

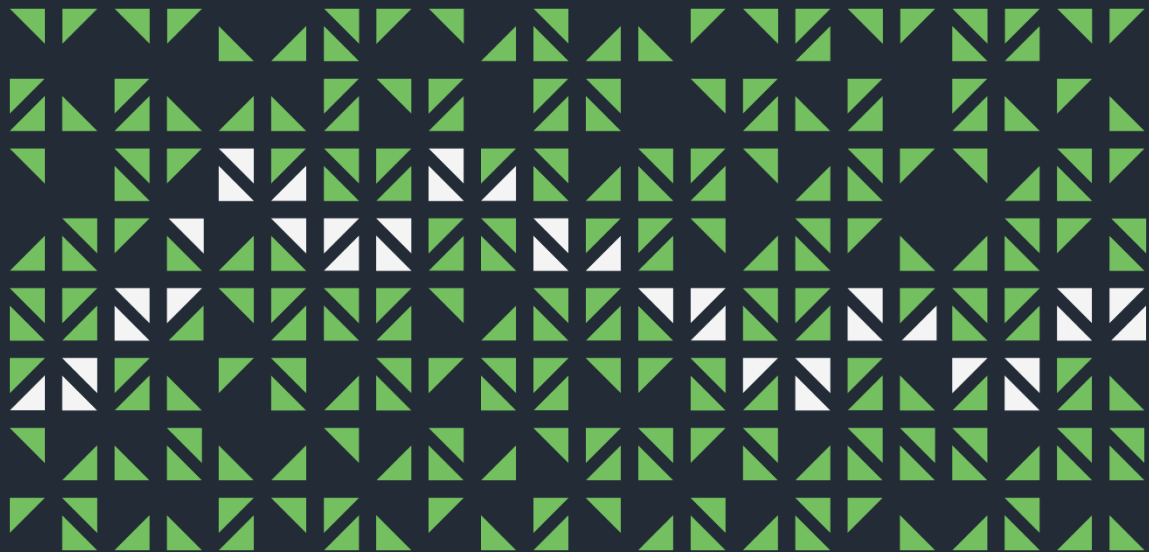
MILLIMAN REPORT

# ESR for life insurance companies under new Japanese solvency regulation

Comparison with ICS and EU Solvency II

February 2026

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# 1 Introduction

## 1.1 BACKGROUND

The current solvency regulation in Japan was introduced with the revision of the Insurance Business Act in 1996, based on frameworks such as the U.S. RBC regulation and Canada's MCCSR regulation. Since 1999, the solvency margin ratio (SMR) has been used as an indicator of the financial soundness of insurance companies. The minimum level of SMR is set at 200%. If the SMR falls below 200%, early corrective actions are triggered according to the SMR level.

$$SMR = \text{Solvency Margin} / (\text{Total Risk Amount} \times 1/2)$$

Here, the numerator, the solvency margin, refers to the net assets on the statutory accounting balance sheet, adjusted for inclusion limits, etc. The denominator, the total risk amount, is the aggregated amount of various risks calculated using a factor-based approach. In 2010, a short-term review led to revisions that tightened the criteria for the inclusion of the solvency margin and raised the confidence level of the value at risk (VaR) over a one-year period for each risk factor from 90% to 95%.

Meanwhile, issues and limitations of the conventional SMR have been pointed out. Since 2010, several field tests (FTs) on economic value-based evaluation and supervisory methods have been conducted, and the assessment of each company's situation and consideration of new regulations have been progressing.

The new solvency regulation incorporates an economic value-based approach, based on the market adjusted valuation (MAV) approach of the Insurance Capital Standards (ICS) developed by the International Association of Insurance Supervisors (IAIS).

Draft legislation for the economic value-based solvency regulation was published by the Financial Services Agency (FSA) in October 2024 and January 2025 and, after a period of public comment, the legislation was promulgated in July 2025. As a result, the new solvency regulation will be applied from the end of March 2026. In other words, from the end of fiscal year 2025, insurance companies in Japan will be required to report based on the new regulation. Hereinafter, this new regulation is referred to as "J-ICS".

