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Financial Services Agency

Field Tests of Economic Value-Based Solvency Regime

—Summary of the Results—

In June through December 2010 the Financial Services Agency (FSA) conducted field tests of the economic value-based solvency regime, targeting all insurance companies. The summary of the test results is as follows:

1. Background to the Field Tests

(1) Economic value-based solvency regime

An economic value-based solvency regime is expected to contribute to the enhancement of risk management as it is a framework intended to appropriately recognize the financial conditions of insurance companies by consistently evaluating assets and liabilities based on economic value.

In recent years, discussions and studies have been conducted on a framework of risk management predicated on economic value-based evaluation at international organizations, including the IAIS (International Association of Insurance Supervisors). In Japan, the FSA proclaims in its "Annual Supervisory Policies for Insurance Companies etc." in 2009 that it "will consider the introduction of a solvency regime based on economic value, taking companies' practical conditions adequately into account." Through the examination of this matter, the FSA aims to ensure regulation/supervision with increased sensitivity to and awareness of risks.

(2) Implementation of the field tests

In light of the circumstances described in (1), Japan conducted the field tests, in which insurance companies calculated the economic value of insurance liabilities and other items on a trial basis, in order to comprehend how prepared individual insurance companies are for the introduction of the new solvency regime. Findings obtained in the tests, including practical issues and challenges that came to light during the process of calculation, will be taken into consideration in future examination for the introduction of an economic value-based solvency regime.

2. Content of the Field Tests

The specifics of the implementation of the field tests are as follows:

(1) Summary

Insurance companies were requested to calculate the amount of insurance liabilities based on economic value and to consistently measure interest-rate risks on both asset and liability sides on a

trial basis. They were also requested to report, in the form of replies to a questionnaire, on their findings, such as practical issues and challenges that they encountered in the process of calculation (test period: June to December 2010).

(2) Insurance companies covered by the tests

All life insurance companies (47 companies) and non-life insurance companies (50 companies) in Japan were covered by the field tests. All of the companies submitted reports on the test results.

(3) Method of calculating insurance liabilities, etc. in the field tests

The following methods of calculating economic value-based insurance liabilities and other items were provisionally adopted in the field tests. As for changes in the discount rate and assumptions for the calculation of the risk amount, the FSA designated universal rates and assumptions that should be used by all companies for the tests.

○Base date of calculation

The base date was set at March 31, 2010. (Some figures were calculated with a different base date of March 31, 2009.)

○Composition of economic value-based insurance liabilities

The economic value-based insurance liabilities as defined in the field tests comprise the present value of cash flow for all insurance policies in force as of the base date, as well as reserves for outstanding claims[1] and risk margins.[2]

○Method of calculating the present value of cash flow

It was requested that the future cash flow be estimated for each of all policies in force in principle as of the base date and the present value of cash flow be calculated by discounting the value of the future cash flow with the discount rate (yield based on the risk-free rate).

○Method of calculating risk margins

The use of the cost of capital method,[3] which is a popular calculation method, was required although it is not established as a standard method.

○Method of measuring interest-rate risk

It was requested that interest-rate risk be measured on the basis of the net asset amount (assets minus liabilities), with the following three methods allowed as options.

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[1] In the field tests, the current amount of reserves for outstanding claims was used.

[2] The risk margin, which is a component element of insurance liabilities, refers to a margin to cover cash-flow uncertainty.

[3] In the cost of capital method, the present value of future cash flow to be obtained based on a prescribed change in assumptions related to insurance underwritings (95% confidence level VaR in the field tests) is calculated and the increase in the amount compared with the present value to be obtained based on no change in assumptions is deemed to be the required capital. The total of the each year's required capital multiplied by a prescribed co-efficient (cost capital ratio) and then discounted by the discount rate is deemed to be the risk margin.

〔Method 1〕Measuring the risk as the impact to be produced on the present value of cash flow by interest-rate changes that occur over the whole of the insured period.[4]

〔Method 2〕Measuring the risk with consideration given to the correlation between grid points.[5]

〔Method 3〕Measuring the risk based on a Monte Carlo simulation.[6]

(4) Questionnaire concerning risk management

In the questionnaire concerning the field tests, the FSA asked qualitative questions about the key points of risk management methods used by insurance companies according to the risk type and about their internal models (only in cases where an internal model is voluntarily used for risk measurement) in addition to questions about practical problems identified during the trial calculation.

