

The Latest Changes in the Chinese P & C Insurance Market (I)

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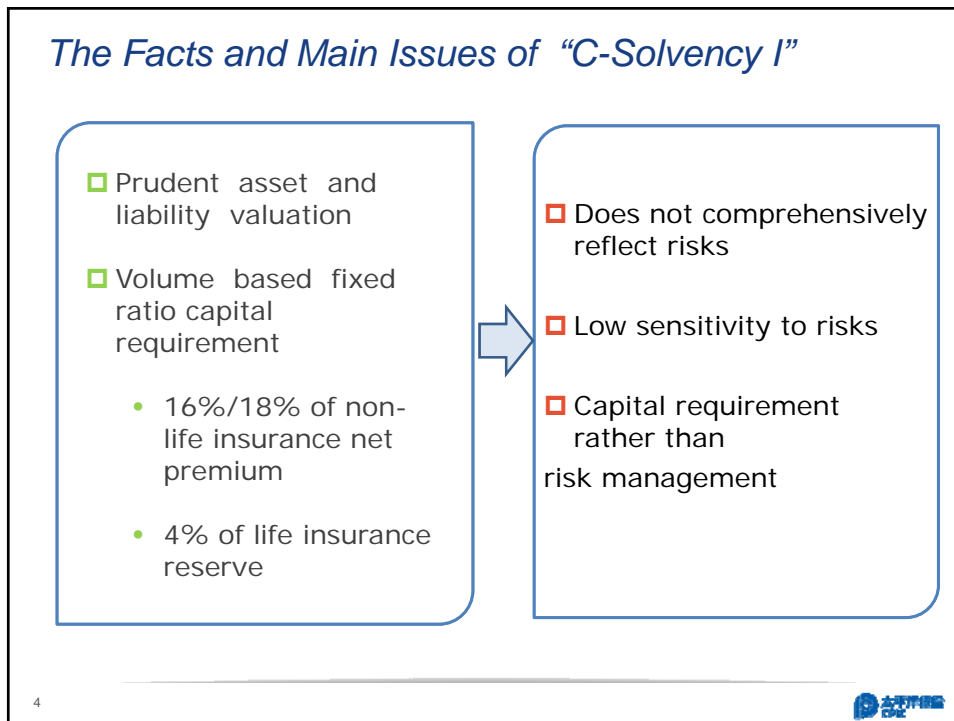
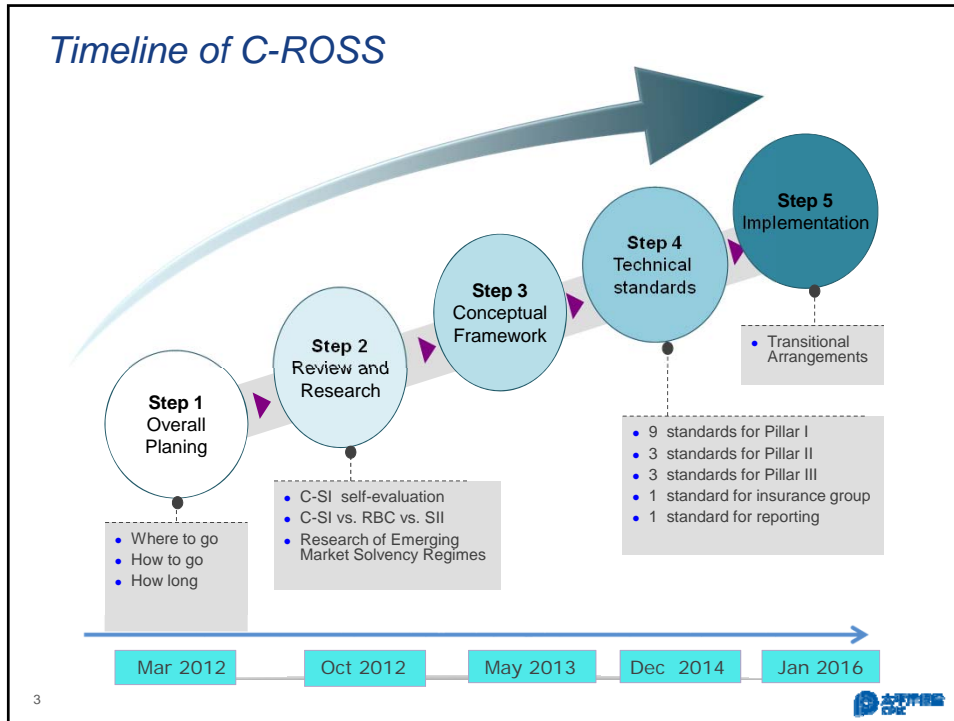
May 16, 2016