Under J-ICS, the economic value-based SMR (ESR) is defined as follows and the minimum level is set at 100%.

$$ESR = \text{Qualifying Capital} / \text{Capital Requirement}$$

The early corrective actions before and after the revision are shown in Figure 1. Additionally, changes in the level of the SMR due to the revision are shown in Figure 2.

**FIGURE 1: COMPARISON OF THE EARLY CORRECTIVE ACTIONS BEFORE AND AFTER THE REVISION**

SEGMENT	AFTER REVISION (J-ICS)	BEFORE REVISION
<b>Exception from category</b>	ESR $\geq$ 100%	SMR $\geq$ 200%
<b>Category 1</b>	100%>ESR $\geq$ 70% <ul style="list-style-type: none"> <li>A request to submit an improvement plan and an order for its implementation.</li> <li>An insurance company should achieve the level of the SMR of at least 100% within a year in principle.</li> </ul>	200%>SMR $\geq$ 100% <ul style="list-style-type: none"> <li>A request to submit an improvement plan and an order for its implementation.</li> <li>An insurance company should achieve the level of the SMR of at least 200% within a year in principle.</li> </ul>
<b>Category 2</b>	70%>ESR $\geq$ 35% <ul style="list-style-type: none"> <li>An order concerning various measures that contribute to improving solvency in terms of the ability to pay insurance claims, etc.</li> <li>An insurance company should achieve the level of the SMR of at least 70% within six months in principle.</li> </ul>	100%>SMR $\geq$ 0% <ul style="list-style-type: none"> <li>An order concerning various measures that contribute to improving solvency in terms of the ability to pay insurance claims, etc.</li> <li>An insurance company should achieve the level of the SMR of at least 100% within a year in principle.</li> </ul>
<b>Category 3</b>	35%>ESR <ul style="list-style-type: none"> <li>An order to suspend all or part of the operations for a limited term.</li> <li>An insurance company should achieve the level of the SMR of at least 35% within three months in principle.</li> </ul>	0%>SMR <ul style="list-style-type: none"> <li>An order to suspend all or part of the operations for a limited term.</li> </ul>

**FIGURE 2: COMPARISON OF SMRS BEFORE AND AFTER THE REVISION, ON AN INDUSTRY BASIS AS OF THE END OF MARCH 2024<sup>1</sup>**

SEGMENT	ESR (RESULTS OF FT 2024)	SMR*
<b>Life</b>	219%	933%
<b>Non-life</b>	200%	750%

\* Note that 1/2 is multiplied to the denominator in SMR.

## 1.2 THREE PILLARS

Under J-ICS, regarding a multifaceted soundness policy that takes into account the internal management of insurance companies, the “three pillars” approach is adopted. This approach is the same as EU Solvency II.

- **Pillar 1: Solvency regulation**
  - Establishes certain common standards for solvency ratios and sets out a supervisory intervention framework as a backstop for policyholder protection
- **Pillar 2: Internal management and supervisory review**
  - Captures risks that cannot be fully addressed under pillar 1, examines the internal management of insurance companies and promotes its enhancement
- **Pillar 3: Disclosure**
  - Encourages appropriate dialogue between insurance companies and external stakeholders, thereby ensuring proper discipline for insurance companies

The legislation promulgated in 2025 pertains to pillar 1 and pillar 3. This report deals with pillar 1.

1. FSA, (23 July 2025). Overview of economic value-based solvency regulation, p. 4. Retrieved 9 December 2025 from [https://www.fsa.go.jp/policy/economic\\_value-based\\_solvency/10.pdf](https://www.fsa.go.jp/policy/economic_value-based_solvency/10.pdf).

## 2 ESR calculation method

In this section, we describe the method of calculating ESR for life insurance companies under J-ICS, comparing with ICS and EU Solvency II.

