



Institute
and Faculty
of Actuaries

Evolving risks in a 'New Normal' Era: Catastrophe, Cyber Risk and New Unknown in Asia

X.Sherwin Li, FCAA, FIA, FCAS, Appointed Actuary of China Re P&C

Yifan Fu, FCAS, FIAA, Head of Analytics of Aon

Chiew Yee Ng, FIA, Actuarial Manager of KPMG



Chengdu IFoA Asia Conference 2019
9-10 May, Chengdu, China



Institute
and Faculty
of Actuaries

CONTENTS

Catastrophe Risk and Modelling

Cyber Risk

New Unknown Risks





Institute
and Faculty
of Actuaries

CONTENTS

Catastrophe Risk and Modelling

Cyber Risk

New Unknown Risks



2017年史无前例的气象灾害损失

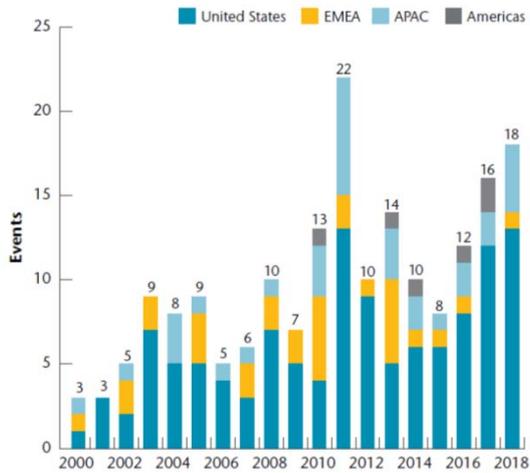
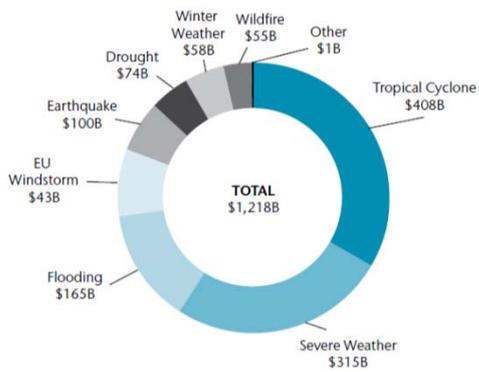


Source: Aon



Institute
and Faculty
of Actuaries

2000年以后全球巨灾损失



Source: Aon

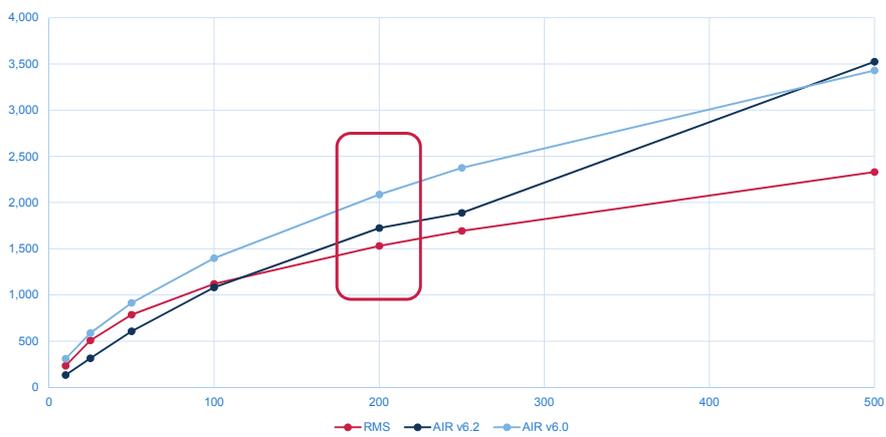


03 May 2019

5

巨灾模型的结论 (常规模型)

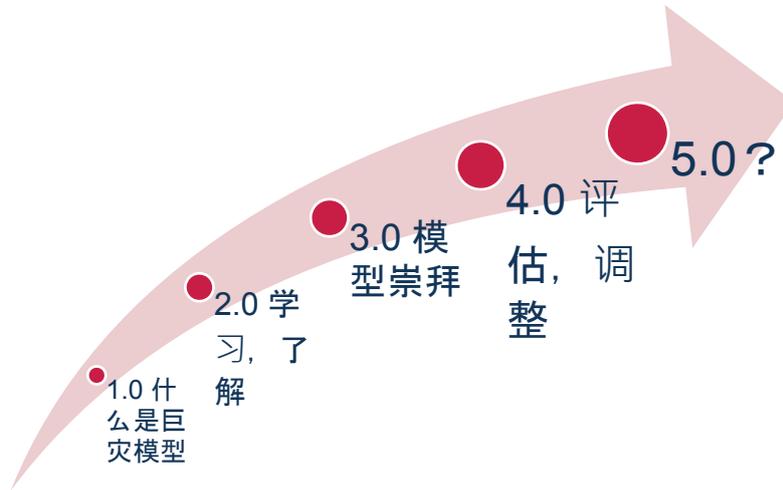
抽样数据 - 模型结果的差距 (中国台风2019)



