tests. By definition, these can only consider one outcome, and do not consider probability of occurrence.

3. Historic and Future Losses

3.1 Historic losses

Mass tort claims have been problematic for the insurance industry, and all the claims analysed below under "Single Negligent Industry Practise" fall into this category. These are blocks of claims brought by a large number of claimants against a single or small number of defendants for injury related to a single product, practice or service. They are distinguishable from other personal injury claims due to several distinct features:

1. Mass torts involve large numbers of claims that are associated with a single product;
2. There is a commonality of factual and legal issues amongst the group of claimants;
3. There is a value interdependence between the different claims.

There are many types of mass tort claims. These include:

- Anti-Trust Claims - Antitrust or Competition laws which legislate against trade practices which deter competitiveness or may be unfair. e.g.: bid rigging, monopolization, price fixing, and vendor lock-in.
- Consumer Product Claims - Products liability litigation involving defective and unreasonably dangerous products that can kill or injure people. There are three major types of product defects that incur liability: design defects, manufacturing defects, and defects in marketing. For example Defective Design and Manufacture or Failure to Warn Claims arise as manufactures of products have a legal responsibility to ensure the safety of products which they market and/or sell to consumers. If there are product design problems or injuries caused because of the product the company has a legal responsibility to either remove the product from the market and/or inform the public about the problems and risks.
- Breach of Warranty Claims - Most products in the market have some type of specific warranty issued by the manufacturer. If the manufacturer does not honour

the warranty, and there are problems with the product that remain resolved, the manufacturer may be in breach of the warranty contract.

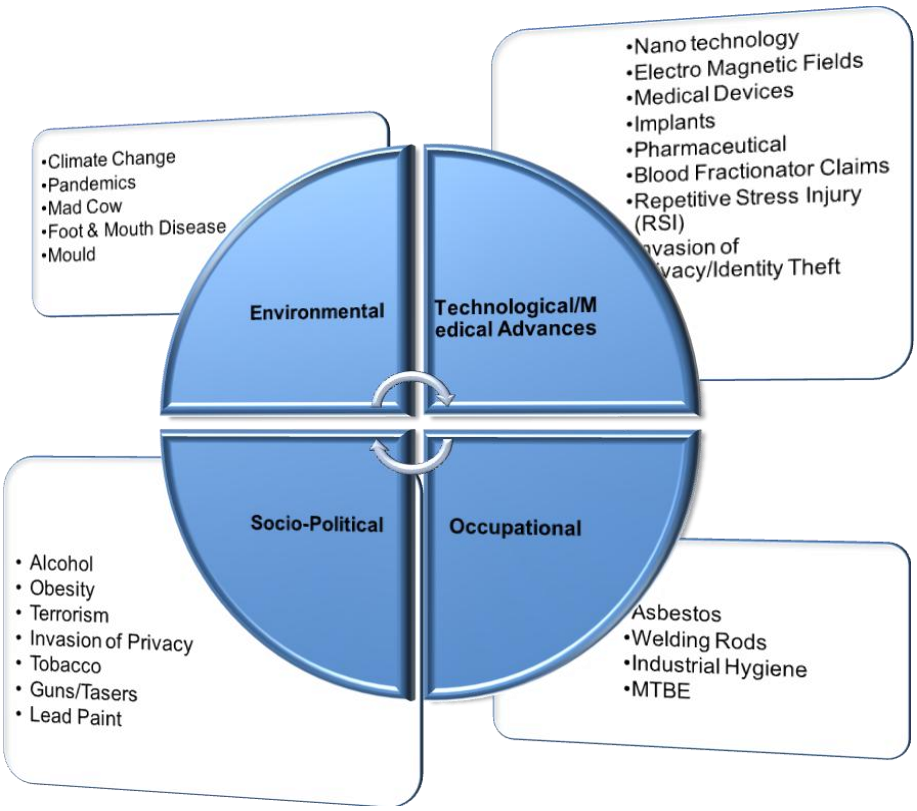
- Discrimination, Race, EEOC, Employee Benefits Claims- These are more of an issue in the US, where there are many federal and state employment laws that have been enacted to ensure fairness and equality for employees. Failure to comply is in serious violation of these laws. Some of these benefits take the form of public insurance, such as unemployment compensation and workers' compensation.

- Insurance Miss-selling Claims - Whether these claims involve health, life, retirement, worker's compensation or disability insurance claims there are numerous laws that employers must comply with and that protect individuals. Additionally auto insurance claims are also subject to federal and state laws. If advisers breach these requirements then claims may be filled against them.

- Medical Devices and Drugs Claims - Individuals, and their families, who have been a victim of defective medical devices including heart valves, artificial joints, bone screws, defibrillators or prostheses have protection under a variety of laws. Drugs, including dietary supplements that have been recalled or removed from the market after injuring or killing patients, may have short and/or long-term health impacts on individuals and are very serious offences

The difficulty the insurance industry has with these claims are that they are generally driven by social, environmental, economic or legal changes, and as such are not based on normal historical claim developments. They often involve long-term exposure, and hence the claims evolve many years after the product was manufactured. Often the medical science is evolving which defines the link between the cause of claimants' damages/injuries and the actual damages/injuries. To the insurance industry, these mass tort claims can potentially impact multiple lines of insurance and the balance sheet of the insurer and reinsurer.

The largest mass tort to date has been asbestos. Some other historic and potential future claims types are listed in the chart below.



When the working party looked at the historic CCAT losses that have occurred, it categorised the losses according to the proposed definitions. It can be seen that all the mass tort claims arise from a "single negligent practice" due to the aggregation potential. When historical losses are grouped into categories, trends and patterns may become clearer, and can be applied to new losses as they arise.

In sections 3.2 to 3.9 we have included case studies of the following historical losses:

- Single Negligent Occurrence — Exxon Valdez
- Single Negligent Industry Practice — Coal related losses

  Asbestos

  Agent Orange

  Blood Fractionator Claims

Food, tobacco and alcohol

- Multiple Unrelated Events, Common Trigger — World Trade Centre

3.2 Detailed Case Study – Exxon Valdez

The Exxon Valdez oil spill occurred in the Prince William Sound, Alaska, on March 24, 1989. It is considered one of the most devastating human-caused environmental disasters ever to occur at sea. It ranks well down on the list of the world's largest oil spills in terms of volume released, but Prince William Sound's remote location made government and industry response efforts difficult and severely taxed existing plans for response. The vessel was carrying 53.1 million U.S. gallons (about 200 million litres) of Prudhoe Bay crude oil, of which 10.8 million U.S.gallons were spilt into the Prince William Sound. This eventually covered 11,000,000 square miles.

Exxon Valdez left the Valdez oil terminal in Alaska at 9:12 pm on March 23, 1989 bound for Long Beach, California. A harbour pilot guided the ship through the Valdez Narrows before leaving the ship and returning control to Joseph Jeffrey Hazelwood, the ship's master. The ship manoeuvred out of the shipping lane to avoid icebergs. Following the manoeuvre and sometime after 11 pm, Hazelwood departed the wheel house. He left Third Mate Gregory Cousins in charge of the wheel house and Able Seaman Robert Kagan at the helm, both of whom were not given their mandatory 6 hours off duty before their 12-hour duty began. The ship was on autopilot, using the navigation system installed by the company that constructed the ship. The outbound shipping lane was covered with icebergs so the ship's captain, Hazelwood, got permission from the Coast guard to go out through the inbound lane. The ship struck Bligh Reef at around 12:04 am March 24, 1989.

Beginning three days after the vessel grounded, a storm pushed large quantities of fresh oil onto the rocky shores of many of the beaches in the Knight Island chain.

The cause of the incident was investigated by the National Transportation Safety Board, which identified the four following factors as contributing to the grounding of the vessel:

The third mate failed to properly manoeuvre the vessel, possibly due to fatigue, excessive workload and the fact that the radar was inoperable from the time they left port.

The master failed to provide navigation watch, possibly due to impairment under the influence of alcohol or the fact that he was sleeping it off below.

Exxon Shipping Company failed to supervise the master and provide a rested and sufficient crew for the Exxon Valdez.

The United States Coast Guard failed to provide an effective vessel traffic system.

In the case of Baker v. Exxon, an Anchorage jury awarded $287 million for actual damages and $5 billion for punitive damages. The punitive damages amount was equal to a single year's profit by Exxon at that time.

Exxon appealed the ruling, and the 9th U.S. Circuit Court of Appeals ordered the original judge, Russell Holland, to reduce the punitive damages. On December 6, 2002, the judge announced that he had reduced the damages to $4 billion, which he concluded was justified by the facts of the case and was not grossly excessive. Exxon appealed again and the case returned to court to be considered in light of a recent Supreme Court ruling in a similar case, which caused Judge Holland to increase the punitive damages to $4.5 billion, plus interest.

After more appeals, and oral arguments heard by the 9th Circuit Court of Appeals on January 27, 2006, the damages award was cut to $2.5 billion on December 22, 2006. The court cited recent Supreme Court rulings relative to limits on punitive damages.

Exxon appealed again. On May 23, 2007, the 9th Circuit Court of Appeals denied ExxonMobil's request for a third hearing and let stand its ruling that Exxon owes $2.5 billion in punitive damages. Exxon then appealed to the Supreme Court, which agreed to hear the case. On February 27, 2008, the Supreme Court heard oral arguments for 90 minutes. In a decision issued June 25, 2008, Justice David Souter issued the judgment of the court, vacating the $2.5 billion award and remanding the case back to a lower court, finding that the damages were excessive with respect to maritime common law. Exxon's actions were deemed "worse than negligent but less than malicious". The judgment limits punitive damages to the compensatory damages, which for this case were calculated as $507.5 million.

Exxon's official position is that punitive damages greater than $25 million are not justified because the spill resulted from an accident, and because Exxon spent an estimated $2 billion cleaning up the spill and a further $1 billion to settle related civil and criminal charges. Attorneys for the plaintiffs contended that Exxon bore responsibility for the accident because the company "put a drunk in charge of a tanker in Prince William Sound.".

Exxon recovered a significant portion of clean-up and legal expenses through insurance recoveries. These occurred both under the International Group Policy(a limit loss of around $400m) and under Exxon's Global Corporate Excess Policy (around $500m). Additional claims were settled under the Aleyseka Pipeline policy (around $100m), as well as a few other smaller marine policies.

In today's terms the cleanup would likely have cost at least $7bn, and reinsurance recoveries would have amounted to $2bn under the IGPIA policy and up to $2bn under the Global Corporate Excess Policy.

3.3 Detailed Case Study – Coal Related Losses

The two main industrial injuries relating to coal mining in the UK are:

- Vibration White Finger (VWF)
- Coal dust related disease

Vibration White Finger

Vibration White Finger (VWF) is an industrial injury triggered by continuous use of vibrating hand-held machinery. It affects the blood vessels, nerves, muscles, and joints, of the hand, wrist and arm.

Symptoms include:

- A numbness or tingling in the tips of fingers, causing fingers to go white. Eventually the whiteness may spread down to the knuckle and feeling may also be lost.

- Fingers change colour due to blood circulation problems in the hand. The sufferer may experience periodic attacks in which the fingers change colour when it is cold. Initially the fingers rapidly become pale and feeling is lost. This is followed by an intense red (and/or bluish) colour signalling the return of blood circulation to the fingers. It is usually accompanied by uncomfortable throbbing.

In more severe forms, attacks may last up to an hour causing considerable pain, loss of manual dexterity and reduced grip strength. Attacks occur more frequently in cold weather.

In extreme cases, the sufferer may lose fingers. The effect is cumulative.

When symptoms first appear, they may disappear after a short time. If exposure to vibration continues over months or years, the symptoms can worsen and become permanent.

