



## The development of Enterprise Risk Management in Japanese Insurance Industry

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### Abstract

We argue on the current status of Japanese Insurance ERM, Solvency framework and various technical issues to be solved in Japanese context which include mathematical or statistical modelling, calibration and corporate structure and culture.

First, we follow the history of risk management in Japanese insurance industry and solvency regulations. Japanese insurance companies have had a great challenge of risk management against the deterioration of financial strength after the collapse of financial bubble since 1990's. In particular, traditional life insurance companies have experienced negative interest gap for long under the ultra-low interest environment and developed specific ALM techniques and tools.

Second, Japan FSA has decided to develop the modernization of solvency regulation since around 2000 in accordance of global trend in insurance regulations. The first solvency regulation was introduced following US RBC framework in 1996. This regulation was revised in 2012 to aim at more strict and reasonable risk assessment. In the near future, Japan FSA is going further to introduce market-consistent insurance solvency regulation and ERM, ORSA. Japanese insurance industry is striving to develop its own risk management system and business structure.

We will explain current risk management practice followed by Japanese insurance companies and various problems in these activities, and a future prospect they are seeking for. In particular, we will investigate how different the risks inherent in Japanese insurance business which determine the nature of risk management are from those of other countries.

**Keywords:** Solvency regulation, ERM, market-consistent valuation, risk appetite framework

### 1. Introduction

Since regulation on solvency requirements have been formally positioned by the revised insurance business law in 1995, Japanese insurance industry began to tackle risk management issues in earnest. Until then, the Ministry of Finance regulated so strictly insurance companies as to maintain conservative liability provision and additional internal buffer and also as to provide with sufficiently high insurance premiums to keep a certain profit even for the weakest insurer, and this kind of insurance supervisory approach had been called a convoy-fleet approach. This approach have been totally changed by adoption of the government policy of deregulation in financial markets including the liberalization of insurance markets and premium rates.

In the early 90's, there were few attempts to introduce Insurance ALM in company management system, but after the turn of the century, many companies began to strive for building comprehensive risk management structure, both organizational and technical, which was pushed by the initiative of Financial Services Agency (FSA). Following the directional movement of International Insurance Regulations, FSA asked for insurance companies to adopt ORSA (Own Risk Self Assessment) and ERM (Enterprise Risk Management) which should be recognized by the Board of Directors. ERM covers not only technical risk management infrastructure, models or database etc. but also organizational issues, corporate governance, communications or culture. In the next decade from now on, Insurance ERM will be greatly reformed and advanced.

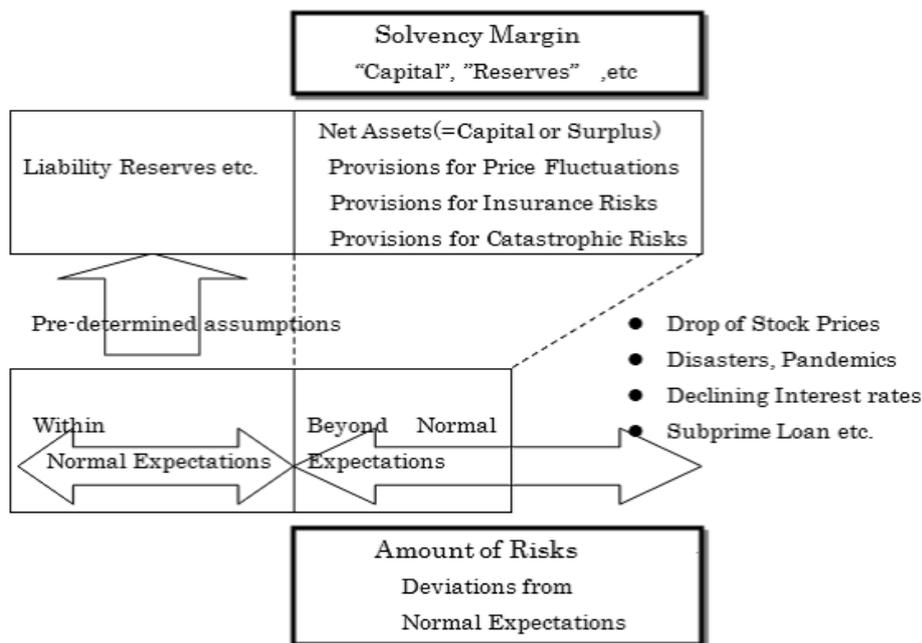
### 2. A brief history of solvency regulation in Japan

