DISASTER RISK MANAGEMENT IN JAPAN

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Powerpoint presentation
Disaster Risk Management Policy in Japan

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......IN JAPAN

*All the $ amounts shown in this presentation are approximately calculated by rate of $1=110 Japanese yen for understanding.
Frequent EQs in Japan

*USGS Earthquake Hazard Program: Epicenters of EQs in 1998

- Shallow (0-70 km)
- Intermediate (71-300 km)
- Deep (301-700 km)
CAT History in Japan (EQ)

- Great Hanshin-Awaji EQ (Jan. 1995)  
  $2.9Bil of property damages
- Great Kanto EQ (Sep. 1923)  
  *143,000 people were missed and 575,000 houses were collapsed or burnt
  
  If the same EQ happens now, it may cause $4.5 Bil of property damages to insurance companies.
- Future Tokai EQ may cause maximum $5.6Bil of property damages. (GIA Japan)  
  *Additionally Governmental $10.7Bil
Governmental EQ Scheme for Household sector

- Direct Insurers
- EQ Re Japan
- Government

Policyholder A
Policyholder B
Policyholder C

All Ceded
Retro Ceded
Retention

*Some portion ceded back to directs
Governmental EQ Scheme for Household sector

Private Insurance Co.s and Government

<table>
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<th></th>
<th>0</th>
<th>$0.7Bil</th>
<th>$10Bil</th>
<th>$41Bil</th>
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<tr>
<td>Private Insurance Companies</td>
<td>50%</td>
<td>50%</td>
<td>$6.8Bil</td>
<td></td>
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<tr>
<td>Government Retention</td>
<td></td>
<td></td>
<td></td>
<td>$34.1Bil</td>
</tr>
<tr>
<td>Maximum</td>
<td></td>
<td></td>
<td></td>
<td>95%</td>
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5%
Some commercial corporations have used ART such as CAT Bond since 1998 but recently new risk management methods emerged. Commitment Line is the contract with financial institutes such as banks, which allow the corporation to borrow money as soon as any catastrophe such as EQ happens.
Contingent Debit Facility

- Also called as Contingent Capital.
- August 2004, Tomoegawa Paper Co. introduced Commitment Line.
- November 5th 2004, Tomoegawa introduced CDF with an insurer, a regional bank and a governmental bank as “loan arrangers” and a security company as “planner”.
Scheme of CDF

- First, Loan Arrangers establish a SPV and pool $33Mil in it.
- OYORMS assessed the EQ risks for their two paper factories.
- Tomoeagawa needs to pay annual fee but doesn’t need to hold too much cash in the company for large EQ.
- If any large EQ happens, the corporation can borrow $33Mil without any collateral required.
CAT History in Japan (Typhoon)

- No.19 Mireille (Sep. 1991)
  $7.5Bil of property damages
- Typhoon Ise-Wan (Sep. 1959)
  5,000 people missed, 834,000 houses
  damaged, 364,000 submerged.

*If the same typhoon happens again now, it might cause $10Bil of property damages.
CAT Swap (Derivative)

- August 2003, Mitsui-Sumitomo Insurance (Japan) & Swiss Re directly (not through subsidiary reinsurance company) swapped their risks between $100 Mil of Windstorm + Flood in Japan and $100 Mil of Windstorm in U.S. & EU by zero cost.

- Japanese insurance companies tend to underwrite concentrating in the risks actually located in Japan.
CAT Risk in RBC Formula

- **Solvency Margin Ratio**
  (Non-life Insurance)
  \[
  \text{Solvency Margin} = \frac{1}{2} \times \left( \sqrt{A^2 + (B + C)^2} + D + E \right)
  \]

- **A** = Ordinary Insurance Risks
- **B** = Assumed Interest Rate Risks
- **C** = Asset Management Risks
  *C includes credit risks for reinsurance:
  (The amount of reserve allowance due to reinsurance + reinsurance recoverable) x corresponding risk coefficient (1%)
- **D** = Catastrophe Risks
- **E** = Business Management Risks

\(\text{Ratio lower than 200\% will cause the warning by the FSA Japan}\)
CAT Risk in RBC Formula

- **Catastrophe Risks**
  - **Whichever is the higher**, the amount of damage caused by an EQ similar to the **Great Kanto EQ** in scale or a typhoon similar to **Typhoon Mireille** in 1991 in gravity shall be deemed to be the highest risk amount. (The law has changed in this May and “Ise-wan 1959” is going to be the new and higher benchmark from 2005.)
  - The total amount calculated according to the insured amounts (net of reinsurance coverage) and **PML** located in regions prone to EQs, windstorm and flood and covered under...
  - **Fire** *excluding homeowners’ earthquake insurance but each company’s share of liability under homeowners’ EQ is included, personal accident, automobile, hull, marine cargo and other insurance* *excluding compulsory automobile liability*
CAT Risk in RBC Formula

- Based on each insurer’s PML and risk portfolio of main lines of business
- Other kinds of risks (A, B, C and E) could happen at the same time
- No rule or standard to calculate PML
- Is reinsurance credit risk enough?
- Are Typhoon Ise-wan and Great Kanto EQ really the worst scenarios?
- RBC supplements reserve system
Provisions Sufficiency

- In 2003, FSA Japan urged GIA to study about insufficiency of technical provisions concerning about CAT risks mainly because Japanese insurance companies have been underwriting 25-35 year terms of household fire insurances that cover floods, windstorms and small portion of expenses caused by fire following an EQ, since 1984.
Catastrophe Reserve Sufficiency

- Some portion of premiums should be reserved as “Liability“ in Japan.
  - “CAT happens once in 5, 10, 20...years”
- In 2004, GIA Japan came to the conclusion that each insurance company should reserve the appropriate amounts of CAT provisions considering each company’s risk portfolio & probability of risks.
Unearned Premiums Sufficiency

- Because of long-term fire insurances in Japan, even unearned premiums might not be enough, since the amount of CAT risks are increasing. (Global warming, Deforestation etc...)  
- If it’s not enough compared with the index such as “recent years’ loss ratio”, the company should increase its technical provisions.
Thank You

DOMO ARIGATO

NIPPONKOA Insurance Company, Ltd.