Despite being known about since early in the 20th century, it was not recognized as a disease in the UK until 1985. Cases occur across many industries, the most common are in the forestry and mining industry

Coal Dust Related Disease

Black lung disease

Black lung disease (pneumoconiosis) is a chronic occupational lung disease contracted by the prolonged breathing of coal mine dust.

Most people with black lung disease do not have symptoms. When symptoms are present, the most common ones are:

- Shortness of breath;

- Obstruction of airways;

- Severe coughing.

In severe cases, an enlargement and strain of the right side of the heart may occur. This may eventually cause heart failure.

Emphysema

Emphysema is a long-term (chronic), irreversible lung disease that occurs when the tiny air sacs in the lungs are damaged. It is usually encountered as a result of long-term smoking but may occur as a result of coal dust inhalation. It causes difficulty breathing and shortness of breath that worsens over time.

Bronchitis

Bronchitis is inflammation and irritation of the airways of the lungs. Symptoms include a persistent cough that often produces mucus, fever, mild wheezing, and chest pain. Bronchitis is usually caused by infection from a virus. It can also develop after exposure to chemicals or air pollution.

Chronic bronchitis recurs and becomes long-term, especially in people who smoke.

Compensation

Coal mining in the UK was nationalised in 1946 and remained in Government hands under various names such as British Coal, until privatisation in the mid 1990s. After privatisation the UK government assumed liability for future industrial disease claims. The mining unions and individuals, assisted by crooked and highly enthusiastic solicitors had been campaigning for compensation for over a decade.

In 1997, a historical court case awarded £127,000 compensation to seven miners for VWF. The judge ruled that British Coal had been negligent by not taking actions to preventative action since 1975. There have also been numerous court rulings showing negligence to employee safety in lung related conditions.

After losing an appeal to the 1997 ruling, the UK government set up the world's biggest ever compensation scheme. By the time it closes the scheme is expected to have dealt with over 750,000 compensation payments to former miners and their families, paying out an estimated £4.1 billion.

The scheme has been plagued by controversy. Total solicitors payments are estimated at £1.3 billion, and after legal fees many claimants have received less than £1,000. In one case a claimant received only 50p.

Classes Affected, Exposure Measures and Risk Factors

None of the compensation claims have been incurred by the insurance industry due to the public nature of the coal industry. If the industry had been private then the vast majority of claims would be on employee's liability policies. As mines are sealed off from the rest of the world and rarely somewhere were the public would go public liability claims would be very low (if there were any at all).

The most sensible exposure measure if underwriting this type of disease would be number of workers. For VWF it would be more accurate to consider number of employees using vibrating equipment.

The risk factors would be:

- age and salary of workers (for loss of earning awards);
- safety equipment/procedures used (if masks were worn, ventilation, limited time on vibrating equipment);
- propensity to claim (often encouraged by local solicitors with medical experts).

3.4 Detailed Case Study – Asbestos

Asbestos was not the first mass toxic tort, but has had and continues to have the most profound impact on the global insurance industry. U.S. asbestos is by far the biggest loss to the insurance industry ever (estimated between $100 and $120 billion), dwarfing estimates from 2005 hurricanes Katrina, Wilma and Rita ($66 billion, $13 billion, and $10 billion, respectively) and September 11th terrorist attacks ($21 billion).

Asbestos was a material used in thousands of products due to its fire resistance and versatility. Tens of millions of Americans were exposed to asbestos in the workplace. Although practically all Americans are exposed to asbestos to some degree, such everyday

exposures do not usually result in health problems. However, substantial exposure to asbestos can lead to a variety of medical conditions. The diseases caused by asbestos can have long latency periods, sometimes up to thirty or forty years. There are a number of signature injuries associated with asbestos exposure:

		Malignant	
Mesothelioma	Malignant form of cancer in the lining of the chest or abdominal cavities	Y	Typically 30 -40 years
Lung Cancer	Cancer of the bronchial covering of the lungs	Y	Typically 20 -30 years
Other Cancer	Tumours of throat, larynx, oesophagus, stomach, colon, lymphoid	Y	Typically 20 -30 years
Asbestosis	Non cancerous scarring of interior lung tissue	N	Typically 15 -30 years
Pleural Plaques/Pleural Thickening	Scarring or thickening of pleural tissue surrounding lungs; typically no detectable impairment or injury	N	

The original asbestos claims were presented to the insurance industry under third party general liability policies extending to cover products liability. The products liability sections of such policies were usually written in the aggregate. When the policies were originally written no one would have envisioned that these policies would cover any occupational injury claims. Until asbestos claims were filed, these coverages (particularly excess level) were rarely claimed upon.

Asbestos-related bodily injury claims developed when the products liability laws in the United States were undergoing change. Prior to 1965, asbestos claims were processed as workers compensation claims. If a claimant wanted compensation outside the workers compensation laws, he would have to bring a legal action for bodily injury based on theories of negligence or breach of warranty. Until 1965, only the actual purchaser of a product could bring a products liability claim against the producer. In 1965, the legal environment in the United States underwent significant change with the adaptation of a new rule ("Rule 402A"), which allowed legal action by not only the direct purchaser, but also any individual who might foreseably be injured by a product.

The first products liability lawsuits which successfully used "Rule 402A" and involved an asbestos bodily injury claim was *Borel vs. Fibreboard et al.* in 1971 in US District Court, Eastern District of Texas. Following *Borel*, asbestos claims against producers, became common.

The number of filings has continually increased since the 1970s. A RAND Institute for Civil Justice study, released in May 2005, described asbestos litigation as the longest-running mass tort litigation in the United States and found that the number of asbestos claims continues to rise sharply. As of the end of 2002, over 730,000 people had filed asbestos-related claims, costing businesses and insurers more than $70 billion. Forty-two percent of that amount has gone to claimants, 31 percent toward defence costs from insurers and other sources and 27 percent to plaintiffs' lawyers..

More than 8,400 companies have been named as defendants since the 1970s when the asbestos litigation began. As more asbestos defendants are filing for Chapter 11 protection, plaintiffs' lawyers are suing a widening array of non-traditional asbestos defendants. Plaintiff's lawyers have focused on corporate genealogy, and identified the successors or parent companies of the asbestos manufactures who may have acquired asbestos liabilities with the purchase of a smaller asbestos company.

Increasingly the majority of current defendants are users of the product, not manufacturers. These increasingly peripheral defendants did not manufacture, sell or install asbestos-containing insulation or materials. Rather, asbestos was incidental in the product or facilities, and if it was in their products, it was enclosed. Therefore, only a minimal number of fibres were released into the air. Increasing numbers of claims are being brought by workers who did not routinely handle asbestos but asbestos was present in the workplace. In the UK a claim has been successfully bought by a worker worried about the possibility of being affected by asbestos based illnesses even though there was no direct exposure. XXX

Originally claims came from the traditional industries such as manufacturing, shipyards, railroads, and construction where workers were in enclosed tight quarters with a great deal of asbestos. Current plaintiffs are workers who ran machines that contain asbestos or in facilities ventilated by ducts lined with asbestos. These workers may have inhaled asbestos released into the air, but are not likely to have inhaled as much as shipyard workers or asbestos installers.

The increasing number of claims, and escalating costs, has forced approximately 70 companies to seek bankruptcy protection and the pace of asbestos-related bankruptcies is accelerating. A bankruptcy has a domino effect on other asbestos related defendants due to the following: (1) many states have joint and several liability for damage; (2) most people sue multiple defendants, (3) most claimants forum shop.

3.5 Detailed Case Study – Agent Orange

Asbestos may have been the largest mass tort to date, but it was not the first. The first Agent Orange class action was filed in 1979, and it was the largest mass tort class action of it's time. Agent Orange was a defoliant used by the US military in Vietnam. The term 'Agent Orange' originated from the 45-gallon orange-striped barrels Monsanto and Dow Chemical used to market and ship the roughly 1:1 chemical mix of dichlorophenoxyacetic acid (2,4-D) and 2,4,5-trichlorophenoxyacetic acid (2,4,5-T). Dioxin, a known carcinogen linked to cancer and other ailments, is a component of Agent Orange and Agent Purple. Approximately 20 million gallons of herbicides were used in Vietnam between 1962 and 1971 to plant life and leaves which otherwise provided cover for enemy forces during the Vietnam Conflict. Shortly following their military service in Vietnam, some veterans reported a variety of health problems and concerns which some of them attributed to exposure to Agent Orange or other herbicides.

The conditions recognized include:

- Chloracne (must occur within 1 year of exposure to Agent Orange)
- Non-Hodgkin's lymphoma
- Soft tissue sarcoma (other than osteosarcoma, chondrosarcoma, Kaposi's arcoma, or mesothelioma)
- Hodgkin's disease
- Porphyria cutanea tarda (must occur within 1 year of exposure)

- Multiple myeloma
- Respiratory cancers, including cancers of the lung, larynx, trachea, and bronchus
- Prostate cancer
- Acute and sub-acute transient peripheral neuropathy (must appear within 1 year of exposure and resolve within 2 years of date of onset)
- Type 2 diabetes
- Chronic lymphocytic leukaemia

There were 2.4 million Vietnam veterans that the original Agent Orange class action lawsuit represented. In 1985, an out of court Agent Orange settlement made between the companies and the veterans created a $180 million fund financed by the chemical companies to pay those veterans claiming disease and serious illnesses from Agent Orange exposure. Dow, Monsanto, Diamond Shamrock Corporation, Hercules Inc., Uniroyal inc., T-H Agricultural & Nutrition Company, and Thompson Chemical Corporation all produced Agent Orange for military use and were included in the Agent Orange settlement. The $180 million fund was depleted by 1994. Just 50,000 Agent Orange members received a small compensation.

There were many problems with the settlement, which laid the foundation for asbestos claims, as well as for other global settlements, including the breast implant litigation. One of the major issues which arose from the Agent Orange settlement is the long latency period for the injuries to manifest themselves, as well as the ability for any potential claimants to opt out of the settlement and seek compensation through the courts.

3.6 Detailed Case Study – Blood Fractionator Claims

Four major companies in the US engaged in the manufacture, production and sale of blood products which have been or are defendants in many ‘Tainted Blood’ lawsuits. The companies are: Armour Pharmaceutical Company, Bayer Corporation, Alpha Therapeutic Corporation, and Baxter Healthcare Corporation through its Hyland Pharmaceutical division. These blood products, known as anti-haemophilic factor or "Factor VIII" and "Factor IX", were first released in 1980 and were designed to stop profuse bleeding almost immediately.

They became a widely used therapy and were manufactured and sold in the U.S. and were exported worldwide.

Lawsuits have been brought by individuals who have haemophilia, seeking damages for injuries allegedly caused by Factor VIII or IX derived from human blood plasma processed by the various defendants from the late 1970s to the mid-1980s. The typical case alleges that an individual was infected by factor concentrates containing the HIV virus, and resulted in the mass infection and/or deaths of thousands of people with haemophilia worldwide.

It is alleged that these major US companies recruited and paid donors from high risk populations, including prisoners, intravenous drug users, and blood centres with predominantly homosexual donors, to obtain blood plasma used for the production of Factor VIII and IX. Plaintiffs further allege that these companies failed to exclude donors, as mandated by federal law, with a history of viral hepatitis. Testing of this nature could have substantially reduced the likelihood of plasma containing HIV and/or HCV (Hepatitis C) entering plasma pools.

There have been numerous lawsuits in the United States, Ireland, Taiwan, Japan, Spain and the Netherlands.

On May 6, 1997, US District Court Judge Grady approved a class action settlement submitted by Baxter along with Bayer Corporation, Armour Pharmaceutical and Alpha Therapeutic Corporation in which more than 6,400 claimant groups were found eligible to participate. “Claimant groups” consist of the injured person, along with any others asserting derivative claims such as loss of consortium. To be eligible for the U.S. class action settlement, the primary claimant must have:

- Been a haemophiliac
- Been infected with HIV
- Used factor concentrate produced by one of the four Fractionators from 1978 through 1985

It was agreed that each approved claimant would receive $100,000. The payment of $100,000 may be reduced by settlements or judgments received by a particular claimant.