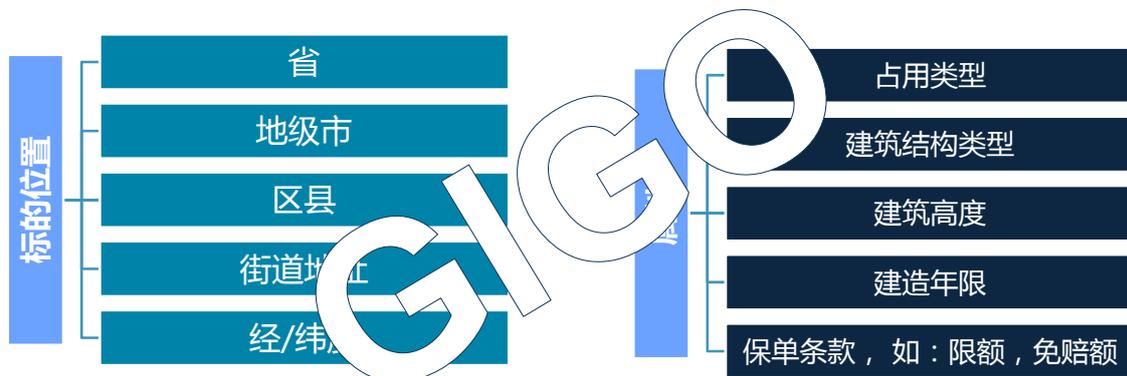
03 May 2019

6

对巨灾模型的接受阶段

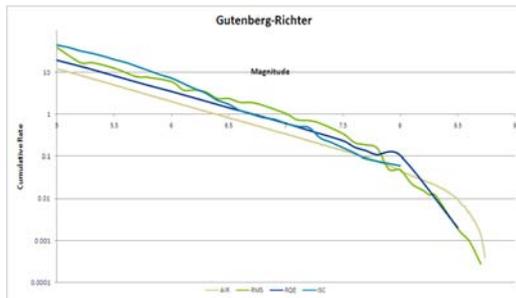


模型结果差异的因素 - 数据



模型结果差异的因素 – 模型方法, 参数, 曲线, 假设

- 模型方法和背后的研究
- 参数, 曲线, 假设



03 May 2019

9

次生灾害 – 2011年日本东部地震

地震 →

核电危机

图片来源: Digitalglobe

火灾

图片来源: Alertnet

洪水

图片来源: earthquakejapan2011

土壤液化

Source: earthquakejapan2011

山崩

图片来源: earthquakejapan2011

海啸

图片来源: earthquakejapan2011



03 May 2019

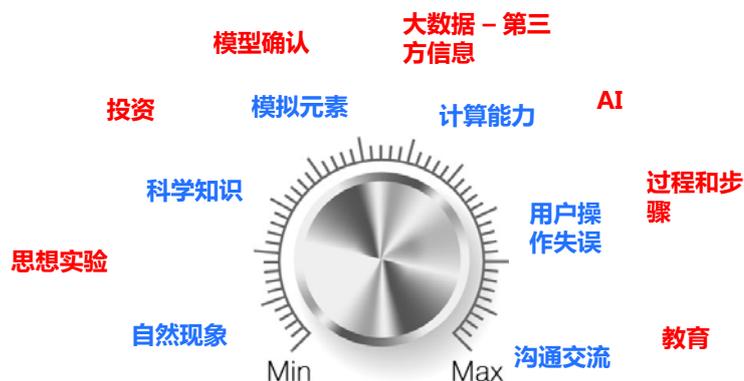
10

模型误差

- 模型误差是模型得出的损失结果和事件的真实损失的不同
- 模型误差是一种不确定性，并不是仅仅是估计不足
- 有很多原因造成了模型误差



未来 – 回到控制





Institute
and Faculty
of Actuaries

CONTENTS

Catastrophe Risk and Modelling

Cyber Risk

New Unknown Risks



Institute
and Faculty
of Actuaries

Cyber Risk

Updates from our Legal-Underwriting-Actuarial panel discussion
in Oct 2018 (Hong Kong)

IFoA General Insurance Asia Working Party





The insured losses from NotPetya are estimated at

PCS Global Cyber Industry Loss Index estimate as at September 2018

'Silent' losses from NotPetya attacks are still developing, two years on

- Most affected companies did not have standalone cyber cover. Those that did largely exhausted their cyber policy limits
- Largest silent losses for NotPetya are from Property policies.
- Key issues / disputes in two notable cases:
 - Validity of war exclusions (ongoing litigation as at Q1 2019)
 - Coverage of business interruption losses where there is no physical damage



Will this drive market action in reviewing P&C policy wordings, pricing for and/ or excluding silent cover?