### 2.1 PRINCIPLES

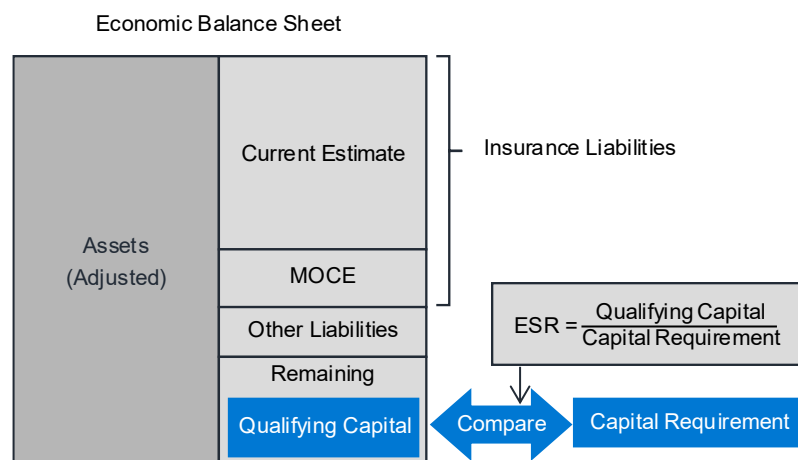
#### 2.1.1 Framework of ESR calculation

Although the basic structure of J-ICS is the same as that of ICS, ICS is a consolidation-based regulation for internationally active insurance groups (IAIGs). The FSA has contemplated the following points and revised as issues unique to domestic regulation.

- Does it appropriately reflect the risk profile of insurance companies in Japan, particularly small and medium-sized insurance companies?
- Is there a problem when the concept of ICS is applied to the standalone basis in addition to the consolidated basis?
- Clarification of the parts of ICS that do not specify detailed treatment and calculation methods.

Under J-ICS, the qualifying capital and capital requirement are compared. The qualifying capital is based on the economic balance sheet that evaluates assets and liabilities on an economic value basis, while the capital requirement corresponds to risk amount measured as VaR with a 99.5% confidence level over a one-year period. ESR is calculated and evaluated as an indicator of whether the qualifying capital is sufficient for the capital requirement.

FIGURE 3: ECONOMIC BALANCE SHEET AND ESR



#### 2.1.2 Proportionality principle

The calculation and valuation of ESR are subject to the proportionality principle, similarly to ICS and Solvency II. The principle admits simplification for calculation when the practical load to improve the calculation accuracy is significantly large, but no significant improvement is shown in the value. Since the calculation of insurance liabilities and capital requirements on an economic value basis is very complex, it is possible to simplify the calculation by applying this principle according to the materiality.

The application of the proportionality principle needs to be comprehensively judged from the perspective of small materiality to the ESR result, and not misleading the user's decision-making. There are no quantitative criteria for determining whether a simplified method can be applied, as it depends on each company's business structure and characteristics, as well as size, nature and complexity of individual items.

### 2.1.3 Look-through approach

Regarding financial products such as investment funds in the calculation and valuation of ESR, the look-through approach is applied, similarly to ICS and Solvency II. This calculates the capital requirement based on individual assets and transactions that support the exposure held.

In practice, it is assumed that it is often difficult to apply a full look-through, in which case it is possible to apply a partial look-through approach.

When a full look-through approach is not possible, the mandate approach may be applied. This assumes that, for an investment fund, the fund first invests in assets that are subject to the maximum capital requirement up to the maximum limit allowed by the contract, and then invests in the assets with the highest capital requirement until the total investment amount reaches the upper limit.

Additionally, leverages in the fund should be appropriately taken into account in any case based on the look-through approach.

## 2.2 VALUATION APPROACH

### 2.2.1 Insurance liabilities

As described in Figure 3, under J-ICS and ICS, the insurance liabilities are the sum of the current estimate and the margin over current estimate (MOCE). This corresponds to the fact that, under Solvency II, the technical provisions are the sum of the best estimate and the risk margin.