3. Practical Issues and Challenges Identified in the Calculation

The following are the circumstances of insurance companies when they calculated economic value-based insurance liabilities and other items on a trial basis, and the challenges identified in practice in the calculation process:

(1) Issues and challenges in general

(i) The challenges most widely recognized by the management of both life and non-life insurers were the calculation of insurance liabilities based on economic value itself, followed by adoption of the internal model, the reflection of the calculation results in management, and the development of internal control systems.

[Economic value-based calculation of insurance liabilities]

○Many companies regard the economic value-based calculation of insurance liabilities as meaningful. The most commonly expressed reason for this belief was:

・The economic value-based calculation of insurance liabilities is important from the perspective of ensuring the effectiveness of risk management since it enables insurance companies to identify their own risks in a timely and appropriate manner and the measurement of risks provides information useful for management.

○A small minority of companies provided comments expressing cautiousness about the

[4] In this method, the difference between the present value of cash flow (regarding liabilities minus assets) and the present value of cash flow to be obtained if the discount rate rises or declines for the whole of the future insured period based on 95% confidence level VaR is deemed to be the risk.

[5] In this method, the difference between the present value of cash flow (regarding liabilities minus assets) and the present value of cash flow to be obtained if the discount rate rises or declines for the whole of the future insured period based on 95% confidence level VaR is deemed to be the risk

[6] In this method (the so-called Monte Carlo method), a number of yield curves are generated and the risk amount is calculated in light of the distribution of the present value of cash flow based on each yield curve.

economic value-based calculation of insurance liabilities, such as:

・As the economic value-based calculation of insurance liabilities relies on estimates more than the existing process of calculating liabilities, a careful examination is necessary for the establishment of the calculation method.

・As actuarial assumptions used in the economic value-based calculation of insurance liabilities are reviewed at the time of the calculation, the calculation is presumably affected by fluctuations in the assumptions every calculation period. Therefore, caution should be exercised when using the calculation results as a basis for the implementation of a prompt corrective action by the supervisor.

○Regarding requirements for financial soundness based on the economic value-based calculation of insurance liabilities, the following comments were provided:

・An examination of the requirements should be conducted in cooperation with the Institute of Actuaries of Japan and other relevant organizations because there is a wide range of matters that need to be considered from the actuarial perspective.

・The requirements should be established after the implementation of continuous impact assessment surveys in addition to the latest field tests.

・A roadmap toward the establishment of the requirements should be indicated.

[Internal models]

○The following are major challenges that were recognized with regard to internal models used in risk management based on the economic value-based calculation of insurance liabilities:

・The need to improve risk evaluation techniques using internal models

・The establishment of a system to continuously validate the appropriateness of internal models

・The issue of how to ensure consistency between internal risk management and capital adequacy regulation

・The establishment of an internal model suited to each company

・The proper understanding of internal models by the management (including the board of directors), and governance for the use of internal models

[Use in day-to-day management]

○Regarding how to utilize the economic value-based calculation of insurance liabilities in day-to-day management, many companies recognized the following challenges, since the results of risk management based on the calculation reported to the management in a

timely manner may have a significant impact on management decisions (decisions on capital strategies and reduction of risks):

・To establish a framework for grasping the risk-return balance appropriately.

・To improve the accuracy of the risk measurement of new products because the economic value-based calculation of insurance liabilities could make it possible to set premium rates that are commensurate with the risk and are more competitive.

[Development of institutions' internal systems]

○Regarding the development of institutions' internal systems for the economic value-based calculation of insurance liabilities, many companies recognized the following challenges:

・Employing and training actuaries and other personnel with relevant professional skills

・Developing infrastructure, such as IT systems and databases

[Others]

○Some companies recognized ensuring consistency with the IFRS (International Financial Reporting Standards) as a challenge (from the perspective of minimizing the cost of developing IT and other systems).

○In relation to the IFRS (Exposure Draft), it was pointed out that differences could arise with regard to the scope of insurance policies, the treatment of reserves for outstanding claims, policy reserves regarding compulsory automobile liability insurance and earthquake insurance, and short-term products, and the measurement of risk margins.