- What can we learn from Y2K?



Why don't many (Asian) companies buy cyber insurance? Some common themes

- Lack of clarity of coverage
 - I'm covered under my other policies (I think)
- Standalone cyber policies do not meet business needs
 - Reputational damage is not insurable
 - Coverage limits for cyber policies are too low
 - Will insurers pay out? Negative media coverage
 - Every insurer has a different product and wordings..
- Relatively lower liability for data breaches

In Asia, cyber premiums were **~USD 200m*** in 2016, driven by cyber liability in Japan and Korea

Source: Japan External Trade Organisation, Axco
*The latest year for which comprehensive data is available. Inclusive of projected USD 34m growth from introduction of compulsory cyber liability in Korea

03 May 2019

17

Notable recent developments

Lack of clarity of coverage

2019: Allianz begins to update and clarify corporate policy wordings globally – reducing uncertainty around which cyber risks are covered under traditional policies

Source: Allianz Global Corporate and Specialty

Relatively lower liability for data breaches

Standalone cyber policies don't meet customer needs

Q4 2018: Singapore launches first commercial cyber risk pool

Source: MAS

Q1 2019: Mactavish report on 8 common limitations in cyber insurance coverage generates discussion in the UK market

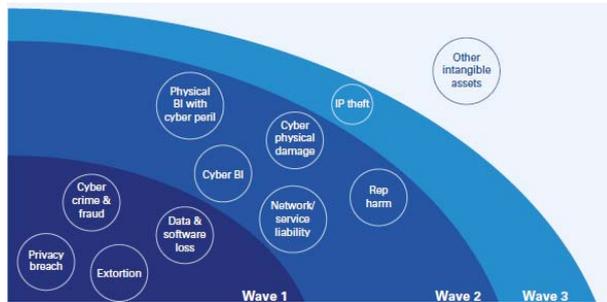
Source: various media

03 May 2019

18

What can the industry do?

1. Broadening of standalone cyber coverage and focusing on value-adds e.g. incident response and prevention



Source: KPMG, *Embracing the cyber insurance opportunity*

03 May 2019

19

What can the industry do?

2. Development of an event definition to support Cat XOL reinsurance coverage.

2019 renewals: There are indications of the global cyber reinsurance market maturing with a shift towards more XOL coverage.

Source: *The Insurer*, interview with *Envelop Risk*

In Asia the focus remains largely on quota shares

3. New methods of distribution e.g. partnerships with cybersecurity firms

03 May 2019

20

Applying an actuarial lens to cyber perils

- **Longer-tailed, but:**
 - Cyber claims (standalone and silent) can be complex to settle, and there may be a lag in discovering incidents.
 - But current low take-up rates and limits mean that in a major incident, standalone cyber insured limits are routinely exhausted and claims are effectively short-tailed (for now).
- **Limited historical claims data, therefore:**
 - A strong understanding of these areas are key:
 - Types of triggers (cyber security incident, data breach, errors etc.)
 - Coverage features and coverage periods
 - How expert incident response panels help to limit loss costs.
- **Aggregation between lines**
 - Understand areas where cyber perils potentially overlap with other P&C lines such as general liability, property, crime/fidelity, D&O, PI, terrorism, kidnap and ransom.

Figure 4.1 in this paper for example. <https://www.oecd.org/daff/fin/insurance/Enhancing-the-Role-of-Insurance-in-Cyber-Risk-Management.pdf>

03 May 2019

21



Institute
and Faculty
of Actuaries

CONTENTS

Catastrophe Risk and Modelling

Cyber Risk

New Unknown Risks



Institute
and Faculty
of Actuaries

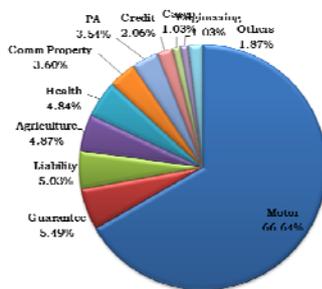
New Unknown Risks in the Emerging Markets

Guarantee Insurance, Agricultural Insurance and Liability Insurance



The Rapid Growth of Guarantee Insurance

Structure of LOB in 2018



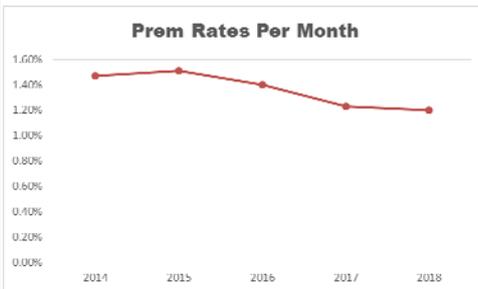
Guarantee insurance grew very rapidly during the past years in China GI market:

- Its growth rate was over 70% in 2018.
- It became the 2nd largest line in 2018, with its share increasing to 5.5% from 3.6% in 2017.
- Financing guarantee insurance accounts for a significant share of the business, including personal/business loan guarantee insurance.