Soon after solvency regulation was formally stipulated in the revised Insurance Business Law in 1995, solvency margin ratios were publicly disclosed from the end of March, 1998. In the conceptual framework of solvency regulation, policy reserve will cover the *expected* losses which have been assumed in advance, but will not cover the *unexpected* losses caused by a large-scale disaster, or



extreme/abrupt aggravation of economic environment, etc. The insurer needs additional internal reserve to cover these losses, which are called as “solvency margin”. Solvency margins consist of "shareholder equity (capital)", “surplus”, or "fund reserved", etc. in the insurer’s balance-sheet. The appropriate level of required capital should be determined based on the amount of possible losses caused by inherent risks in the assets and the liabilities of an insurance company. This concept of solvency coincides with that of capital adequacy in Basel regulation on banking industry. Japanese solvency regulation classifies insurers’ risks into 4 broad categories, Insurance Risks, Assumed Interest Rate Risks, Investment Risks, and Operational Risks, following US Risk Based Capital Scheme. Risks are measured on the basis of VaR (Value at Risk) at a certain confidence level during a year. Various risks are aggregated to the total amount of the whole company risk in consideration of correlation between risks.

Figure 1. Solvency Margin and Amount of Risks (Source: Japan FSA)



Solvency margin ratios are calculated as the ratios of solvency margin against a half of risk amount.

$$\text{Solvency Margin Ratio} = \frac{\text{Solvency Margin}}{\frac{1}{2} \times \text{Risk Amount}} \times 100$$

An insurance company will be considered in sound condition if the solvency margin ratio is 200% or more. However, if the ratio falls below 200%, the supervisory authority shall take early remedial action on the basis of the provisions of the Insurance Business Law and its Enforcement Ordinance.

Table 1. Risk category and assessment (Source: Japan FSA)

Risk category	Case assumed	Amount measured
Insurance risks	Insurance claims payment is higher than normal expectations.	Certain level of insurance claims payment minus normally expected level



Assumed interest risks	Investment income earned is lower than originally assumed income.	Expected amount of the gap
Asset management risks		
Price fluctuation risks	Capital loss is higher than normal expectations.	Amount at risk with a 90% probability
Credit risks	Counterparty defaults.	Expected amount of loss (including that from credit derivatives)
Other risks for subsidiaries, derivative transaction, reinsurance and reinsurance recoverable		
Major catastrophe risks (general insurance only)	A natural disaster strikes.	Amount of damage caused by the largest earthquake or typhoon
Operational risks	Something not in the above categories happens.	2 or 3% of the total of the other risks

- Correlation of risks is taken account to some extent.

In the later 90's era of financial crisis when the bad debt problem of the bank sector occurred, 8 life-insurance and 2 property and casualty firms failed, but the solvency margin ratios of some failed companies had far exceeded a threshold of 200%.

Table 2. Solvency margin ratios of failed companies

Name of Company	Time of failure	Solvency margin ratio at failure
Nissan Life	April 25,1997	-
Toho Life	June 4,1999	154.3%
Dai-hyaku Life	May 31, 2000	304.6%
Taisho Life	August 28,2000	384.7%
Chiyoda Life	December 9,2000	396.1%
Kyoei Life	December 20,2000	343.2%
Tokyo Life	March 23,2001	478.7%
Daiwa Life	December 10,2008	555.4%
Dai-chi Fire	May 1,2000	330.0%
Taisei Fire	November 22,2001	1022.4%

There occurred an outburst of criticism for the then solvency regulation which led more reliable and tighter new regulation. The then regulation the amount of Risks had been calculated generally on the basis of 90% VaR during a year, have amended more rigorous one in 2012, where the risk were valued on the basis of the 95% VaR.

### 3. Solvency II and Enterprise Risk Management

But the story did not end. FSA also set forth a plan to introduce solvency regulation of the economic-value based solvency regulation which imitated the EU solvency II in the near future. As the 1st step, "Field test concerning inauguration of solvency regulation of economic-value based regulation" was executed in 2011.

Solvency II adopted 3 pillar approach similar to Basel banking regulation, which consists of not only capital adequacy standards, but also risk governance and disclosure, internal discipline, etc. Furthermore, the regulation requires the market-consistent of policy liabilities, which in Japan called "economic-value based valuation".

In Solvency II, the risks are classified into "Life", "Non-life", "Health", "Market", "Counterparty", "Intangible", and "Operational", and each of these “modules” contains finer “submodules”.



