Swiss Re

# Understanding and Quantifying Systemic Risk in Casualty Reserves

## An Underwriter's perspective

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# Agenda

1. Casualty Accumulation Risk
2. Capacity Measures for Casualty
3. Example: Building a Scenario
4. Pricing for Accumulation Risk

# Insurance portfolios are exposed to four forms of accumulation risk:

## Classic Clash:

A variety of claims that follow a sudden event or occurrence, such as general liability, employer's liability and professional indemnity claims arising from a building collapse.

- Deepwater Horizon
- Fire in Mont Blanc tunnel

## Serial Aggregation:

A defect in the design or manufacture of a product that triggers multiple losses which are all linked to the initial defect.

- Asbestos
- BPA

## Business Disaster:

Multiple losses occurring as a result of a single failure or the disclosure of incorrect/misleading advice/information

- Bankruptcy of Enron
- Madoff Ponzi scheme

## Systemic Failure:

A repeatable process/procedure or industry/business practice resulting in a series of losses.

- Pension "mis-selling"
- Sub-prime

## External Events:

An external development, which influences frequency and/or severity of various claims (e.g. change in law, life expectancy, inflation)

# Capacity measure for Casualty

## What makes accumulation a threat to (re-)insurance?

Should a large liability catastrophe arise, the following threats are considered to be the main dangers for (re-)insurance companies.

| Threat | Impact on |
|---|---|
| **Large reserve increase** | Capital, Rating, Profit |
| **Continuous reserve increases** | Rating, Capital, Long-term earnings, Reputation, Profit |
| **Large immediate payment** | Liquidity |
| **Headline loss, loss after which no hard market follows** | Rating, Reputation |

**Note:** All dangers may be exacerbated in case of correlation with other business, e.g. L&H and Asset Management. Correlations can be calculated if risk drivers / scenarios are shared between Casualty and other business.

# Capacity measure for Casualty
## How could we measure accumulation?

**Framework for accumulation metrics**

Use one of each of the following operations to define the metric on any portfolio:

- Aggregate the cash-flows (pay-out and reserve movements) per Financial Year (FY), Underwriting Year (UWY) or any other meaningful criteria.
- Apply a function (e.g. expected value, shortfall, max ...) to the aggregated cash flows
- Apply a discrete operation on the resulting time series (e.g. maximum, next year, sum, discounted sum, stabilized sum)

➢ Differences can be around the observed period and the risk measure used.

➢ What is the one-year economic impact for accumulation scenarios with latent exposures?