Each fractionator's share in the settlement is as follows: Alpha – 15%, Armour – 20%, Baxter – 20%, and Bayer – 45%. There was no cap on the fractionators' total contribution to the settlement.

The fractionators established a multi-tiered structure for evaluating eligibility and processing of payments and releases. Claimants were required to either accept the settlement offer ($100,000 per claimant group) and file proof of claim or opt out of the settlements. The fractionators established several task force groups to examine each claim form for eligibility purposes, prepare and evaluate releases, consider requests for deferrals, etc.

Approximately 400 claimants opted out of the global settlement. In most states, Baxter's potential liability is subject to laws providing that the sale of blood or blood derivatives (including factor concentrates) is not covered by the doctrine of strict liability. As a result, each claimant must prove that his or her injuries were caused by Baxter's negligence.

The most current scientific report concerning the rate of infection of haemophiliacs with HIV is the study published in 1994 by Kroner, et al. in the Journal of Acquired Immune deficiency Syndromes entitled "HIV-1 Incidence among Persons with haemophilia in the United States and Western Europe, 1978 – 1980". The objective of the Kroner study was to estimate the most likely dates of seroconversion to HIV positive for HIV positive haemophiliacs. The basic finding is that HIV infection in the haemophiliac population began in 1978, peaked in October of 1982, and had declined significantly by July 1984.

It has been recognized that the subjects of the Kroner study are representative of all haemophiliacs in the United States, since factor concentrates are made by only four industry members, and since the results parallel seroconversion trends developed by the Centres for Disease Control and Prevention.

3.7 Detailed Case Study Four (Food, tobacco, and alcohol)

Food

The most common cause of insurance claims from food relate to poisoning. .Food poisoning symptoms can range from mild cases of vomiting, abdominal pain and diarrhoea to serious

cases involving damage to the nervous system. In extreme cases it may even cause paralysis or death.

A recent class action was brought in Canada against Maple Leaf Foods, following contamination of meat products with the bacteria *listeria*. The contamination caused an outbreak of 56 cases of listeriosis, including 20 deaths. The total settlement reached a cost of CA$25-27m (£14-15m).

There is also the possibility of mass tort claims arising from the use of additives (E numbers). Although there has been little claims related activity so far, an number of these are being investigated to ascertain if they have harmful side-effects.

Losses will mainly impact_Product Liability - from the sale of contaminated food products;, exposure for these policies is usually defined as turnover. The main risk factors are Health & Safety practices in the workplace, as well as type of food product, batch size, country, shelf life, …..

Tobacco

Smoking causes heart disease, cancer, chronic pulmonary disease and strokes, leading to severe illness and death. There are several strands of potential damages claims related to tobacco smoking:

- Claims against tobacco companies by people who took up smoking before the health risks were well publicised.
- Claims alleging that 'light' or 'low tar' cigarettes advertisements fraudulently misled consumers about the health risks of those types of cigarettes.
- Claims relating to exposure to second-hand smoke (passive smoking), primarily among employees in the pub and nightclub industries.

The classes affected are Product Liability and Employers Liability; the exposure measure used is usually turnover. The risk factors for EL would be whether smoking was permitted throughout the premises or only in a particular area; ventilation, and the provision of smoking

facilities. In the case of Product Liability they would depend on whether the risks of smoking where known when the product was sold. This has been the subject of frequent litigation.

Alcohol

Given the well-known health issues associated with alcohol, the most common class actions relate instead to the targeting of alcohol advertising at underage drinkers. – as such advertising is illegal, and it would not covered by insurance. Although there have as yet been no class actions related to the health effects of alcohol, given it's well known properties it may be harder to bring these claims in future. However, it is worth noting that if alcohol had to obtain health and safety approval this would never be given.

3.8 World Trade Centre

The original World Trade Centre was designed by Minoru Yamasaki in the early 1960s using a tube-frame structural design for the twin 110-story towers. Groundbreaking for the World Trade Centre took place on August 5, 1966. The North Tower (1) was completed in December 1970 and the South Tower (2) was finished in July 1971. The complex was located in the heart of New York City's downtown financial district and contained 13.4 million square feet (1.24 million m2) of office space. Other World Trade Centre buildings included the Marriott World Trade Centre; 4 World Trade Centre; 5 World Trade Centre; 6 World Trade Centre, which housed the United States Customs; and 7 World Trade Centre, which was built in 1985. In 1998, the Port Authority decided to privatize the World Trade Centre, leasing the buildings to a private company to manage, and awarded the lease to Silverstein Properties in July 2001.

On the morning of September 11, 2001, Al-Qaeda-affiliated hijackers flew two 767 jets into the complex, one into each tower, in a coordinated suicide attack. American Airlines Flight 11 was flown into the northern facade of the north tower at 08:46. The damage caused to the north tower by Flight 11 destroyed any means of escape from above the impact zone, trapping 1,344 people. Seventeen minutes later, a second team of terrorists crashed the similarly hijacked United Airlines Flight 175 into the south tower. Although the south tower's floors of impact were lower, a smaller number, less than 700, were killed instantly or trapped, because evacuation of the south tower was ordered immediately after the north tower strike.

At 9:59 a.m. after burning for 56 minutes, the south tower collapsed due to fire which caused steel structural elements, already weakened from the plane impact, to fail. The north tower collapsed at 10:28 a.m., after burning for approximately 102 minutes. The attacks on the World Trade Centre resulted in 2,750 deaths.

At 5:20 p.m. on September 11, 2001, 7 World Trade Centre collapsed due to uncontrolled fires causing structural failure. 3 World Trade Centre, a Marriott hotel, was destroyed during the collapse of the two towers. The three remaining buildings in the WTC plaza sustained heavy damage from debris and were ultimately demolished. The Deutsche Bank Building across Liberty Street from the World Trade Centre complex was later condemned due to the uninhabitable toxic conditions inside. The Borough of Manhattan Community College's Fiterman Hall at 30 West Broadway was also condemned due to extensive damage. The process of cleanup and recovery at the World Trade Centre site took eight months.

Casualty claims arose from a number of different policies: PONY due to lack of evacuation plans (which strangely was written into the Marine market), WTC cleanup policy, Airline Liability (two full limit $1.5bn losses), legal costs and associated liability issues such as dust, A&H policies, E&O policies relating to the placement of the property insurance, excess workers compensation policies (including PONY again), architects for design failure.

General Comments

The above losses illustrate the many facets of CCAT claims. The appeals process around the Exxon Valdez loss, and the differing levels of awards made it hard to assess the final cost, although this was less of an issue for the reinsurance claims. It also illustrated that he who has the deepest pockets often wins. The WTC loss illustrates the many interactions and relationships that can link a loss across many classes of business, and hence why loss amounts can be hard t predict, and exposures hard to aggregate.

Mass tort claims are discussed in more detail in the next section. The Coal related losses illustrate the aggregation potential for unrecognised illnesses once awareness is raised. Asbestos illustrates a number of issues: the length of latency period, the way the claims spread to other insureds, the huge legal costs, the time taken to make changes to

infrastructure, and how poor handling by the insurance industry can cause increases in claims. On the other hand, Agent Orange illustrates the dangers of severely limited funds and complexities of possible solutions. Sometimes, as in the case of asbestos, the cover provided was unintended. In many cases, reinsurance has not been an effective way of limiting an insurers involvement.

3.9 Future losses

In this section we will concentrate on mass tort claims, as these seem to have the potential to produce the largest losses. What are some of the warning signals that could trigger another Mass Tort?

1. There needs to be a large exposed potential plaintiff population.
2. There need to be known health risks associated with the product or cause of the damage.
3. There needs to be potential sympathetic jury pools who will find against big businesses. Defendants are usually large multinational corporations, who are pitted against individual claimants. Juries usually favour the smaller injured party.
4. The discovery process need to produce a “smoking gun”.

The main determinants of the size of a future claim would include:

- Period of latency – the longer the period the more can be impacted
- Nationality of those affected – Americans are more litigious and tend to achieve higher awards
- Severity of the issue/injury
- How widely the item has been used
- Ease of proving liability
- Involvement of lawyers and juries
- Attitude of Insurance Industry

Potential sources of claims may include:

3.9.1 Tobacco (to the extent that claims have not so far succeeded)

Coverage may be barred in certain instances due to tobacco exclusions & other coverage defences

Legal theories could include – addiction, deceptive trade practices (light cigarettes), targeting minors,

Plaintiffs bar may seek other coverage – e.g. advertising liability, "corporate family" policies, or next tier of defendants such as the retailers and chemical suppliers if and when large tobacco companies cannot pay (could be similar to the asbestos net of seeking peripheral defendants as the traditional defendants filed for Chapter 11 bankruptcy protection).

3.9.2 Obesity

Filings could expand to other types of food industry claims; e.g. Transfat; Aspartame (possible cancer link); ingredients which cause allergies; genetically modified foods

Types of claims may include:

- Deceptive trade practices e.g. using children's characters to sell cereals high in sugar
- Employment practices e.g. laying off over-weight employees

It is worth noting that a significant number of states have enacted tort reform to combat mass filings of claims

3.9.3 Alcohol

Claims appear to be following the tobacco model – allegations of deceptive trade practices and targeting minors.

3.9.4 Nanotechnology

Nanotechnology is a new and potentially very influential branch of science. It involves the manipulation of matter on a very small scale. Viruses and DNA are examples of natural

objects on the nano-scale. Favourable properties are taken from substances and applied to other substances which benefit from these properties. This technology therefore is about creating entirely new materials, products and systems, as well as making existing products faster, stronger, and better.

Its applications may be very diverse and include medicine, energy, information technology, aerospace, construction, food, textile and cosmetics. Potential uses of nanotechnology include:

- Cars could be made to absorb more of the impact during a crash.
- Creating stronger and more flexible building materials to resist damage from earthquakes, fire, flood and corrosion.
- Easing and lowering cost of environmental cleanup operations with the use of specialised nano-particles.
- Transforming drugs and allowing cheaper and more sensitive diagnostic tools for diseases.

Whilst such new areas may create many opportunities for the insurance industry it also creates concerns about hidden risks. In the same way that asbestos gave rise to a multitude of liability claims, materials created via nanotechnology may incur similar, unforeseen consequences going forward. Whereas media scare stories of nano-robots killing people may be exaggerated, potential claims may arise from:

- Environmental damage: nano-particles may cause large environmental damage. The cleanup for such tiny particles will also be very difficult. The long-term effects of environmental damage may be catastrophic. In addition nano-waste could create a problem similar to that of nuclear waste.
- Health effects: nanotechnology has already been linked to various types of cancer and breathing difficulties. Current workplace safety rules e.g. wearing dust masks may prove inadequate for protection against nano-particles.

Nanotechnology contains such a broad range of products that monitoring the effects of, and regulating it is very difficult. This risk is escalated by its complexity and with products coming from a variety of countries throughout the globe.

Claims can potentially affect most of the main liability classes. For example:

- Public liability - notably environmental pollution;
- Employer's liability – potential for health claims involving the manufacture of products containing nanotechnology;
- Product's liability – potentially from the sale of any product containing nanotechnology;
- Professional liability – any advisory firm e.g. Architects recommending the use of nanotechnology materials would be an example. Research institutes, especially those with private sector links, could be liable if their research or advice is used to promote nanotechnology which causes claims.

The definition and scope of nanotechnologies, as well as marketing reasons mean it would be impractical to exclude such claims. Exposure would be measured by the limit of liability.