### 2.2.2 Current estimate

The current estimate is defined as the probability-weighted average of the present values of the future cash flows associated with insurance liabilities, discounted using the specific yield curve. The current estimate amount shall be based on the most up-to-date and reliable information, as well as realistic assumptions, and is not biased towards conservatism or optimism. The current estimate under J-ICS and ICS is the same concept as the best estimate under Solvency II.

The future cash flows include, at a minimum, benefit and claim payments, direct and indirect expenses incurred, premiums received, subrogation payments and recoveries other than from reinsurance and special purpose vehicles, and other payments made in order to settle the claims. Additionally, there are some key items to be considered, similarly to ICS and Solvency II, as shown in Figure 4.

FIGURE 4: KEY ITEMS IN CALCULATING FUTURE CASH FLOWS

ITEM	CONSIDERATIONS
<b>Inflation</b>	<p>Inflation shall be reflected. The inflation rate is calculated based on a method consistent with the yield curve for the discount rates with reference to the following indicators.</p> <ul style="list-style-type: none"> <li>▪ Break-even inflation rate calculated from inflation-indexed bonds</li> <li>▪ Consumer price index and other similar indicators</li> <li>▪ Expected inflation rate reflected in ultimate forward rate (UFR)</li> </ul>
<b>Time value of options and guarantees (TVOG)</b>	<p>TVOG shall be reflected. This is calculated taking into account all payments related to the risks insured. The following are examples of TVOG valuation targets, but regardless of this, companies need to include what they deem appropriate and material.</p> <ul style="list-style-type: none"> <li>▪ Dynamic lapse</li> <li>▪ Policyholder dividend</li> <li>▪ Minimum guaranteed benefits on variable life and annuity</li> <li>▪ Minimum guaranteed interest rate on variable interest rate product</li> </ul>
<b>Policyholder behavior</b>	<p>Policyholder behavior shall be reflected. This is based on appropriate statistical and empirical evidence, to the extent that it is deemed representative of future expected behavior.</p>

ITEM	CONSIDERATIONS
<b>Future trends</b>	<p>Future trends may be reflected in the assumptions. For non-economic assumptions such as mortality rates, companies reasonably judge whether to reflect future trends, the level of increase/decrease rates and the reflection period based on the actual situation. In making these judgements, companies need to ensure objectivity based on necessity and feasibility, for example, by confirming the following.</p> <ul style="list-style-type: none"> <li>Consistency with public data such as future demographic projections and social trends such as public medical institutions</li> <li>Consistency with product characteristics such as underwriting conditions and coverages</li> </ul>
<b>Management actions</b>	<p>Management actions may be taken into account when requirements such as objectivity, reality and verifiability are met.</p>
<b>Contract boundary</b>	<p>Future cash flows shall be taken into account up to each contract boundary that is defined as the earlier of the following dates.</p> <ul style="list-style-type: none"> <li>The future date when the insurance company has a unilateral right to terminate the contract or reject the premiums payable under the contract.</li> <li>The future date when the insurance company has a unilateral right to amend the premiums or the benefits payable under the contract in such a way that the premiums fully reflect the risks.</li> </ul> <p>For example, regarding yearly renewable guaranteed-type group life insurance contracts, the insurance company may freely adjust the premiums at each contract anniversary date so as to fully reflect the risks arising from such contracts. In this case, the next contract anniversary date corresponds to the second point above and, in the calculation of current estimate, premiums and related future cash flows beyond the next contract anniversary date are not included.</p>