(ii) The current status toward the development of economic value-based risk management in insurance companies was as follows:

[Life insurance companies]

○Around half responded that "they have introduced economic value-based risk management (in some form or other)" or "they are capable of conducting economic value-based risk management although having not used it in the management's decision-making." Most of the remaining companies are considering developing internal systems for that. Some of the companies considering such plans said that they are exploring a future direction following the implementation of the field tests.

[Non-life insurance companies]

○Many companies are promoting economic value-based risk management as part of the development of integrated risk management systems. Some companies said they did not necessarily recognize the need for economic value-based risk management in light of the characteristics of their products. Some branches of foreign insurance companies are

considering developing risk management systems in cooperation with the headquarters in their home countries.

(iii) Regarding the solvency evaluation based on the economic value-based calculation of insurance liabilities, many companies commented that consideration should be given to the practice of the existing process of preparing financial reports, etc. The following are examples of such comments:

・As it takes time to sort out data, it should be allowed that the data sorted out at a provisional base date (three months or six months before the accounting date, for example) are used for the calculation as of the official base date.

・The use of a simplified method for the calibration of risk margins should be allowed.

・With regard to the calculation of the present value based on estimated future cash flow, rather than calculating it for every single insurance policy (which requires calculation for all individual policies in force) as required in principle in the field tests, it should be allowed to use a simplified method, such that the present value is calculated for each pool of insurance policies to which the same parameters (including actuarial assumptions) are applicable.

(2) Assumptions for the estimation of future cash flow

○In the field tests, it was requested that future cash flows be estimated for every single contract in principle. However, more than 60% of life insurance companies and more than 80% of non-life insurance companies used alternative calculation methods with regard to some or all insurance policies. Under the alternative methods, future cash flows were estimated by, for example:

・Aggregating insurance policies with the same parameters, such as the age at entry and actuarial assumptions

・Selecting representative insurance policies and dividing the calculation results by the selection rate

・Aggregating insurance policies by types of products, etc.

○In the field tests, it was requested that the cash flow estimation period be the period until the expiry date of all policies in force as of the base date. Nearly 40% of life insurance companies estimated cash flows for the period requested. Many of the companies which ceased the estimate before the expiry of all policies in force did so at 100 years or 50 years from the base date. Nearly all non-life insurance companies estimated cash flows for the period requested.

○The largest proportion of companies calculated the surrender and lapse rates based on the records for the past three years and the second largest proportion used the records for the past one year. Around 10% eliminated special factors or employed smoothing or other adjustment

techniques. For the calculation of the rates, insurance policies were categorized according to the types of insurance products, the number of years since entry, the method of premium payment, gender, age, etc.

○The largest proportion of companies calculated the occurrence rate of insurance events based on the records for the past three years. While few companies eliminated special factors, 40% of life insurance companies employed smoothing and other adjustment techniques. Regarding the downward trend of the mortality rate, etc., many companies provided comments opposing long-term projections. Insurance policies were categorized mainly according to the age of policyholders by the types of insurance products, the number of years since entry, and gender in the case of life insurance companies. For non-life, policies were categorized by primary insurance, underwritten reinsurance and ceded reinsurance.

○The largest proportion of companies calculated the operating cost based on the records for the past one year. However, nearly 30% of non-life insurance companies used the records for the past three years. More than 30% of life insurance companies eliminated special factors. Few companies reflected an uptrend of the operating cost in their calculation.

○The largest proportion of companies calculated the renewal rate based on the records for the past three years and the second largest proportion used the records for the past one year. Few companies eliminated special factors or used smoothing or other adjustment techniques. No companies reflected a trend of the renewal rate in the calculation. Categorization was made according to the types of insurance policies, the number of years since entry, etc.

○Regarding the surrender and lapse rates, the occurrence rate of insurance events, the operating cost and the renewal rate, companies which did not have sufficient data, such as newly established companies, applied the figures used for product development.
Meanwhile, the units of estimation, the scope of future cash flow (operating cost in particular) and the possibility of using the future assumptions designated by the supervisory authorities were cited as the areas of difference compared with the IFRS (Exposure Draft).