Figure 2. Solvency II Structure Diagram (Source: EU)

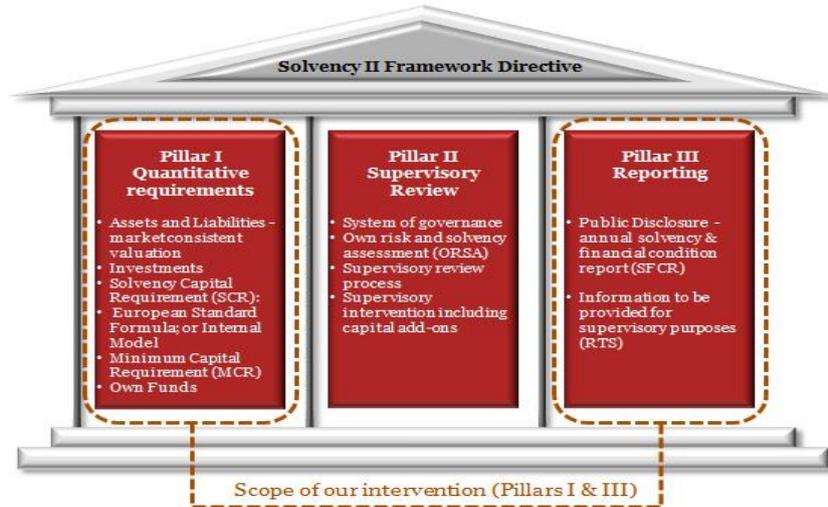
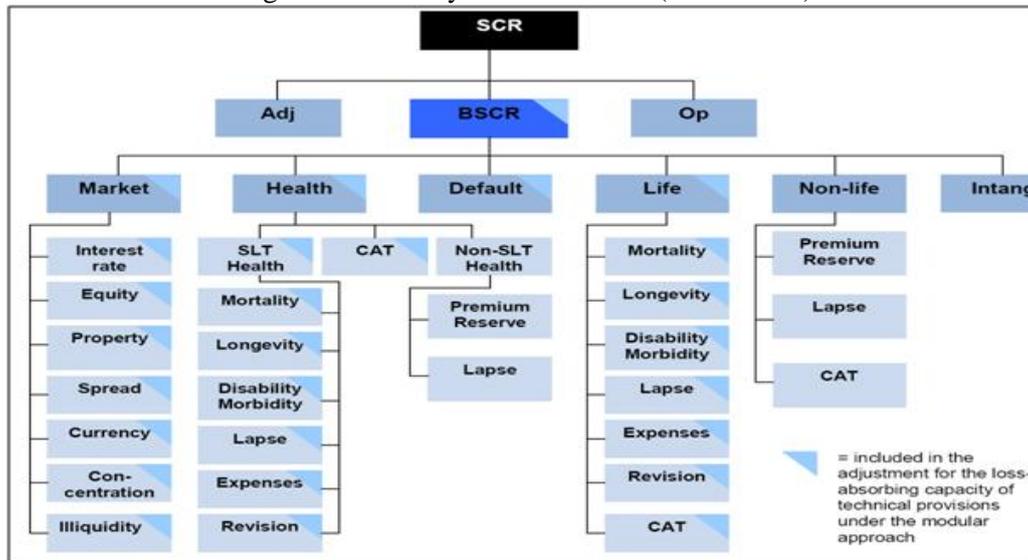


Figure 3. Solvency II Risk Module (Source: EU)



In Solvency II, insurers are allowed to use the internal models other than standard models, and in particular, advanced insurance companies or groups are welcome to develop their own original risk assessment models, and may be able to reduce the amount of risks rather than when they use standard models. Since there is such an incentive, it is expected for willing insurers competitively to develop state-of art risk management with each other.

**4. Concluding Remarks -ERM in Japanese context-**

FSA, which released and modified periodically “Administration Guideline” as part of administrative measures for insurance companies, added several items concerning "ERM" in the latest amendment. In it, the data which insurance providers, such as identification of Risk, a calibration, formulation of superintendence Direction, ORSA, and the account establishment, should carry out as ERM are described.

Moreover, FSA conducted special inquiries to all insurers about inauguration of ERM 4 times from 2011 to 2014. The result was published in the Accountability Report dated June 30, 2014. The report said that few advanced insurance companies have already implemented ERM framework such as construction of turning round PDCA Cycle, identifying risks, using economic capital models to allocate scarce resources to profitable business units, and evaluating its results, etc. Although major



non-life insurers (or groups) and foreign-affiliated life insurance company are progressing relatively, some large-scale life-insurance companies are also beginning to develop gradually.

Furthermore, FSA asked their affiliates such as the Institute of Actuaries of Japan, for comprehensive research on technical details of solvency assessment of insurance business, “economic-value based” valuation of insurance liabilities, and various aspects of ERM implementations.

In this way, the insurance industry of Japan was challenged by advancement of new risk management system, and by implementing ERM framework effectively. Especially, for recently-emerging insurance groups need ERM framework as indispensable infrastructure to conduct efficient global management.

To put ERM into effect, it is most important that top management should involve positively ERM issues in daily management, and argue risk management issues in regular meetings of the Board of Directors. It is desirable to put a special post of risk management, CRO (Chief Risk Officer) to manage all risk issues comprehensively.

Now the insurance industry of Japan is faced with aggregation of new risks while business performances have continued to be low under prolonged slack in business, and it becomes an important problem how to inaugurate good ERM in the industry.