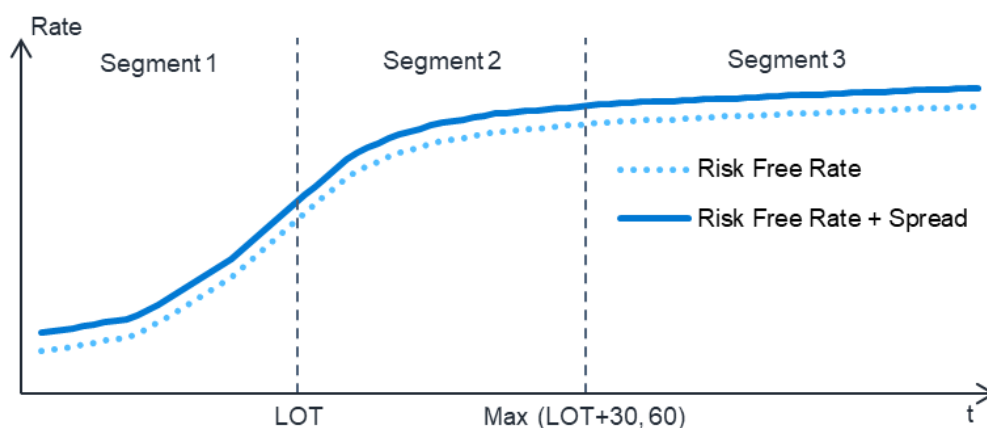
### 2.2.3 Discounting

Yield curves for discount rates under J-ICS and ICS are made in three segments as shown in Figures 5 and 6. The transition from the segment 1 to 2 occurs at the last observed term (LOT). The transition from the segment 2 to 3 occurs at the later of 30 years after the LOT and 60 years. For Japanese yen (JPY), the LOT is 30 years.

FIGURE 5: YIELD CURVE FOR DISCOUNT RATES UNDER J-ICS AND ICS

SEGMENT		DESCRIPTION
<b>Segment 1</b>	<b>Risk-free rates</b>	Market interest rates from liquid interest rate swaps (credit risk adjusted) or government bonds
	<b>Spread adjustment</b>	Three-bucket approach
<b>Segment 2</b>		Extrapolation using the Smith-Wilson Method
<b>Segment 3</b>		UFR + spread

FIGURE 6: OVERVIEW OF YIELD CURVE UNDER J-ICS AND ICS



Regarding the spread adjustment, the three-bucket approach is applied. Insurance liabilities are classified into three buckets: the top bucket, middle bucket and general bucket in order of the highest degree of matching and illiquidity of liabilities, depending on the nature of the liabilities and the assets backing these liabilities. A different yield curve adjustment is determined for each bucket. For the top and middle buckets, eligibility criteria are stipulated, such as that assets backing insurance liabilities are identified and managed separately along with the liabilities. Insurance liabilities that do not fall under any of them are classified as general bucket. A higher spread is applied as high as the degree of matching and illiquidity of liabilities increases.

There are the following differences between J-ICS and ICS.

- Under ICS, the spread for the middle bucket takes into account the term structure, whereas under J-ICS, a flat spread is applied.
- Under ICS, the modulation factor is multiplied to the spread, whereas under J-ICS, it is not applied.
- Regarding the eligibility criteria for the middle bucket, under ICS, it is acceptable if the criteria have been met for the previous three years and there has not been any substantial change in the portfolio, even if they are not met in the current year. In contrast, under J-ICS, the criteria must be met in the current year.

The bucket composition in FTs 2020 and 2021 is shown in Figure 7.

**FIGURE 7: BUCKET COMPOSITION OF INSURANCE LIABILITIES ON A CURRENT ESTIMATE AMOUNT BASIS<sup>2</sup>**

SEGMENT	LIFE		NON-LIFE	
	FT 2020	FT 2021	FT 2020	FT 2021
General bucket	45%	52%	100%	100%
Middle bucket	55%	48%	0%	0%
Top bucket	0%	0%	0%	0%

Upon the introduction of UFRs, it was pointed out that based on the low interest rate environment in Japan, the shape of the yield curve rises significantly after the starting point of the extrapolation, resulting in ultra-long-term cash flows being discounted at unnaturally high discount rates and insurance liabilities being undervalued. However, in the standard model of pillar 1, the UFR has been adopted in consideration to suppress excessive volatility in ESR. On the other hand, in the internal management of pillar 2, it is important to consider what each company should be without relying too much on the standard model. For JPY, the UFR is 3.8% (including the expected inflation rate, 2.0%) and the UFR spread is 0.20%.