Seattle, WA



Contents

- **C-ROSS: China Risk Oriented Solvency System**
- **Cat Risk: Cat Bond & GSPCI**
- **Agriculture Insurance: Index Products**



Principles of C-ROSS

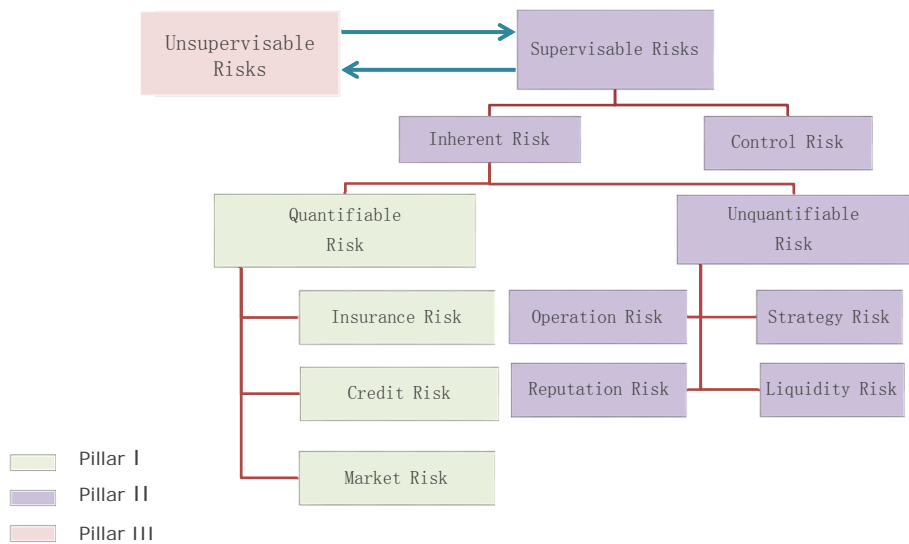
Core Principles

- Risk oriented
- Characteristics of China's market
- Internationally comparable

5

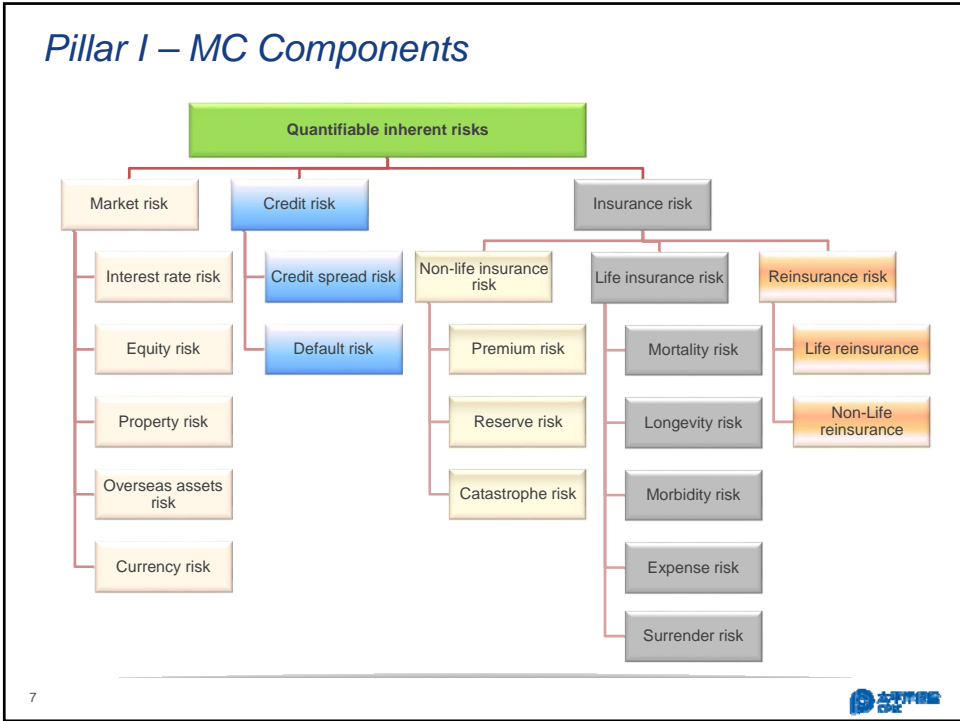


Risk Stratification



6





Pillar I - MC Calculations

Based on
China's
industry data

Fit
probability
distribution

Calibrate at
99.5%
percentile

Standard
formula to
calculate MC

➤ **Composite factor based method:**

MC = EX × RF

which: EX is the risk exposure;

RF is the risk factor; RF = RF₀ × (1 + K)

RF₀ is the base risk factor, K is the characteristic factor