(3) Discount rate

○In the field tests, the discount rate was set based on the yield on government bonds (GBs). Some companies supported the use of the GBs yield as the basis, while others supported the use of swap interest rates. The reasons given for supporting one or the other of the two were as follows:

	Advantages	Disadvantages
GBs yield	・A yen-denominated interest rate is risk-free. ・Consistent with investment by insurance companies ・The trading volume is large in	・Credit risk is reflected in the case of some countries. ・The trading volume is insufficient in the case of some emerging countries.

	Japanese-GBs.	
Swap interest rate	・Consistent with the use of the swap interest rate in the observation of implied volatility for the calculation of the costs of guarantees and options ・Sufficient trading volume is secured for any currency.	・Not risk-free (while there will be no problem if credit risk is removed) ・Technical differences arise compared with the value of bonds.

○While the term structure of interest rates regarding the yen, the U.S. dollar, and the euro was provided in the field tests, some companies voluntarily assumed a structure regarding the Australian dollar and the U.K. pound.

○As insurance policies are not allowed to be traded freely, the discounted present value of an insurance policy can be presumably smaller in absolute terms than that of an asset with high liquidity that generates the same amount of future cash flow. From this viewpoint, it was requested in the field tests that insurance liabilities be also calculated based on the discount rate adjusted for the illiquidity premium.[7] As a result, the impact of the inclusion of the premium on the amount of insurance liabilities was found to be small—the amount of the liabilities with the premium is 1% less than that of the liabilities without the premium. Support for the assumption of the illiquidity premium as a regulatory requirement was widespread among life insurance companies. However, the majority of non-life insurance companies, which have little necessity to assume the illiquidity premium because their contract periods are relatively short, opposed the assumption on the ground that the inclusion of the premium would make calculation complex. In relation to the IFRS (Exposure Draft), it was pointed out that a difference could arise between the discount rate used for the regulatory purpose and the rate used under the IFRS. A small number of life insurance companies opposed the assumption of the illiquidity premium on the ground that it would cause underestimation of insurance liabilities and make it difficult to consistently manage interest-rate risk related to both assets and liabilities for the companies which make risk-free investments.

(4) Costs of guarantees and options

○Although it was requested in the field tests that the costs of guarantees and options be included in the calculation of insurance liabilities, some companies were unable to do so.

[7] As there is not any established method of calculating the illiquidity premium, the gap between the yields on GBs and municipal bonds issued by the Tokyo Metropolitan Government (these two types of bonds have the same credit rating) with the same maturity period was deemed to be the illiquidity premium in the field tests.

Regarding the calculation of the costs of guarantees and options, many companies suggested that the theoretical basis of the calculation method should be clarified and that a simplified calculation should be considered because the calculation of those costs, which are based on simulations using a large number of scenarios, takes a vast amount of time and work. Some companies argued that, in addition to dynamic surrender, dividends and minimum guarantees for variable annuity insurance, which were requested to be taken into consideration in the field tests, policyholders' behavior at the start of pension payment (choice of pension-type insurance, postponement of pension payment, etc.), and minimum guaranteed yields for products with variable prospective yields should also be taken into consideration, although these have not been established as standard items for consideration. While some companies said that a standard method should be provided, others argued that limits should not be set on models and items for consideration.

(5) Risk margin

○ In the field tests, it was requested that the cost of capital method be used to calculate the risk margin. However, because this method requires the calculation of the required capital for each and every year, nearly all life insurance companies used a simplified calculation method, such as calculating the required capital for every few years and applying the capital thus calculated to the skipped years, citing the heavy burden of calculation. Nearly all non-life insurance companies made calculation as requested because the burden of calculating the required capital is lighter for them than it is for life insurance companies as their contracts are mostly short-term ones. While many companies supported the cost of capital method as appropriate for the calculation of risk margin, many companies suggested that some simplified method or other should be permitted. In the field tests, the costs of guarantees and options were not taken into account for the calculation of the required capital. Some companies pointed out that it would be practically difficult to take into account those costs because that would take a vast amount of time and work.

○Regarding the cost capital ratio that is used in calculation based on the cost of capital method, some companies suggested that a universal rate applicable to all companies should be set in order to ensure the fairness in terms of the regulatory requirement. However, other companies argued that the rate should be set according to the circumstances of individual companies so as to ensure market-consistent calculation.

(6) Interest rate risk

○In the field tests, it was requested that interest-rate risk be calculated based on Methods 1 to 3 (for the methods, see 2. (3)).