Comparison with the yield curves under Solvency II is as follows.

- **Segment 1:** Under Solvency II, currency- and country-dependent spread adjustment called the volatility adjustment (VA) is applied to risk-free rates (without the bucketing approach). However, application of the VA is subject to supervisory approval and disclosure requirement. In the upcoming Solvency II reforms, the VA will get an additional company-specific adjustment (to account for volume and duration mismatches between assets and liabilities).
- **Segment 2:** Under Solvency II, extrapolation using the Smith-Wilson method to the UFR (without spread adjustment) is also applied. However, in the upcoming Solvency II reforms, the extrapolation method will be revised and will also take into account market information beyond the LOT.
- **Segment 3:** This does not exist under Solvency II. There is only extrapolation towards the UFR without spread adjustment.

2. FSA. (30 June 2022). Preliminary decision on basic contents regarding economic value-based solvency regulation, p.35. Retrieved 9 December 2025 from [https://www.fsa.go.jp/policy/economic\\_value-based\\_solvency/03.pdf](https://www.fsa.go.jp/policy/economic_value-based_solvency/03.pdf).

## 2.2.4 MOCE

The MOCE is defined as a margin added to the current estimate and covers the inherent uncertainty in the cash flows related to insurance obligations. The concept is similar to the MOCE under ICS and the risk margin under Solvency II, but the calculation methods are different for each as shown in Figure 8.

FIGURE 8: CALCULATION METHODS OF MOCE AND RISK MARGIN

J-ICS MOCE	ICS MOCE	SOLVENCY II RISK MARGIN
Cost-of-capital method ▪ Cost-of-capital rate: 3.0%	Percentile method ▪ Life: 85 <sup>th</sup> percentile ▪ Non-life: 65 <sup>th</sup> percentile	Cost-of-capital method ▪ Cost-of-capital rate: 6.0%

As shown in Figure 8, the MOCE under J-ICS is calculated using the cost-of-capital (CoC) method. The formula is as follows.

$$MOCE = CoC\ Rate \times \sum_{t \geq 0} \frac{Estimated\ Capital\ Requirement\ (t)}{(1 + Discount\ Rate\ (t))^t}$$

CoC Rate = 3.0%

Estimated Capital Requirement (t) = The amount of estimated capital requirement at year t

Discount Rate (t) = Risk-free rate of year t

The risk margin under Solvency II is calculated using a similar formula, but the capital requirement is assumed to occur at the end of the year, resulting in a one-year shift in the discount rates. (The denominator is  $(1 + Discount\ Rate\ (t+1))^{t+1}$  for Estimated Capital Requirement (t).) Additionally, a different CoC rate, 6.0% is applied. In the upcoming Solvency II reforms, the CoC rate will be adjusted to 4.75% and the risk margin will be calculated with additional decay factor.

Upon the introduction of J-ICS, adopting the percentile method was considered, as well as ICS, but the following problems were pointed out about the percentile method.

- Since life insurance companies in Japan have many long-term products, there is a considerable difference between MOCE based on the CoC method and MOCE based on the one-year period percentile method adopted in ICS.
- In the percentile method, the setting basis for the confidence level and the reason why the confidence level is different for life and non-life are unclear.
- The percentile method may not appropriately reflect significant differences in the duration of insurance liabilities across companies.
- Compared to the CoC method, in the percentile method, the correspondence between risk, return and capital is not clear, and it is difficult to understand what is being measured.

After considering these problems from both a theoretical perspective and the perspective of more appropriately reflecting the risk profile of each company, the CoC method was adopted instead of the percentile method.

The level of the CoC rate was also discussed. Based on the treatment under Solvency II and the level of MOCE required under ICS, around 3% was considered as a benchmark. In FT 2022, a comparison was made between MOCE calculated using the CoC method with CoC rate of 3% and MOCE calculated using the percentile method adopted in ICS. The results are shown in Figure 9 and, since there was no excessive deviation from the level of MOCE required under ICS, the CoC rate of 3% was finally adopted.