$$K = \sum_{i=1}^n k_i = k_1 + k_2 + k_3 + \dots + k_n$$

K_i is the characteristic factor based on specific risk or entity, n is the number of characteristic factors

➤ **Scenario based method:**

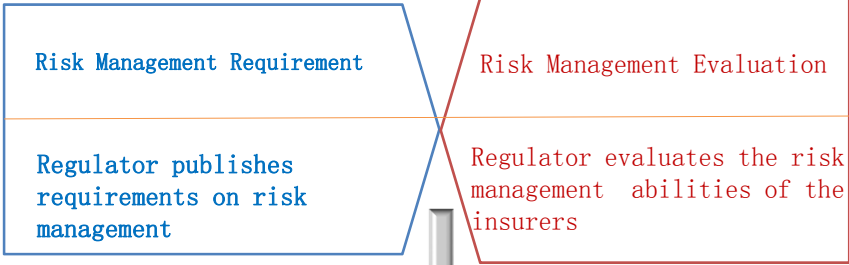
Used to calculate one year VaR;

Applied on catastrophe risk for non-life, interest rate risk and insurance risk for life insurers

8 

Pillar II – Solvency Aligned Risk Management Requirement and Assessment (SARMRA)

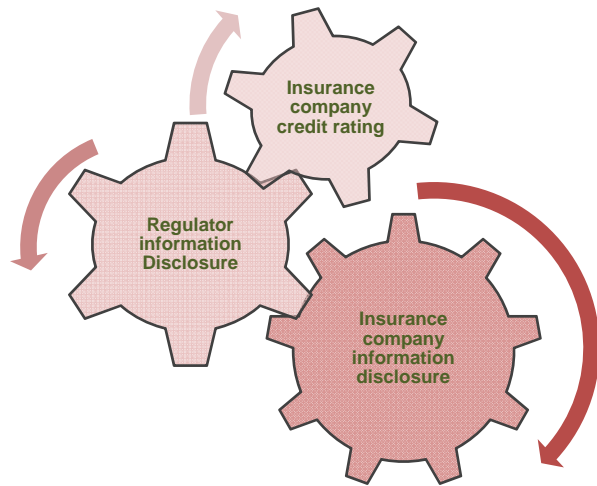
Risk Management Requirement and Regulatory Assessment



The result of evaluation will feed into the MC control risk:
 $MC_{\text{control risk}} = Q \times MC_{\text{quantifiable inherent risks}}$
 $Q = -0.005 \times S + 0.4$
S is the scores achieved by the insurance company under SARMRA