The main risk factors would be:

- Type of industry;
- Who buys the products?

4. Current practice and survey results

Background

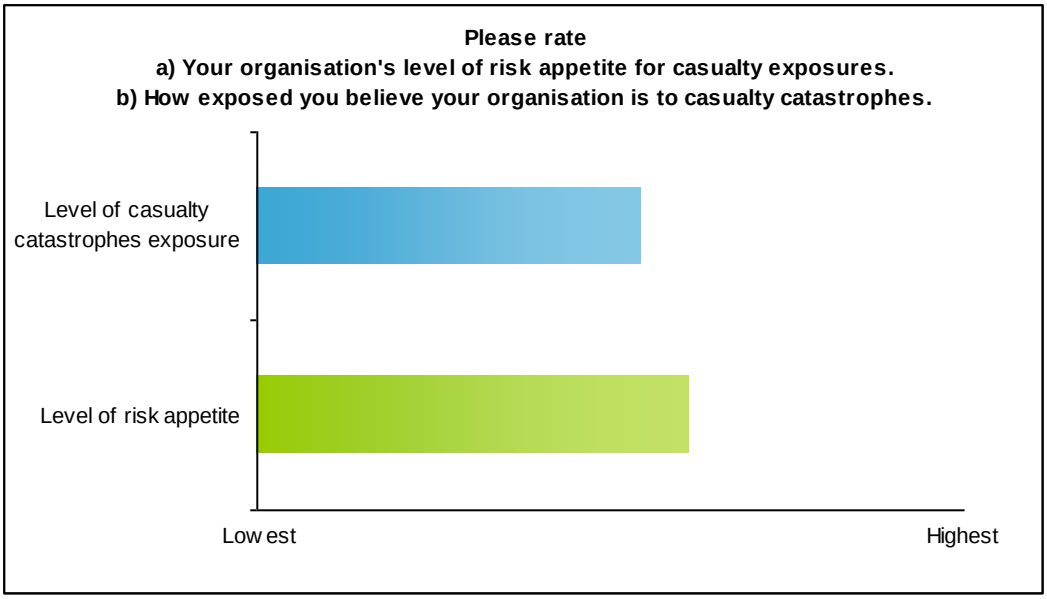
The Casualty Catastrophe Working Party survey aims to answer questions about current and best market practice with regard to casualty catastrophes. We are defining casualty catastrophes as any large third party loss that might arise in a way that impacts more than one policies at the same time. This ranges across all types of loss as defined either under our generic definitions or the Guy Carpenter suggested classification, as we are keeping our definition as broad as possible. Examples would include asbestos and laddering claims, amongst many others.

We have received responses from a range of Lloyd's and Company Market businesses. The respondents reflected a broad spectrum of entity sizes, product classes, independent businesses and subsidiary organisations.

Our thanks go to all the organisations and individuals who kindly gave their time to the survey and made this report possible.

Introduction

Our survey has indicated that most organisations have higher than average risk appetite towards casualty exposures as most believe that their organisations are not highly exposed to casualty catastrophe exposures.



Casualty catastrophes represent significant financial hazards to an (re)insurer, including the risk of insolvency, an immediate reduction in earnings and statutory surplus, the possibility of forced asset liquidation to meet cash needs, and the risk of a ratings downgrade.

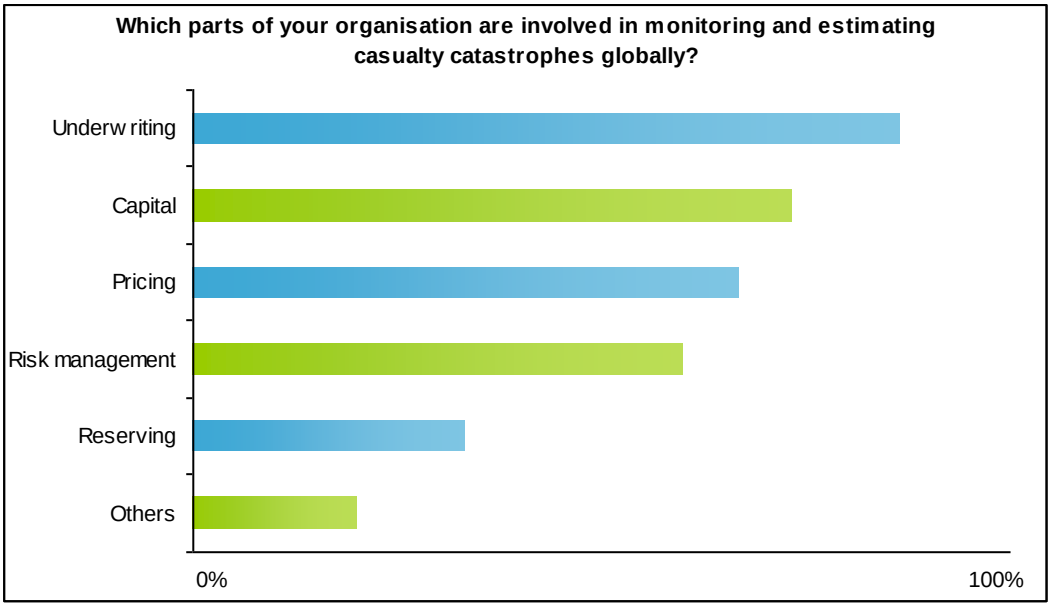
Historically, (re)insurers have been more concerned about the impact of natural catastrophes. The focus on natural catastrophes has taken their eye off other potentially calamitous events particular casualty catastrophes. There is a domino effect that could follow a casualty event and sometimes, it can be impossible to fully capture the extent of the exposures, due to the complex interactions between policies, assureds etc..

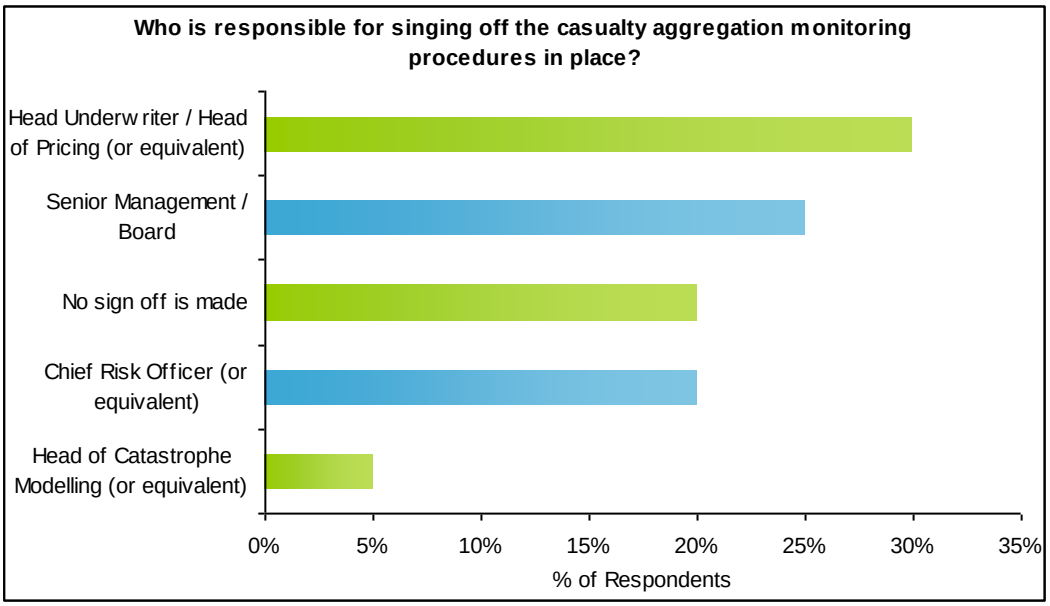
Our survey therefore explored the current practice adopted by various (re)insurers in estimating, monitoring and aggregating its casualty catastrophe exposures. It also examines an (re)insurer's approach towards pricing, reserving, managing capital and risk mitigation in relation to casualty catastrophes.

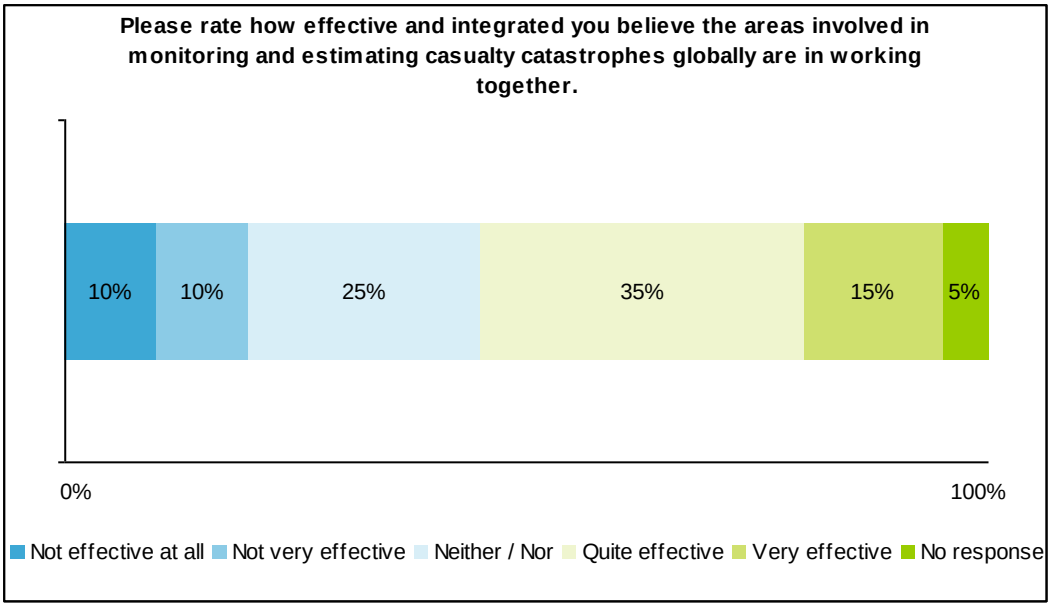
Estimation, Monitoring and Aggregation of Casualty Catastrophe Exposures

Although our survey has indicated that most organisations believe that the different areas involved in monitoring and estimating casualty catastrophes globally are working together quite effectively and are integrated, this is inherently underwriting-driven.

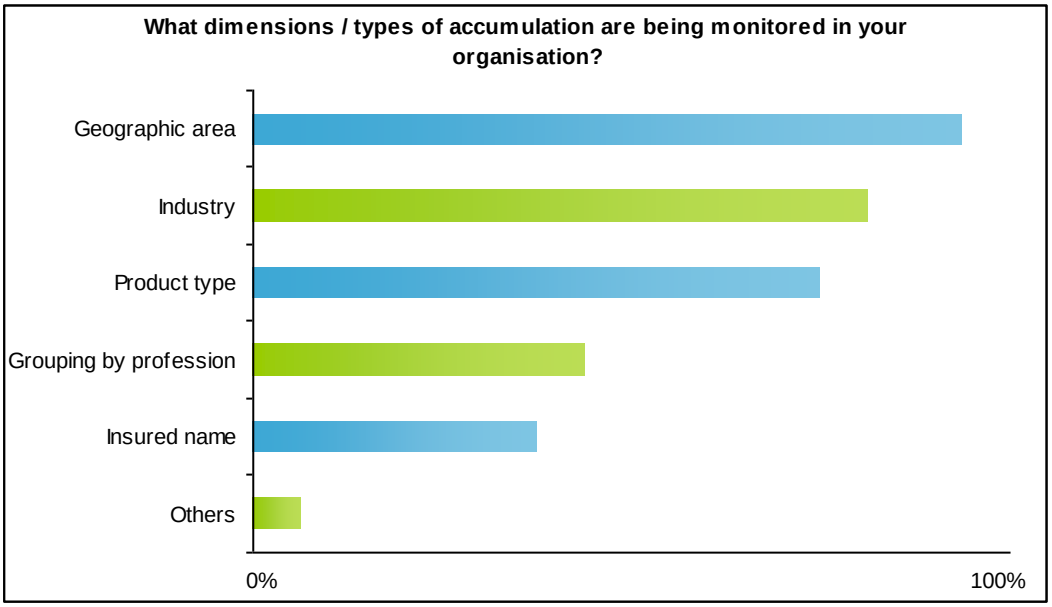
The sign-off is usually done by the head of underwriting or pricing rather than Chief Risk Officer or the Board. There also seems to be little actuarial input in the estimation, monitoring and aggregation of casualty catastrophe exposures.