**FIGURE 9: COMPARISON OF MOCE BY COC AND PERCENTILE METHOD IN FT 2022 (UNIT: JPY BILLION)<sup>3</sup>**

SEGMENT	(A) COC MOCE (COC RATE: 3.0%)	(B) PERCENTILE MOCE (SAME AS ICS)	(A)/(B) -1
Life	8,491	6,852	24%
Non-life	376	339	11%

In calculating MOCE using the CoC method, in principle it is necessary to estimate the capital requirements at each future point in time. However, since the practical burden of calculations in accordance with the principle is extremely large, it is allowed to estimate future capital requirements based on the runoff pattern using risk drivers that each company deems appropriate, with the capital requirements at the valuation date. In practice, such simplification has been adopted by some companies in FTs.

### 2.3 QUALIFYING CAPITAL

The qualifying capital under J-ICS and ICS as well as the own funds under Solvency II are classified into tiers according to loss-absorbing capacity, level of subordination, permanence, etc. and there are limits on the eligible amounts for each tier.

Under J-ICS and ICS, the classification is as follows.

- **Tier 1:** Financial instruments and capital elements other than financial instruments that absorb losses on a going-concern basis and in winding up
  - Tier 1 unlimited financial instruments
  - Tier 1 limited financial instruments
  - Tier 1 capital elements other than financial instruments
- **Tier 2:** Financial instruments and capital elements other than financial instruments that absorb losses only in winding up
  - Excess amount over the limit for tier 1 limited financial instruments
  - Tier 2 paid-up financial instruments
  - Tier 2 non-paid-up financial instruments (for mutual companies only)
  - Tier 2 capital elements other than financial instruments

Under Solvency II, the category corresponding to tier 2 is further subdivided, and there is also tier 3.

The classification of financial instruments under J-ICS based on the key principles is shown in Figure 10.

The upper limits for financial instruments, capital elements other than financial instruments and deductions from capital resources for each tier are shown in Figure 11. These are basically similar to ICS.

3. FSA. (30 June 2023). Status of considerations toward finalizing standards for economic value-based solvency regulation, p. 45. Retrieved 9 December 2025 from, FSA [https://www.fsa.go.jp/policy/economic\\_value-based\\_solvency/05\\_1.pdf](https://www.fsa.go.jp/policy/economic_value-based_solvency/05_1.pdf).

FIGURE 10: CLASSIFICATION OF FINANCIAL INSTRUMENTS

PRINCIPLE	TIER 1 UNLIMITED	TIER 1 LIMITED	TIER 2 PAID-UP
<b>Loss-absorbing capacity</b>	<ul style="list-style-type: none"> <li>Absorbs losses on both a going-concern basis and in winding up</li> </ul>	<ul style="list-style-type: none"> <li>Absorbs losses on both a going-concern basis and in winding up</li> </ul>	<ul style="list-style-type: none"> <li>Absorbs losses in winding up</li> </ul>
<b>Level of subordination</b>	<ul style="list-style-type: none"> <li>Most subordinated (i.e. is the first to absorb losses)</li> <li>Subordinated to policyholders, other non-subordinated creditors, holders of tier 2 financial instruments and holders of tier 1 limited financial instruments</li> </ul>	<ul style="list-style-type: none"> <li>Subordinated to policyholders, other non-subordinated creditors and holders of tier 2 financial instruments</li> </ul>	<ul style="list-style-type: none"> <li>Subordinated to policyholders and other non-subordinated creditors</li> </ul>
<b>Availability to absorb losses</b>	<ul style="list-style-type: none"> <li>Fully paid-up</li> </ul>	<ul style="list-style-type: none"> <li>Fully paid-up</li> </ul>	<ul style="list-style-type: none"> <li>Fully paid-up</li> </ul>
<b>Permanence</b>	<ul style="list-style-type: none"> <li>Perpetual</li> </ul>	<ul style="list-style-type: none"> <li>Perpetual</li> <li>No incentives to redeem permitted.</li> <li>Issuer may redeem after a minimum specified period after issuance or repurchase at any time, subject to prior supervisory approval</li> </ul>	<ul style="list-style-type: none"> <li>Sufficiently long initial maturity (may have incentives to redeem but first occurrence deemed to be effective maturity date)</li> </ul>
<b>Absence of both encumbrances and mandatory servicing costs</b>	<ul style="list-style-type: none"> <li>Issuer has full discretion to cancel distributions (i.e., distributions are non-cumulative)</li> <li>Instrument is neither undermined nor rendered ineffective by encumbrances</li> </ul>	<ul style="list-style-type: none"> <li>Issuer has full discretion to cancel distributions (i.e., distributions are non-cumulative)</li> <li>Instrument is neither undermined nor rendered ineffective by encumbrances</li> </ul>	<ul style="list-style-type: none"> <li>Instrument is neither undermined nor rendered ineffective by encumbrances</li> </ul>

