Casualty Risk Accumulation
A Forward-looking Approach to Quantification

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Swiss Re

About the speaker

- **Salomon Billeter**
- Casualty Model Development
- Built up Swiss Re’s forward-looking modeling capabilities including Liability Risk Drivers™

- **Christian Wirtz**
- P&C Re Portfolio Management
- Ten years with Swiss Re in P&C portfolio management, casualty treaty underwriting and actuarial pricing

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- **Swiss Re**
- Leading provider of reinsurance and insurance. Net Premiums of $33.7B (2017).
- Our vision: We make the world more resilient. Together, we apply fresh perspectives, knowledge and capital to anticipate and manage risk.
- Swiss Re is a knowledge company. We apply knowledge to help clients better understand, quantify and transfer accumulation exposure at portfolio level.

Agenda

- Forms of accumulation risk
- Swiss Re Liability Risk Drivers™
- Modeling casualty accumulation risk
- Application to reinsurance solutions

Insurance portfolios are exposed to multiple forms of accumulation risk

Classic Clash:

A variety of claims that follow a sudden event or occurrence, impacting multiple insured's, policies or coverages.

E.g. Lac-Mégantic rail disaster

Business Disaster:

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

E.g. Enron bankruptcy

Serial Aggregation:

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

E.g. bodily injury caused by substance Bisphenol A

Systemic Failure:

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

E.g. mis-selling of financial products

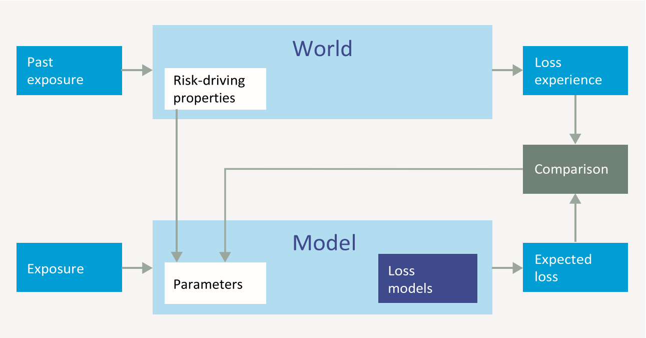
External Events:

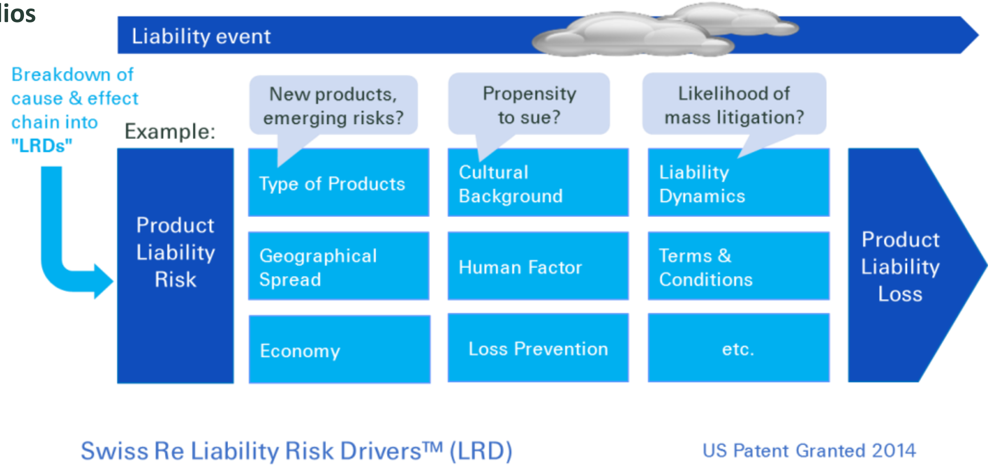
An external development, which influences frequency and/or severity of various claims (e.g. change in law, life expectancy, inflation).

Swiss Re Liability Risk Drivers®: A structured approach to FLM

Risk of Change

- ❑ **Anticipate impact of changes** adequately and consistently
- ❑ Enter **new markets** and **segments**
- ❑ Understand sensitivity of losses to key factors to **manage portfolios**





Towards a comprehensive model for systemic and idiosyncratic risk alike

BERLIN 2018

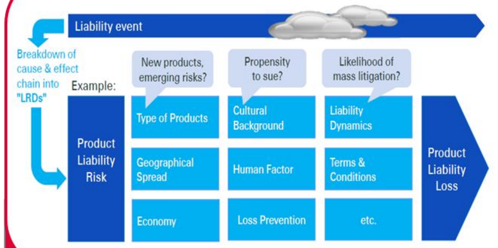
Risk of Change

- **Anticipate impact of changes** adequately and consistently
- Enter **new markets** and **segments**
- Understand sensitivity of losses to key factors to **manage portfolios**

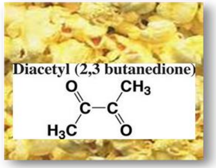
Casualty Accumulation

- **Identify liability catastrophes** early on in order to **understand impact** on market, clients' and own portfolios, to **manage** risk accumulation and to **steer** risk appetite

Liability cat events



"Classic Clash"



"Serial aggregation"
"Latency of effect"

"Interconnectedness of companies and industries"

Liability cat events

External events
"Across-the-board impact"

Economic

Biometrics

Legal

LRD – a common framework based on scenarios and risk factors

Modeling the diversity of casualty risk accumulation

Picture of LRD to illustrate, will be replaced after patent submission

Moving away from «all risk covers» requires deep understanding, but opens opportunities to better leverage capital allocated to Casualty

Catastrophic Event

Named Perils & Substances

Major Events

Systemic Risk

Conclusion

- New models enable better understanding and quantification of portfolio exposure to casualty catastrophes
  - Past losses are not sufficient (only as back test)
  - Reflect structure of underlying loss-generating process in the model

- New risk transfer products are needed for effective management
  - From all risks to understood defined peak risks
  - After removal of peak risks, general purpose solutions

Legal Notice

Thank you very much for your attention!

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