Generally, casualty catastrophe exposures are aggregated and monitored by geographic area and industry. This is not surprising since the risks are not as well known as natural catastrophes and there has been less research and effort made to understand casualty catastrophes.

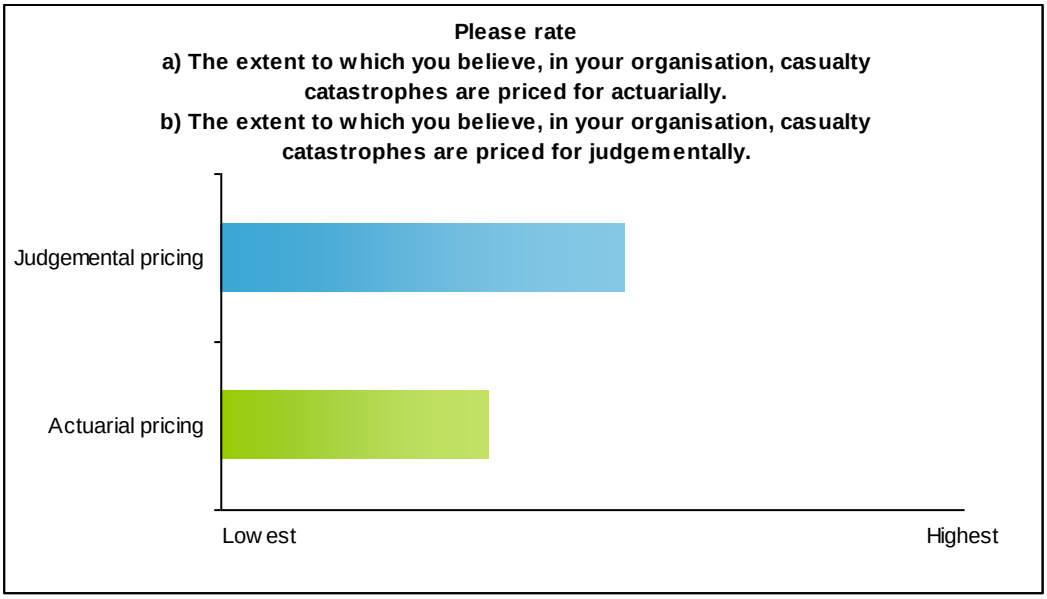


Recent casualty catastrophes however, have highlighted that aggregation and monitoring by one or two dimensions are not sufficient due to clash exposures and increasing correlation between lines of business and insured. For example in the case of Enron, the initial loss was limited to just one insured, one industry and several product types (Enron's D&O, Fiduciary

and Fidelity policies), but it then spread to other insured, industry and product types through their accountants (Arthur Anderson), lawyers (Vinson & Elkins), and banks (Citibank). Following that, there was an expanding shockwave when suppliers and dependents of Enron filed lawsuits. It also affected other companies in the industry e.g. CMS Energy, Dynegy.

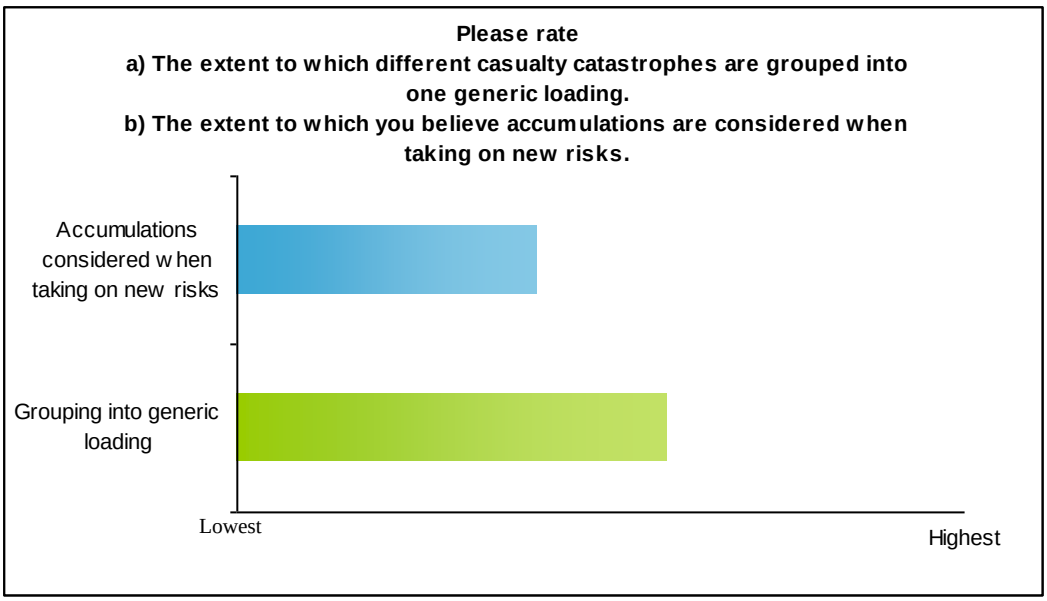
Pricing of Casualty Catastrophes

Since there are very few widely available proprietary casualty catastrophe models and most casualty business is written through London Market, the risk tends to be priced judgementally by the underwriter.

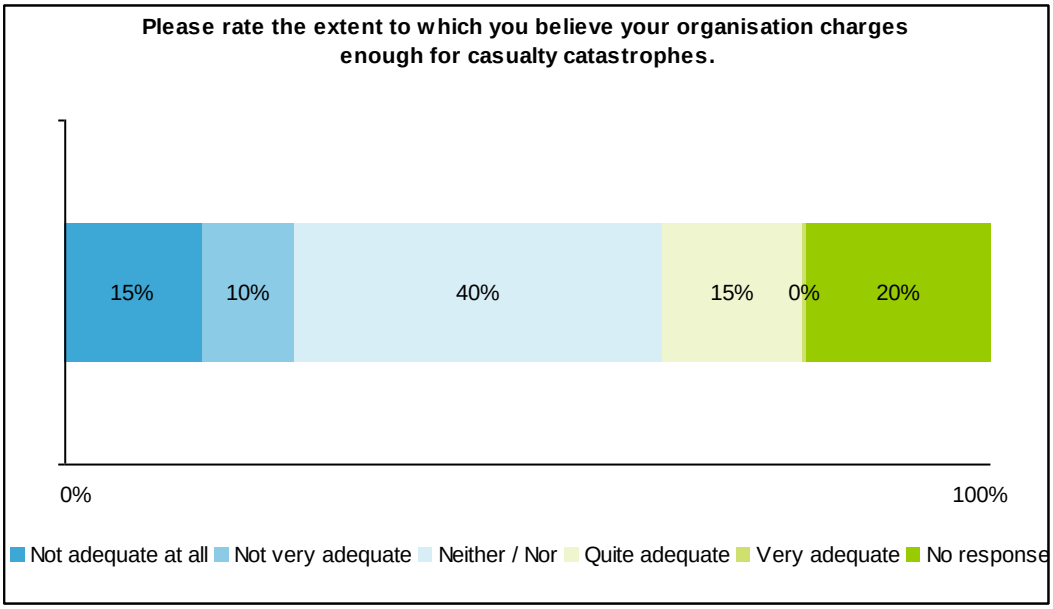


Underwriters tend to group different casualty catastrophes into one generic load when pricing. Given that different underwriters price for different product types separately, it is difficult to consider the global accumulation of premiums available and aggregate written within the organisation when taking on new risks.

However, if underwriters generally believe that they are not highly exposed to CCATs, then the inclusion of a specific loading is unlikely, and would be impossible to assess. It is likely that any company applying such a loading unilaterally would be selected against by the market.

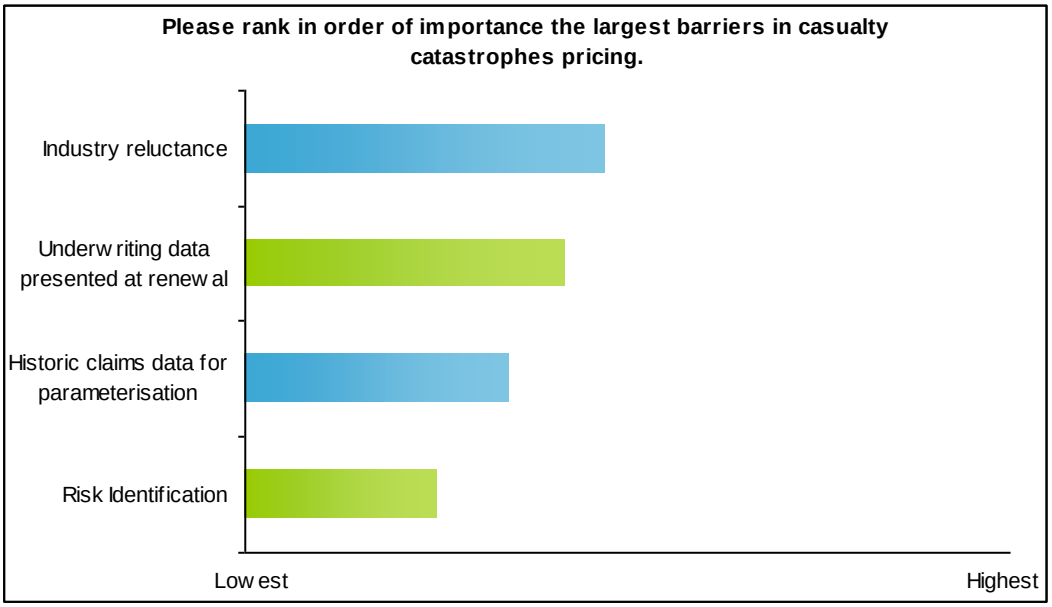


As a result, there may be a tendency for companies to not charge enough for casualty as clash exposures and the correlation between multiple lines of business and insureds are often not taken into account.



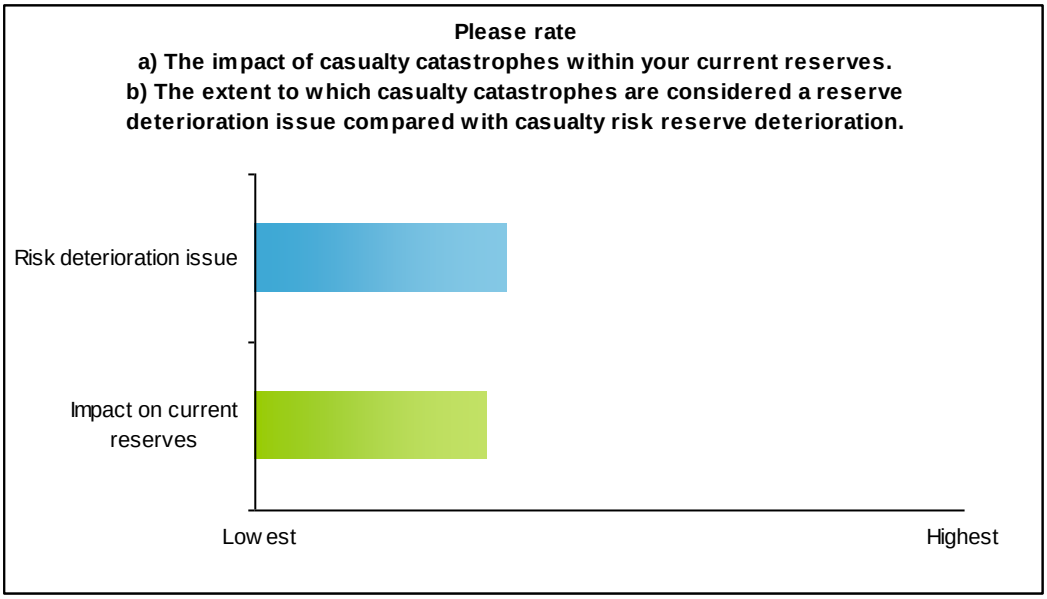
Ideally, casualty catastrophes should be priced by considering in detail the exposures across different lines of business, geographical area, insureds etc, and this will be based on the premise that there is a central monitoring of accumulation. However, this may not be possible as many companies find it difficult to overcome the barriers in pushing forward a

robust and comprehensive casualty catastrophes pricing framework. It is worth noting that many organisations feel that the lack of data is a significant issue.