[Method 1] All life and non-life insurance companies used Method 1 because it is simpler than Methods 2 and 3. The largest proportion of companies projected future cash flow,

which is the basis of the calculation, on an annual basis and the second largest proportion did so on a monthly basis. Some companies excluded cash, short-term funds and securitized products from cash flow to be calculated. In the field tests, for the sake of convenience, interest-rate risk of relevant liabilities was calculated on the assumption of a fixed surrender rate with no regard to the level of market interest rates and the costs of guarantees and options, and the risk margin was excluded from the calculation. However, some companies suggested that changes in the surrender rate according to the level of market interest rates should be reflected and that the costs of guarantees and options should be included in the calculation.

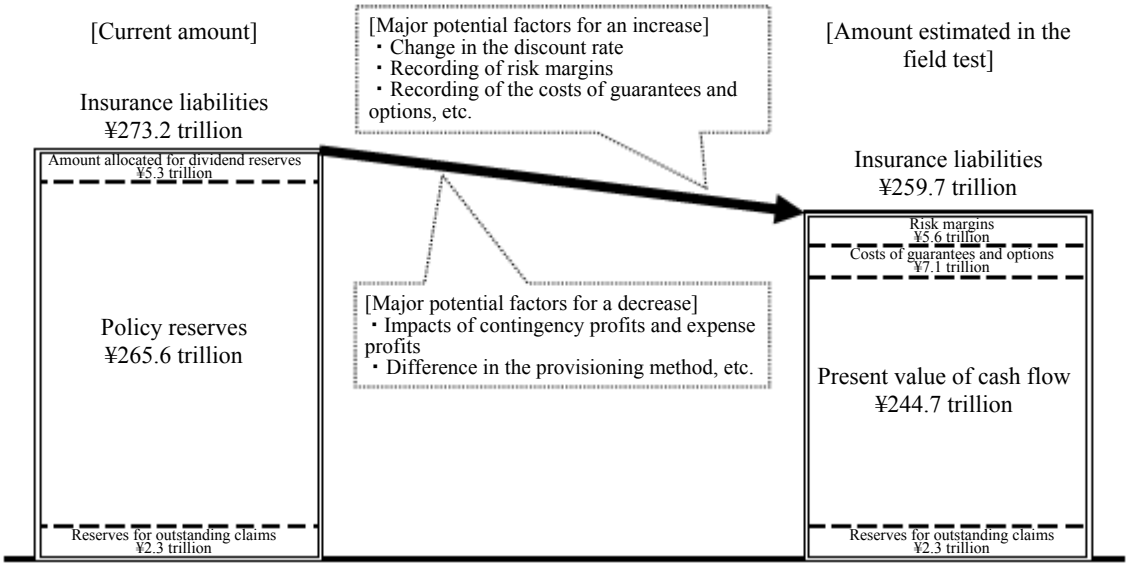
[Methods 2 and 3] Nearly all life insurance companies used both Methods 2 and 3, while among non-life insurance companies, which have many short-term contracts, nearly all used Method 2, but only around 60% used Method 3. Some companies pointed out that Method 2 would not be effective when the surrender rate changes according to the level of market interest rates.

(7) Calculation results

The field tests were intended to grasp, through the implementation of trial calculations, how well individual companies calculate liabilities and what sort of practical issues and challenges they face during the process of calculation—it was not necessarily intended to obtain exact quantitative figures. Therefore, it should be kept in mind that the calculation methods and assumptions used in the calculations in the field tests were provisional ones and that depending on assumptions, calculation results may differ from the results obtained through the latest tests.