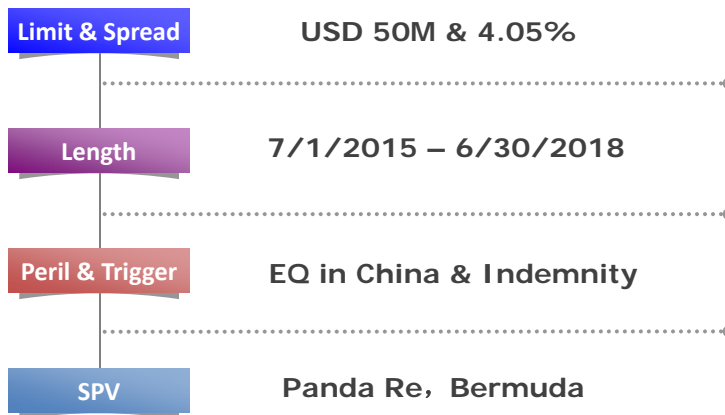
Pillar III – Market Discipline



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- Agriculture Insurance: Index Products

First Cat Bond Issued: Sponsored by China Re



Government Sponsored Public Cat Insurance

City of Shenzhen: Nat Cat Insurance Coverage for the General Public

- **Background** : As the policyholder, the Government of Shenzhen wants to protect all the people, including 12-million residents and tourists, and 3.74-million homes in the city when natural disasters happen by using the government sponsored public insurance program.
- **Perils** : Rainstorm, thunder, flood, tornado, hurricane, tsunami, mudslide, hail, earthquake(>Richter Scale 4.5), and nuclear accident.
- **Coverage** :
 1. BI: \$300m per event, \$20,000 per person per event;
 2. PD: \$30m per event, \$3,000 per home per event;
- **Premiums in 2015**: \$6m

13



Government Sponsored Public Cat Insurance

City of Dali: EQ Index Insurance Coverage for the Farmers

- ☉ **Background**: The county government of Dali wants to protect the 824,300 farmers from earthquake damages by purchasing insurance programs triggered by the index of the Richter magnitude scale .
- ☉ **Perils**: Earthquakes greater than 5 Richter scale within Dali county or surrounding regions.
- ☉ **Coverage**: \$70m limit per year for property damages. \$15m limit per year for injuries. \$20,000 limit per person per year for injuries.
- ☉ **EQ Index**: 5-5.5 /8% of lim, 5.5-5.9/12% of lim, 6-6.4/25% of lim, 6.5-6.9/50% of lim, equal to or greater than 7/100% of lim
- ☉ **Premiums**: \$6m per year

14



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Agriculture Insurance: Index Products

Beijing Municipality: Hog Price Index Insurance Coverage

- **Background:** Aims to protect farmers from risk of price fluctuation when hog price decrease or feed (corn) price increase, by enrolling in insurance program triggered by hog and feed price ratio(HFPR).
 - **Perils:** Monthly average HFPR, released by central government, less than 6:1
 - **Coverage:** ¥ 600, ¥ 800, ¥ 1000, ¥ 1200 per hog (optional)
 - **Payment (per month)** = Sum insured per hog × quantity of hog production per month × (1- current HFPR / standard HFPR[6:1]) × compensation ratio
- | HFPR | ≥6.0 | [5.5,6.0) | [5.0,5.5) | <5.0 |
|--------------------|------|-----------|-----------|------|
| Compensation Ratio | 0 | 60% | 80% | 100% |
- **Hog and Feed Price Ratio** = Hog Price / Corn Price
 - **Premium Rate:** 5% × Sum insured per hog × annual quantity of hog production

Agriculture Insurance: Index Products

Guangxi: Sugarcane Price Index Insurance Coverage

☞ **Background:** Aims to protect sugarcane farmers and sugar mills from risk of sugar price fluctuation, by enrolling in insurance program triggered by sugar price.

☞ **Perils:** Annual average sugar price of Guangxi

☞ **Coverage:**

Sugarcane Farmers		Sugar Mills	
Avg. Sugar Price (RMB Yuan/ton)	Payment (RMB Yuan/mu)	Avg. Sugar Price (RMB Yuan/ton)	Payment (RMB Yuan/mu)
< 5500	18	[5300, 5400)	30
[5500, 5600)	30	[5200, 5300)	60
[5600, 5700)	60	[5100, 5200)	90
> 5700	90	<5100	

☞ **Premium:** ¥ 180 per mu sugarcane (1mu=666.7m²)

☞ **Hedging:** Through futures and options market

When sugar price decreases
¥ 100/ton, payment increases
¥ 30/mu, no limit

17