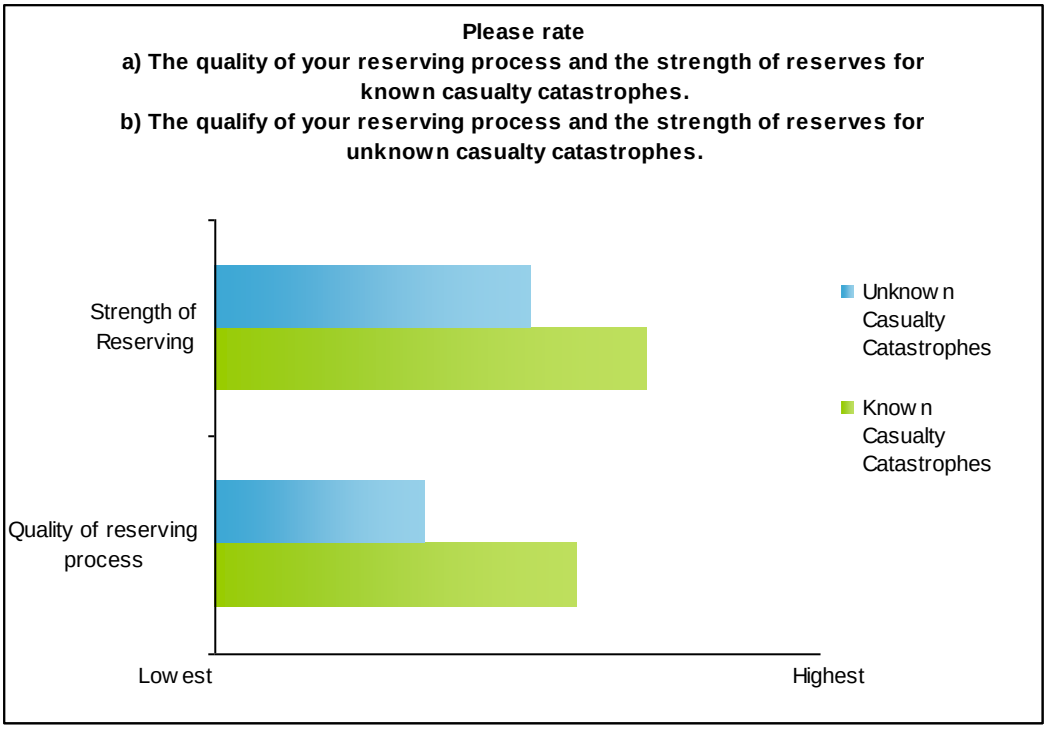
Reserving of Casualty Catastrophes

Although AM Best has highlighted that 70% of insurers' failures were attributable to casualty business written, it is interesting to note that most respondents in our survey did not believe that casualty catastrophes have a significant impact on their current reserves. This may be due to the low frequency of events, or the supposition that as these events are hard to estimate even when they have occurred, setting a reserve appears to be a step too far.

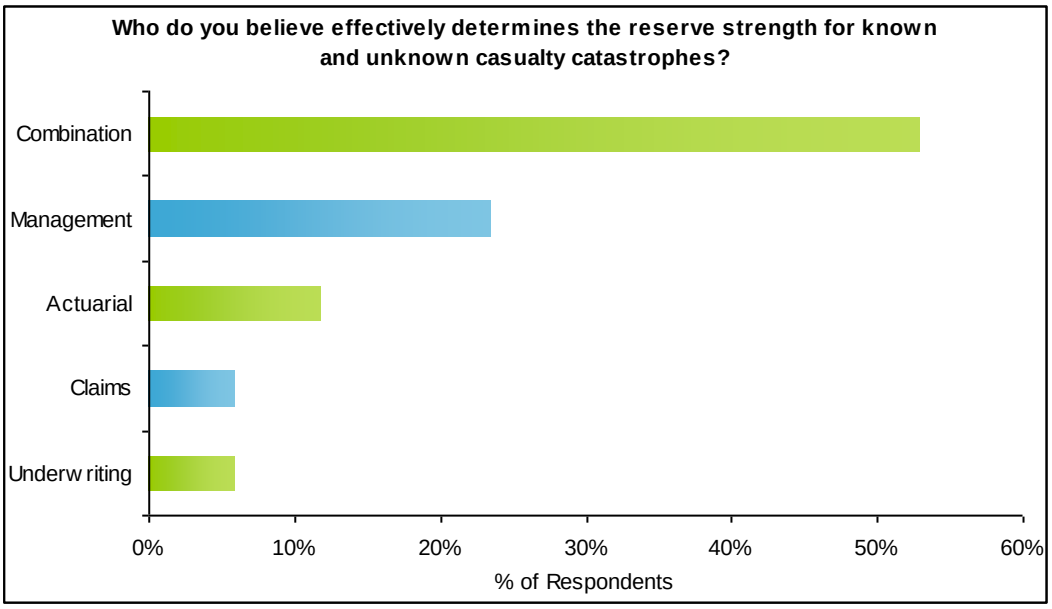


Sufficient data and modelling capabilities in respect of casualty catastrophes traditionally have been in short supply. Although recently there has been an introduction of a new casualty catastrophe model which focuses on general liability business (uses cedant policy profiles to assess where potential casualty catastrophes would have the largest effect), the model focuses on exposure calculations and concentrations. There is no near term intent to estimate actual loss cost either by estimating frequency or percentage of limit eroded.

Furthermore, it is difficult to estimate the quantum of casualty catastrophes as events tend to be unknown. Even for known casualty catastrophes, it is difficult to quantify the losses due to the lack of data and high uncertainty, as well as environmental an legal changes reducing the reliance that can be placed on past data. For example, asbestos is a well known casualty catastrophe but even now there are still new developments and changes in the legal environment which make the loss estimation and reserving extremely difficult.

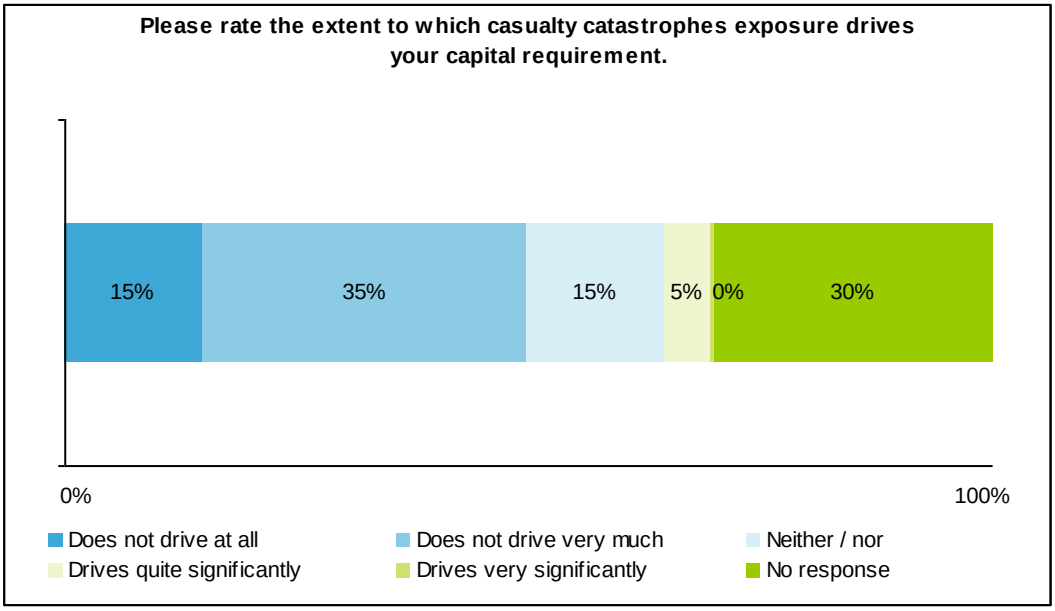


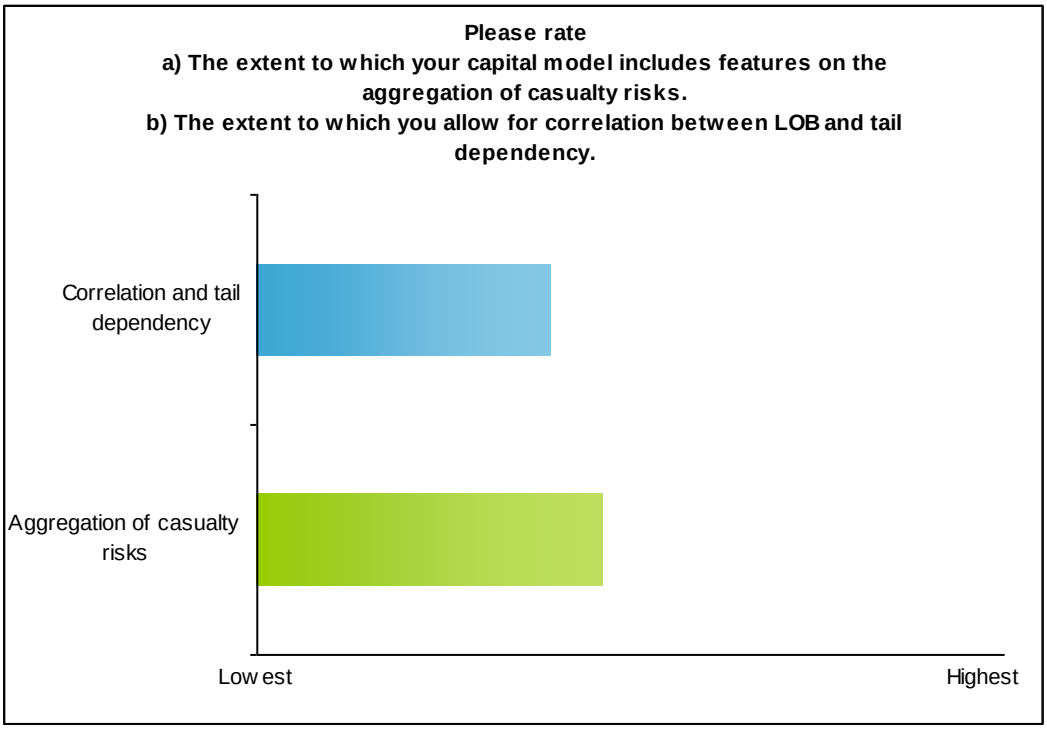
Compared to casualty catastrophes pricing, reserves for casualty catastrophes are less influenced by the underwriters. There is still limited actuarial input as it is almost impossible to derive appropriate statistical methods to quantify the losses, and there is a view that the actuarial 1 in 200 events for casualty are not extreme enough. By implication this has knock-on effects to all aspect of actuarial work as it is difficult to generate examples which have huge knock-on effects across all lines.