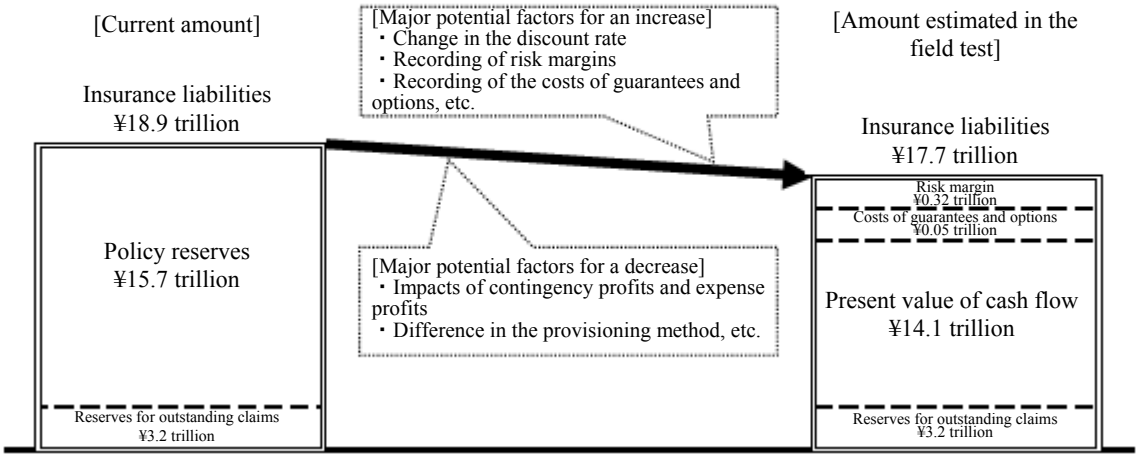
While bearing that in mind, we show the comparison between the amount of insurance liabilities estimated as a result of the field tests and the amount of insurance liabilities calculated based on the current regulatory requirements in Figures 1 and 2 (Figure 1 represents insurance liabilities for all life insurance companies and Figure 2 represents those for all non-life insurance companies). The results of the tests show the tendency that the amount of insurance liabilities generally decline for both life and non-life insurance companies. However, on an individual company basis, the amount is estimated to decline for some companies but increase for others. This would be because characteristics of insurance liabilities held by individual insurance companies vary. It should be kept in mind that there was not a universal trend common to all companies.

【Figure 1】Changes in the amount of insurance liabilities (Total for life insurance companies)



Note 1: Costs of guarantees and options included are those of companies that calculated the costs.
Note 2: The current amount of policy reserves does not include contingency reserves and prepaid unearned premiums.
Note 3: Potential factors for an increase or a decrease may produce opposite effects depending on the characteristics of individual insurance policies of individual companies.

【Figure 2】Changes in the amount of insurance liabilities (Total for non-life insurance companies)



Note 1: Costs of guarantees and options included are those of companies that calculated the costs.
Note 2: The current amount of policy reserves does not include catastrophe reserves, etc.
Note 3: Potential factors for an increase or a decrease may produce opposite effects depending on the characteristics of individual companies or individual companies.

4. Results of Survey on Risk Management

(1) Status of use of internal models by risk category

In the field tests, a survey on the use of internal models was also conducted. This survey found that the ratios of insurance companies that use internal models for risk management according to the risks as categorized in the field tests are as shown in the table below. Many life insurance

companies use internal models to measure interest-rate risk, minimum guarantee risk for variable annuity insurance and equity risk. Among non-life insurers, many use internal models to measure natural disaster risk and equity risk. As the weighted average ratios indicated in the table show, relatively large insurance companies, both life and non-life, use internal models to measure market-related risks, such as interest-rate risk in particular.

【Table】Ratios of companies using internal models by risk category (Unit:%)

	Life		Non-life	
	Ratio	(weighted average)	Ratio	(weighted average)
Surrender/lapse risk	25.5	(42.7)		
Mortality/survival risks	44.7	(51.5)		
Insurance risks other than mortality/survival risks			22.0	(75.8)
Third-sector risk	36.2	(48.6)	8.0	(11.1)
Renewal risk	8.5	(28.1)		
Minimum guarantee risk for variable insurance	40.4	(52.8)		
Natural disaster risk	12.8	(2.7)	30.0	(78.7)
Operating cost risk	27.7	(42.9)		
Interest rate risk	68.1	(92.3)	32.0	(96.3)
Measured on a net asset basis	44.7	(85.7)	16.0	(74.7)
Measured on an asset-side only basis	23.4	(6.6)	16.0	(21.6)
Equity risk	55.3	(91.3)	22.0	(77.4)
Exchange rate risk	42.6	(90.3)	22.0	(77.4)
Real estate risk	36.2	(87.3)	14.0	(67.8)
Derivatives risk	34.0	(73.0)	10.0	(50.1)
Credit risk	59.6	(92.6)	20.0	(74.9)
Operational risk	31.9	(30.7)	12.0	(24.8)

Note: The weighted average ratio is the ratio weight-averaged according to the current total amount of risks.