Institute
and Faculty
of Actuaries

Premium Risk of Guarantee Insurance



The average premium rates of personal loan guarantee insurance were declining during the past years:

- More competition in the market.
- The trend of declining slowed down due to some “black swan” events.

“Black Swans” of Guarantee Insurance

There were several “black swan” event occurring in the field of guarantee insurance:

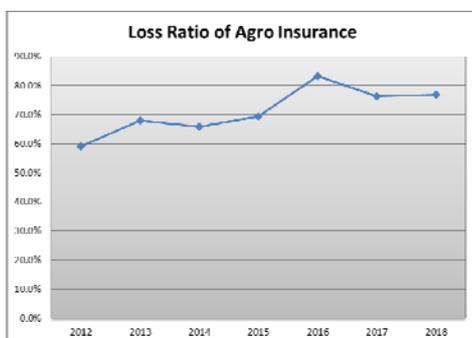
Corporate Bonds of Qiao-Xing

- This “black swan” appeared in 2016.
- It brought about a potential claim with the amount around CNY 1 billion.
- It rang the alarm bell to insurers as to the risk of corporate bond insurance but not to personal loan guarantee insurance.

Risk Explosion of P2P Platform

- The product of personal loan guarantee insurance became popular since 2015.
- Many insurers thought it was a very profitable business in 2016 and 2017, until an insurer suffered a huge loss in 2018.
- Risk exploded in a P2P platform and the estimated loss of an insurer was over CNY 4.4 billion, 2 billion paid plus over 2 billion potential outstanding.

Risks of Agricultural Insurance



The volume of agricultural insurance kept stable growth during the past years:

- It was the 2nd largest line in China GI market before 2018 and the 4th largest with a growth rate of nearly 20% in 2018.
- The overall average premium rates showed a downward trend, however.
- The overall loss ratios were rising during the past years.



Institute
and Faculty
of Actuaries

03 May 2019

27

Risks in Current Agricultural Insurance

Natural Hazard / Catastrophe

- Agricultural insurance is much like property insurance, affected seriously by natural hazard and catastrophe.
- The change of global environment is a kind of systematic risk facing agricultural insurance.

Index-based Agricultural Insurance Products

- Indices include weather indices and price indices.
- Price indices involves financial risk as well as systematic risk.



Institute
and Faculty
of Actuaries

03 May 2019

28

Risks in Emerging Liability Insurance Products



The premium volume of liability insurance kept rapid growth during the past ten years:

- It was the 3rd largest line in China GI market, with a growth rate of over 30%, in 2018.
- The traditional liability insurance products such as employers' liability, public liability, carriers' liability all kept a rapid growth.
- As well, some new liability insurance products grew even much faster.

Risks in Emerging Liability Insurance Products

Several new liability insurance products have ever been popular during the past decade:

Carriers' Liability Insurance

- With the legal requirement of some laws, carriers' liability insurance went through a period of rapid development during the past decade.
- It grew up from a new baby sub-line to the 2nd largest liability sub-line ever (3rd largest in 2018).
- As the "should-be-insured" were insured, however, the growth rate of carriers' liability decreased from over 10% even over 20% to round 4%.
- The overall loss ratio of carriers' liability insurance in China is around 45%.

D&O Liability Insurance

- It was ever a very hot topic several years ago.
- However, it did not grow up, in comparison with carriers' liability.

Risks in Emerging Liability Insurance Products

Liability Insurance for Attachment of Property in Litigation

- It is a very new liability insurance product in recent years.
- The overall premium rates are declining quickly during the past years.
- However, its average loss per claim shows an obvious upward trend.

Environmental Liability Insurance

- It might be a product taking the ride of new legal requirement.
- However, its risk is much different from carriers' liability insurance.



Institute
and Faculty
of Actuaries

Summary

The Growth Opportunities in Emerging Markets

- In emerging markets, there are really some opportunities for the growth of insurance business.
- The growth rates of certain lines of business are fast.

The Potential Risks within the Opportunities

- Facing the growth opportunities, however, insurers must pay close attention to the potential risks.
- The risks ever known by us are changing so quickly, out of our expectation.
- The risks unknown by us yet often give us some shocks.



Institute
and Faculty
of Actuaries



Questions



Comments

Expressions of individual views by members of the Institute and Faculty of Actuaries and its staff are encouraged.

The views expressed in this presentation are those of the presenter.