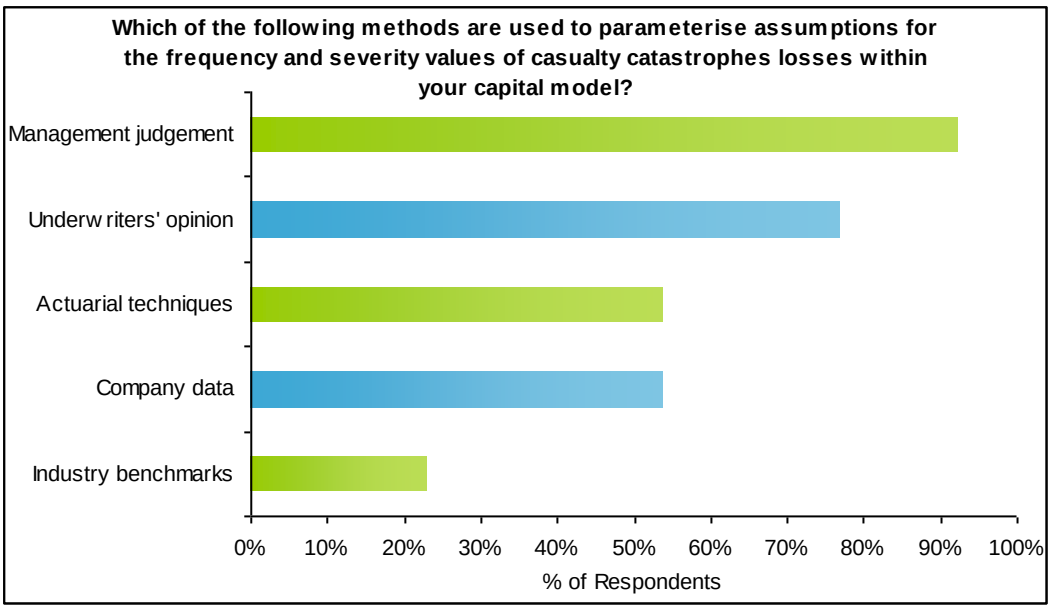
Capital Considerations for Casualty Catastrophes

The 1-in-200 view taken in ICA calculations, and the 1-in-250 view for rating agencies tend to imply that casualty catastrophes are not the main driver of capital. Instead, the main drivers for insurers whose capital is heavily influenced by catastrophes are natural perils exposures. Most capital models also do not include any specific features to aggregate and model the risks of casualty catastrophes, let alone the exposures and losses in the tails of these distributions. The extent to which correlation between classes of business and tail dependency on casualty catastrophes losses are allowed for is minimal. The established RDS methodology tends to be very vague with regards to casualty catastrophes losses unlike natural catastrophes, which are well defined and extensively modelled.

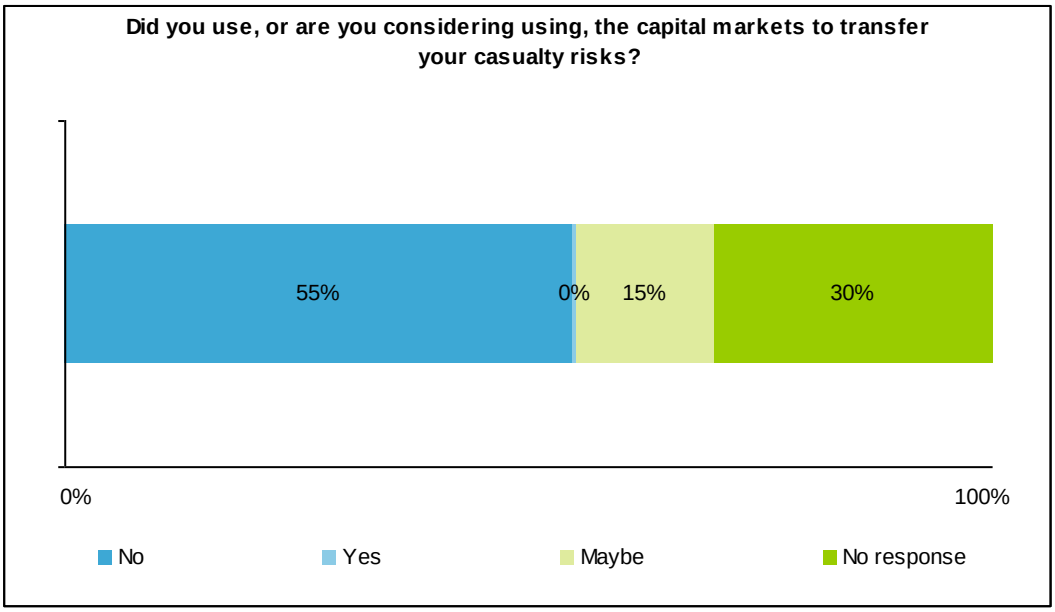




Where casualty catastrophes are modelled, the methods used to parameterise the assumptions tends to be judgemental and set by the underwriter or management. This is because it is difficult to obtain any industrial benchmarks and there is lack of company data as it is difficult to predict future casualty catastrophes based on past casualty catastrophes due to the wide range of possible events. Again, there are limited actuarial techniques involved.



Recently, CEIOPS has published its "Report on Securitisation in the Insurance Sector". Broadly, the report is supportive of securitisation of insurance risks and implies capital efficiency through insurance-linked-securitisation products. Under the Solvency II regime, there is an incentive for companies to use capital market products as an alternative to reinsurance to transfer risk and manage capital. However, our survey has indicated that so far, there is little interest in organisations to tap this new source of capital market funding.



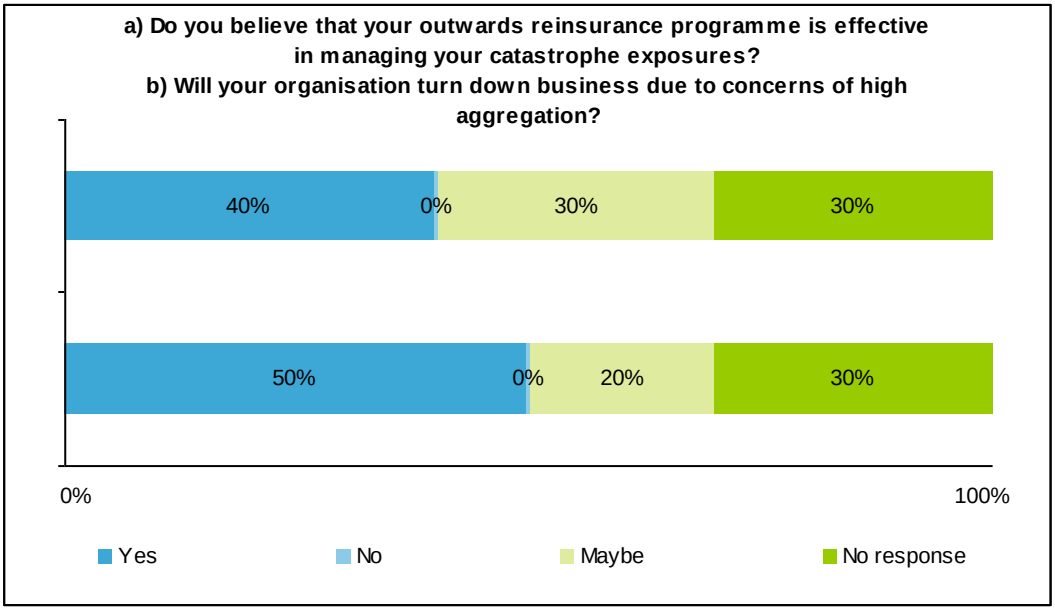
Risk Mitigation Considerations for Casualty Catastrophes

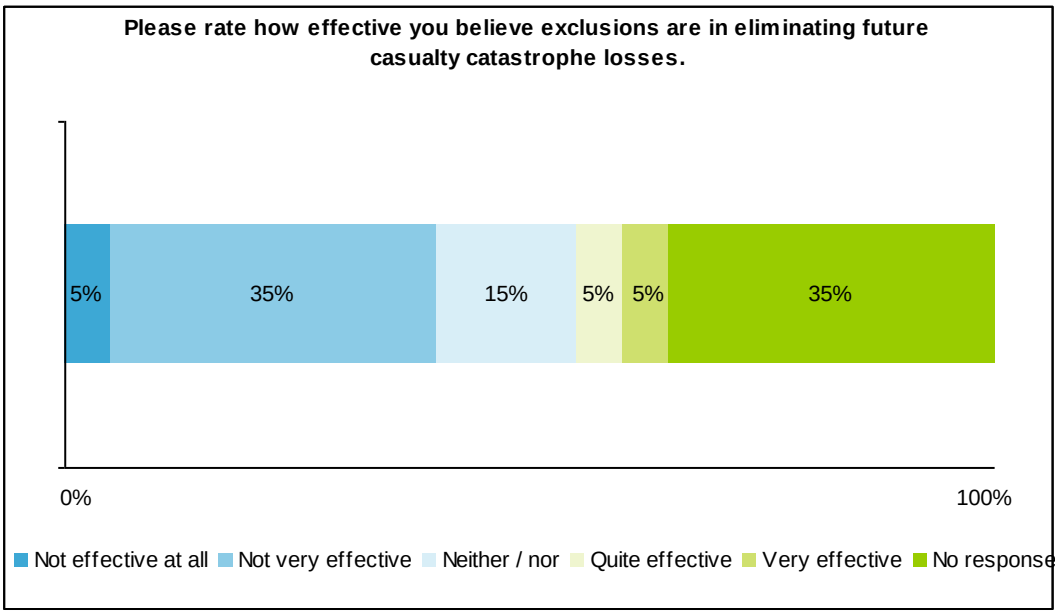
While companies have been aware of the domino effect that could follow a casualty event, a realistic approach to risk mitigation has so far been elusive. Increasing globalisation has led to growing complexity of casualty risks. Traditional risk management techniques may not protect companies against these costly exposures.

Although most respondents believe that reinsurance is effective in managing casualty catastrophes exposures, this implies that maybe insurers are not considering the event types outlined earlier in sufficient detail. For instance, there is little market for clash cover as the insurance market feel it is too expensive and the reinsurance market feel it is too cheap, and there is very limited reinsurance market for clash type covers. Some markets have no appetite for it at all, at any price. There may be as few as ten players for financial institution clash cover market.