(2) Appropriateness of the use of internal models

○As to the appropriateness of the use of internal models in the measurement of all or some risks, many insurance companies, including both life and non-life ones, acknowledged that it is necessary for the use of internal models to be permitted under the regulatory framework. The major reasons for that were that it is possible for individual companies' risk profiles to be reflected appropriately and that the use of internal models would give insurers an incentive to enhance risk management. Moreover, some companies commented that the use of the standardized approach is permitted in parallel with the use of the internal model approach and that it is permitted to use a simplified method with regard to minor risks. Meanwhile, a small proportion of companies urged caution about permitting the internal model approach under the regulatory framework from the perspective of comparability and data availability.

○ Some companies pointed out that it will be necessary to establish measurement techniques

based on internal models, criteria for regulatory approval of the internal models, and rules on the verification and review of the validity of internal models before the use of internal models is permitted.

(3) Interest rate risk

○Nearly all life insurance companies and more than 70% of non-life insurance companies managed interest-rate risk. Nearly all of the companies that manage interest-rate risk measure the amount of interest-rate risk. Regarding the measurement method, half of the life insurance companies measured only asset-side risks and the rest measured only risks on a net-asset basis, which means that both asset-side and liability-side risks are measured consistently. Among non-life insurance companies, many companies measure only asset-side risks and companies that measure risk on a net-asset basis are in the minority.

○Among companies that measure interest-rate risk, nearly all life insurance companies and more than 60% of non-life insurance companies use internal models. As for the internal model-based measurement method, many companies use the variance-covariance method or the stochastic simulation method. Of the companies that use the stochastic simulation method, around half simulated more than 10,000 scenarios. Regarding the confidence level for the measurement of VaR, they were almost evenly divided between a range of 95% to 99.5% and more than 99.5%.

(4) Natural disaster risk

○Around half of the life insurance companies and around 80% of non-life insurance companies managed natural disaster risks. Among the companies, around half of the life insurance companies and all non-life insurance companies measure risks in some way or other.

○As for the internal model-based measurement method, life insurance companies generally estimate the amount of probable maximum losses by applying the death toll estimated by a public organization for the purpose of the formulation of disaster prevention/mitigation plans to their own insurance portfolios. Nearly all non-insurance companies that conduct internal model-based measurement use simulation models: around 60% use models provided by vendors and the remaining 40% use internally developed models. More than 70% simulated more than 10,000 events in their simulation models. Many companies measure VaR at a confidence level of more than 99.5% and T-VaR at a confidence level of 95% to 99.5%. Some companies conducted measurement both at a confidence level of more than 99.5% and at a confidence level of 95% to 99.5%.

(5) Others

○Some companies conduct risk management according to their own risk categorization (e.g.,

business investment risk and system risk) that is different from the one requested in the field tests. Regarding the risk management method, some companies measure various risks related to asset management comprehensively as asset management risk, rather than measuring subdivided risks.

○Many life insurance companies measure the costs of guarantees and options using internal models.

5. Interviews on ERM

As part of its examination of a medium-term review of the solvency regime, in addition to conducting the field tests, the FSA had interviews in February and March 2011 in order to grasp the current status of enterprise risk management (ERM) of major insurance companies and groups. Major subject matters of the interviews included the concept on risk appetite, the status of the risk management division in the company, and the management of risks and capital.

The summary of the interviews is as follows.

○It was found that all groups with which the FSA had interviews measure the amount of integrated risks and compare the risk amount with their capital as part of their risk management. The majority of companies measure the integrated risk amount on a VaR basis (some companies partially conducted measurement on a T-VaR basis as well as on a VaR basis). Many life insurance groups conduct measurement at a confidence level of 99% or 99.5%, while many non-life insurance groups do so at a confidence level of 99.5% or 99.95% (the holding period was one year).

As for specific management methods, most groups conduct periodic monitoring so as to keep the risk amount below the capital amount or set alarm points in advance and consider how to respond in each stage. A small number of groups conduct capital allocation management, in which economic capital is allocated to business areas or core subsidiaries and the risk-return balance is examined.

○It has become clear that many groups are already shifting to the economic value-based risk management or using it in parallel with the risk management system based on the existing accounting standards. As was pointed out in the field tests, many groups use a simplified method and report results based on the method to the management because the economic value-based calculation usually takes vast amounts of time and work.