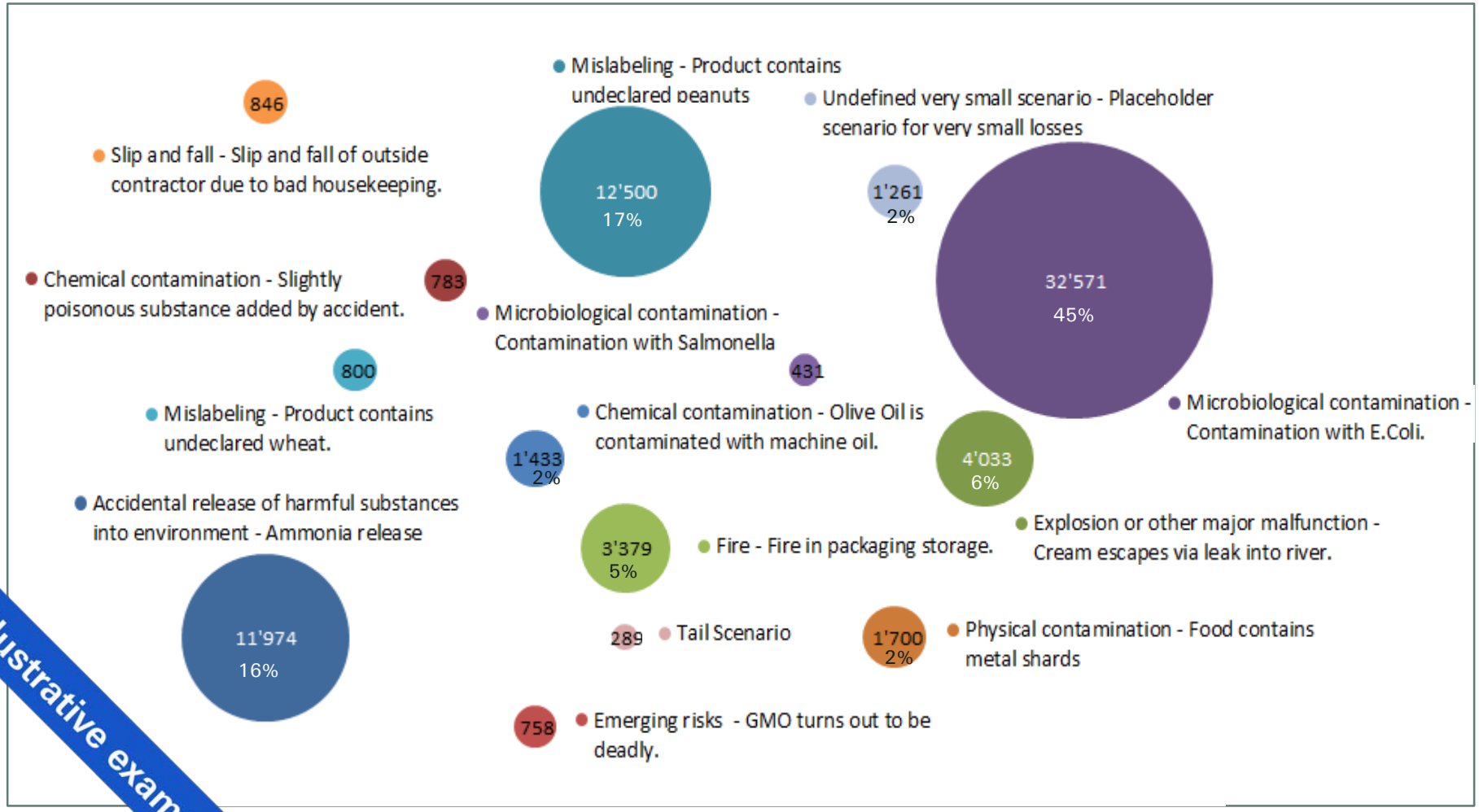
# Example: Building a Scenario

## Wrongful professional advice – description

| | |
|---|---|
| Scenario description | Many professionals give misleading or wrongful advice to a large number of clients, be it intentional or not. The individual advices are systematic, i.e. can be linked by a common cause or are revealed at the same time. |
| Scenario background | In today's complex and interlinked world it is nearly impossible for individuals to understand all details of all the agreements they enter into (e.g. insurance contracts, investments contracts, etc.). The numbers of professional and/or financial advisors is steadily increasing. Even if the underlying cause of an event is fraud (e.g. Madoff), the advisors can be held liable as they "should have known/seen" the fraud. After all, individuals seek advice from professionals because of their superior knowledge. |
| Affected lines | • PI cover of financial advisors and accountants<br>• D&O covers of large financial institutions |
| Examples | • **UK pension industry** (2007-2013): Insureds got advice to change to a product that put them at a disadvantage: people with private pension should have given a higher annuity if they had a reduced life expectancy when getting retired. However such higher pension was not automatically granted in most cases.<br>• **Madoff** (2008): About 120 class actions have been filed mainly on behalf of investors who invested indirectly into the fund.<br>• **Flood Australia under-insurance** (2011): A Nat Cat event triggered claims against a large number of agents for selling products implying underinsurance. |

# Pricing for Accumulation Risk

## Loss scenarios are at the basis of a forward looking model…




Illustrative example

# Pricing for Accumulation Risk

## ... and are quantified based on Liability Risk Drivers™






... Limit Deductible

| Type of Products | Size of Company | Exports | Cultural background | Legal system | Cost of living | ... | Insurance conditions |
|---|---|---|---|---|---|---|---|
| Activities? What is produced? | How big is the company? | Geographic spread of products? | Likelihood that people sue? | Mass litigation? | What do courts award for bodily injuries? | ... | What proportion of the loss is insured? |

**Liability Risk Drivers Model**

**Expected Annual Loss**

➔ **Understanding what drives risk in Liability is key to adapt to change**

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