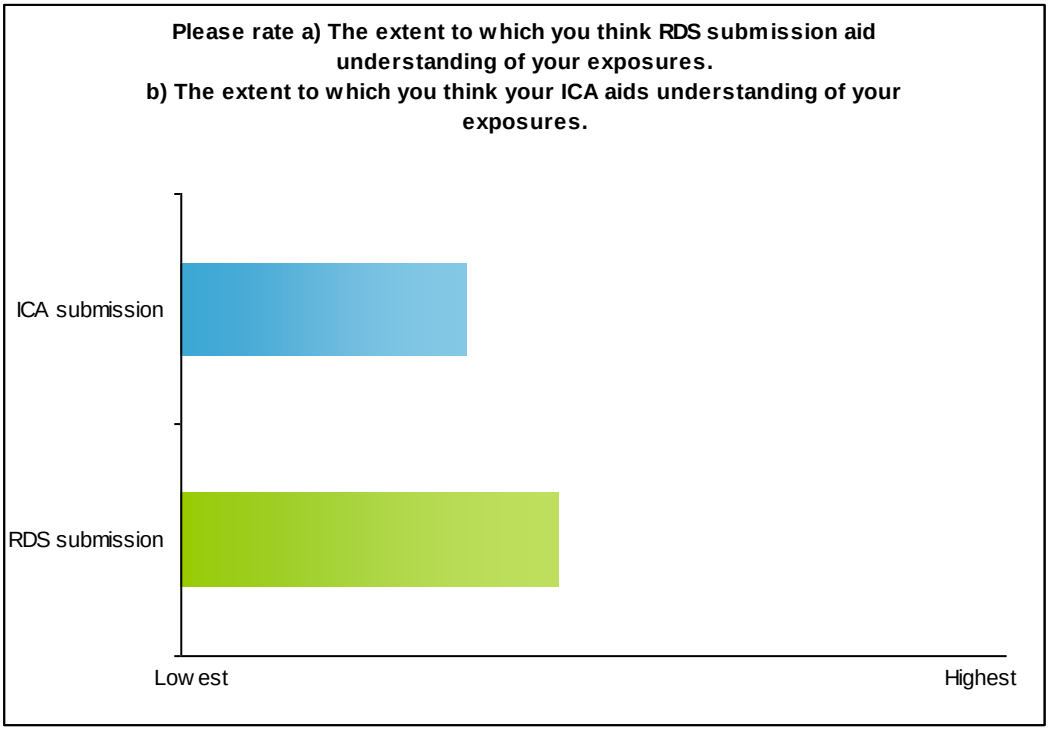
There are also similar issues as a result of the very limited retrocession market. Where a retrocession does exist, it will have the same event definitions as the ceding reinsurer. It will also require excellent data to enable sufficient drill down.

Given that exclusions are not particularly effective in eliminating future casualty catastrophe losses, our survey indicates that organisations may end up having to turn down casualty business due to concerns as a result of high aggregation.

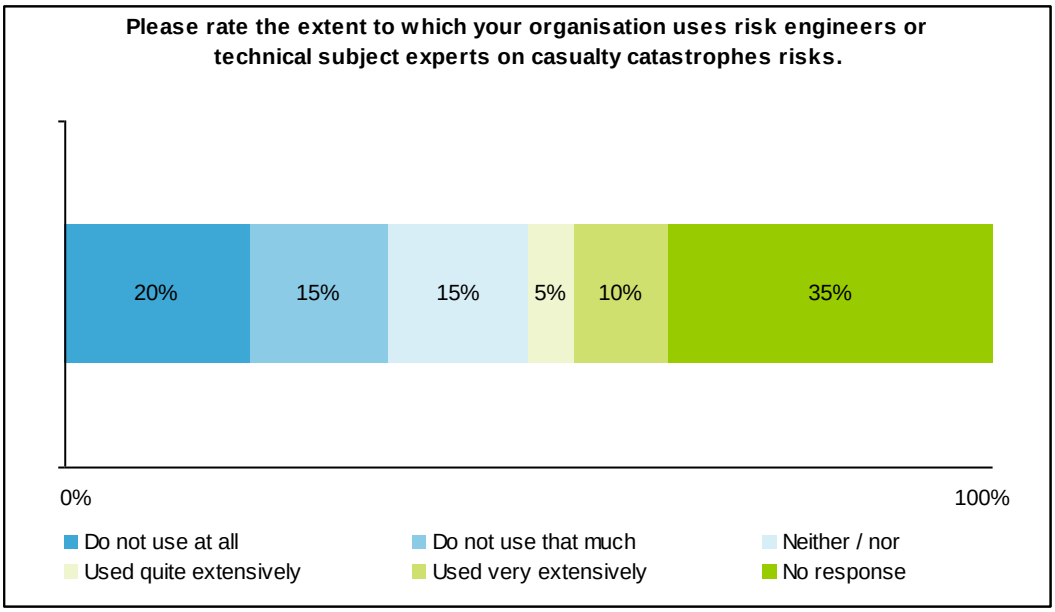




While some argued that the RDS process and the ICA can be utilised to aid the understanding of exposures, we believe that these on a stand-alone basis are not sufficient.



As a result of the above, some companies have started to dedicate resources such as risk engineers and technical subject experts to ensure that it possible to track all exposures, including any "hidden" exposures throughout their portfolio and develop a plan for protecting their capital.



Conclusion

5. Conclusions and Comments

5.1 General

5.1.1 Casualty catastrophes can be devastating – occasionally. It is unlikely that the Casualty market will ever generate sufficient profit to pay back Asbestos claims, let alone those of other CCATS and more run of the mill losses.

5.1.2 Casualty catastrophes are a significant source of exposure and volatility for (re)insurers, but our survey highlights that it is not currently a major area of concern. This may in part be due to lack of relevant data, and is in part due to lack of consideration of the issues around a casualty catastrophe. The aggregation of casualty catastrophe exposure is managed primarily by underwriters, and has limited impact on technical pricing or capital held. Overall, the respondents seem comfortable that their organisation have a good handle on monitoring potential aggregations by location, industry and product type. However, it would be interesting to test this in practice, given the complexities involved and the difficulty of correlating losses between insureds and lines of business for instance. Even if this assertion is correct, then how are these results translated into capital loadings and premiums charged?

5.1.3 The survey points however, to something more interesting. Organisations seem to be focused on small-to-medium size casualty catastrophes, which affect a particular territory/industry segment. This may be because they can aggregate the exposure data in this way, and there is at least some claims data to consider. However what is done about the larger catastrophe losses which have occurred in the past? Are insurers ignoring these and the risk factors pointing to further large mass tort actions or other aggregations? Is the assumption that policy wordings will prevent future aggregation issues? Our industry seems much less prepared for more "global" casualty catastrophes, affecting multiple regions/industries. Only limited efforts have been made in respect of these scenarios, and actuarial input seems conspicuously missing.

5.1.4 The results of our survey are therefore begging for a response to the questions: "What will it take for actuaries to spend efforts on modelling the large, globalised

casualty catastrophes of the 21st century? Additionally, where will the data come from?"

The implications of this are considerable:

- are risks being correctly priced, or is the amount (if any) charged for catastrophe exposure too low;
- is profitability based on the non occurrence of a catastrophe which subsidises the non catastrophic element
- if it is not possible to model the exposed aggregate and correlate it between classes, insureds etc, then, should catastrophe exposure be written;
- what restrictions should insurers impose; what risk mitigation can insurers employ?
- how can the lack of data and modelling approaches be addressed; how will the modelling situation be improved;

5.2 How Can Insurers Mitigate their Risk?

5.2.1 **Reinsurance** will only ever provide limited protection for an insurer, being useful as protection against certain numbers/sorts of CCAT .

- It is reasonably effective in protecting against "Single Negligent Occurrence" losses, subject to the usual limitation that inwards cover is effectively unlimited (unless there are per policy aggregates), whereas outwards XL reinsurance is usually limited to three events, and there are additional issues with clashing losses.
- "Single negligent practice" type events are more affected by these issues e.g. Asbestos claims, particularly where latency is involved. Some protection was provided as many XL protections had aggregate extension clauses, allowing cover to be used to the full, but even so this was massively insufficient, and these clauses no longer exist. Reinsurance

would still provide a level of protection here, however given that cover is usually limited to one or two reinstatements, and one negligent industry event may cause losses to multiple insureds is this cover enough?

- No attempt is made to model multiple unrelated events with a common trigger, this is too variable and the interactions and events causing losses are too hard to predict. Reinsurance would provide only limited protection here, with issues over multiple retentions and possibly vertical cover at the whole account level.

- Practical steps could include:

  a) Make reinsurance risks attaching and inwards policies claims made to limit the possibility of getting claims on back years and to try and avoid being left without cover once the issues become apparent

  b) Make more use of proportional reinsurance e.g. quota share as cover has far fewer limits and some protection will be given regardless unless the policy is commuted

  c) Buy more reinstatements, and make sure that any exclusions introduced by reinsurers are reflected in the underlying business written

5.2.2 **Underwriting** implications may be substantial.

- What steps could be taken to limit inwards losses:

  a) Cover in certain US states, or even the entire US could be withdrawn or severely limited to help control aggregation issues and limit the potential for punitive damages or deep pocket syndrome,

  b) Charge an explicit CCAT load based on the policy limit as this cover is often given for free (but how would this be priced),

  c) Tighten wordings to avoid unexpected coverages e.g. APH claims. This is hard in practice, but policies could be made excluding costs, with as tight a

definition of the claims covered as possible. However, courts often interpret wordings in a way different to that intended by the original underwriter

d) Make inwards policies claims made, unless a claim is notified within a fixed period after the expiry of the risk then claims would have to be made on the current year of the policy regardless of the date of loss. This would make the current year of any claims made policy dependent on past cover given, as well as current risk factors

e) Exclude punitive damages,

f) Limit cover available by using annual aggregates limits as well as per event limits; or apply a maximum number of reinstatements on the inwards business

g) Exclude certain types of loss e.g. the changes made to pollution wordings in the 1980s

h) Reduce the overall Casualty aggregate written to a level that is manageable if the whole amount in any one year or collection of years is blown. This would obviously reduce the amount of Casualty business written.

5.2.3 **Raise awareness of the issues** with insurers, reinsurers, brokers, regulators and modelling companies

5.2.4 **Monitoring of aggregated exposure and modelling of CCATS**

- What steps could be taken to improve modelling:

a) Aggregate exposure written - in as many ways as possible using limits, and looking at both single and multiple losses where appropriate. This could include: geographically, by industry, by product, by assured, by exposed peril/substance etc. Recognise that estimation of the probabilities of events is impossible

b) Use more stress and scenario testing – although lack of data is a serious issue, and ensure that the larger CCAT scenarios are included in this

a) Obtain data - to try and calculate estimates of possible correlations between classes of business. Rework old losses for legislative changes etc to give a better idea as to severity

b) Exposure to some CCATs - may be better managed by the insurer making changes to their business model rather than being limited by reinsurance

c) Try to identify issues – in particular what the next Asbestos sized CCAT issue may be before it arrives

d) Insurers hold more capital – 1 in 200 events may be more severe than expected or limit their portfolios

5.3 Implications For Insurers

5.3.1 Capital may have to rise substantially. Most ICA models will not include a sufficient allowance for CCATS, what does a 1 in 200 year CCAT look like. Asbestos gave rise to massive claims, was this a 1 in 500 year event, a 1 in 200 year event, a 1 in 50 year event or what. What are the probabilities associated with the various possible CCATs (and other unknown events), and what are the ranges of possible sizes; or at least will they be bigger or smaller than in the past? What will the next massive CCAT be?

5.3.2 Reserve levels may have to rise for some Casualty classes, although obviously it would not be possible to build up sufficient reserves to cover a really major loss. The survey indicates that current reserve levels include an element for CCATS, but given the huge range of possible sizes how are these be estimated given the paucity of data. Would it be better to establish some form of equalisation reserves? What will happen under Solvency II, where reserves are required to be best estimate plus a risk margin?

5.3.3 Pricing does not really allow for catastrophe exposure. Making allowance for these will raise premium levels, but the data does not really exist to justify this? Are the issues better approached by making changes to the policies written to reduce the uncertainty rather than trying to find the correct price?

5.3.4 What will the implications of Solvency II be given the huge uncertainty around these events. At present, they appear to be being largely ignored.

Under QIS 4 there were two possible approaches to estimating catastrophe provisions. These were (with no credit for reinsurance):

Method 1 – a proportion of premium was taken to calculate a catastrophe loading. A factor of 15% was applied to casualty premiums, compared to 50% for marine business, and 75% for property business. Only motor, legal expenses and assistance insurance attract lower loadings. Higher percentages apply to non proportional reinsurance, but even so the factor applied to casualty business is one third of that used for Marine and Property.

Method 3 – the insurers own catastrophe loading.

So it seems that regulators do not view the issue as particularly serious, despite the AM Best's assertion that 70% of insurer failures are caused by casualty business.