All groups that conduct economic value-based management also conduct monitoring as required by prudential regulation based on the existing accounting standard. Therefore, consistency with current prudential regulation, such as the Substantial Net Assets Regulation, has been an issue.

○Meanwhile, as for the involvement of the board of directors in risk management, ways of involvement in, for example, the grasp and use of the risk profile, clarification of risks

allowed to be taken, the setting of the risk-tolerance level, and risk management differ from group to group.

6. Conclusion

[Summary]

○All companies targeted replied to the questionnaire. As a result, it was recognized that interest in the economic value-based calculation of insurance liabilities is strong among insurance companies and that they are making progress in incorporating practical processes for the calculation.

○Regarding the economic value-based calculation of insurance liabilities, the FSA has been explaining the significance of comprehensive management of assets and liabilities, and encouraging the calculation of assets and liabilities on an economic-value basis and risk management based on such calculation. Owing to this background, insurance companies are making progress in incorporating practical processes.

[Economic value-based calculation of insurance liabilities]

○The economic value-based calculation of insurance liabilities contributes to the improvement of ALM (Asset and Liability Management) and the enhancement of risk management, as it enables insurance companies to consistently manage assets and liabilities on an economic value basis. In the field tests, many companies recognized the importance of the economic value-based calculation of insurance liabilities.

○However, some companies think that ALM based on an economic-based calculation may not necessarily fully exert an expected effect because of the business-environment characteristics that are peculiar to Japan, such as the strong needs for whole-life annuity and the inadequate development of the market for hyper-long-term bonds. Therefore, before introducing a solvency regime based on the economic value-based calculation of insurance liabilities, due consideration should be given to such circumstances.

[Practical issues and challenges]

○In the field tests, a variety of practical issues and challenges came to light. Major issues and challenges are as follows:

・As the process of calculating future cash flow and risk margins as part of the calculation of insurance liabilities imposes a heavy burden of work, it is necessary to consider introducing some simplified method or other within the limits permissible from the perspective of regulation.

・As the opinions are divided over what data (e.g., GBs yield) should be the basis for setting the discount rate, it is necessary to reconcile differences at the working level.

・Regarding the internal model approach, it is necessary to establish a measurement

method using internal models and formulate the criteria for regulatory approval.

○The FSA needs to consider the above matters through an exchange of opinions with industries.

[ERM hearings]

○Through ERM hearings, the FSA recognized that major insurance companies and groups are shifting to economic value-based risk management in order to use ERM as a management benchmark. However, the FSA also recognized anew that without sufficient involvement by board of directors, ERM could be conducted as a matter of formality with no regard for its purpose or essence. For example, economic value-based risk management may be effectively conducted only by particular divisions, rather than becoming a company-wide activity.

○In addition to performing its primary role as a benchmark for financial soundness, the solvency regime needs to contribute to the enhancement of insurance companies' and groups' risk management. Therefore, it will be effective to not only set the minimum capital requirement under the solvency regime but also use a framework in which the FSA checks the status of insurance companies' risk management by verifying the evaluation of management risks and capital conducted themselves, so the FSA needs to examine the possibility of introducing such a framework.

[Direction of future examination]

○As described above, a variety of issues and challenges were recognized. Of the recognized issues and challenges, practical ones, such as the economic value-based calculation of insurance abilities and the use of internal models in risk measurement, the FSA will conduct further examination in cooperation with expert organizations, such as the Institute of Actuaries of Japan and the Non-Life Insurance Rating Organization of Japan.

○Internationally, a debate on a framework predicated on the introduction of the economic value-based calculation of insurance liabilities has been proceeding. For example, the IAIS is working on the standard for economic value-based calculation, and "Solvency II" is planned to be introduced in Europe in January 2013. While paying sufficient attention to these international developments, it is important to establish a regulatory framework with high risk sensitivity that is suited to the Japanese insurance market.

○The introduction of the solvency regime predicated on the economic value-based calculation of insurance liabilities requires corresponding revisions of the business management and risk management methods that have until now been used by insurance companies. Therefore, the FSA will make steady efforts to establish a new framework

through continuous dialogue with relevant parties while sufficiently enhancing predictability by indicating a roadmap in advance, for example, so as to ensure smooth introduction.