FIGURE 11: OTHER REQUIREMENTS FOR QUALIFYING CAPITAL

ITEM	TIER 1 CAPITAL	TIER 2 CAPITAL
<b>Upper limits for financial instruments</b>	<ul style="list-style-type: none"> <li>Companies other than mutual companies: 10% of the capital requirement Instruments with a principle loss-absorbency mechanism: 15% of the capital requirement</li> <li>Mutual companies: 30% of the capital requirement</li> </ul>	<ul style="list-style-type: none"> <li>Companies other than mutual companies: 50% of the capital requirement</li> <li>Mutual companies: 60% of the capital requirement minus the amount of tier 1 limited financial instruments</li> <li>Tier 2 non-paid-up financial instruments: 10% of the capital requirement</li> </ul>
<b>Capital elements other than financial instruments</b>	<ul style="list-style-type: none"> <li>Retained earnings</li> <li>Capital surplus (excluding capital surplus resulting from the issuance of tier 2 financial instruments)</li> <li>Other contributions</li> <li>Accumulated other comprehensive income or valuation and translation adjustments</li> <li>Adjustments on an economic value basis</li> <li>Regulatory reserves</li> </ul>	<ul style="list-style-type: none"> <li>Capital surplus resulting from the issuance of tier 2 financial instruments</li> <li>Encumbered assets</li> <li>The smaller of the following total amount and 15% of the capital requirement <ul style="list-style-type: none"> <li>50% of retirement benefit assets and prepaid pension costs (net of deferred tax liabilities)</li> <li>Deferred tax assets</li> <li>10% of software intangible assets (net of deferred tax liabilities)</li> </ul> </li> </ul>
<b>Deductions from capital resources</b>	<ul style="list-style-type: none"> <li>Intangible fixed assets (net of deferred tax liabilities)</li> <li>Retirement benefit assets and prepaid pension costs (net of deferred tax liabilities)</li> <li>Deferred tax assets</li> <li>Tier 1 financial instruments intentionally held by other financial institutions</li> <li>Investments in own tier 1 financial instruments</li> <li>Non-qualifying reinsurance assets</li> <li>Encumbered assets</li> </ul>	<ul style="list-style-type: none"> <li>Tier 2 financial instruments intentionally held by other financial institutions</li> <li>Investments in own tier 2 financial instruments</li> </ul>

Under Solvency II, there are also limits on the eligible amounts for each tier; particularly minimum requirements are applied based on the solvency capital requirement (SCR) and the minimum capital requirement (MCR) as follows.

- Tier 1: The eligible amount shall be at least 50% of the SCR and at least 80% of the MCR.
- The sum of tier 2 and tier 3: The eligible amount shall not exceed 50% of the SCR.
- Tier 3: The eligible amount shall be less than 15% of the SCR.

**2.4 CAPITAL REQUIREMENT<sup>4</sup>**

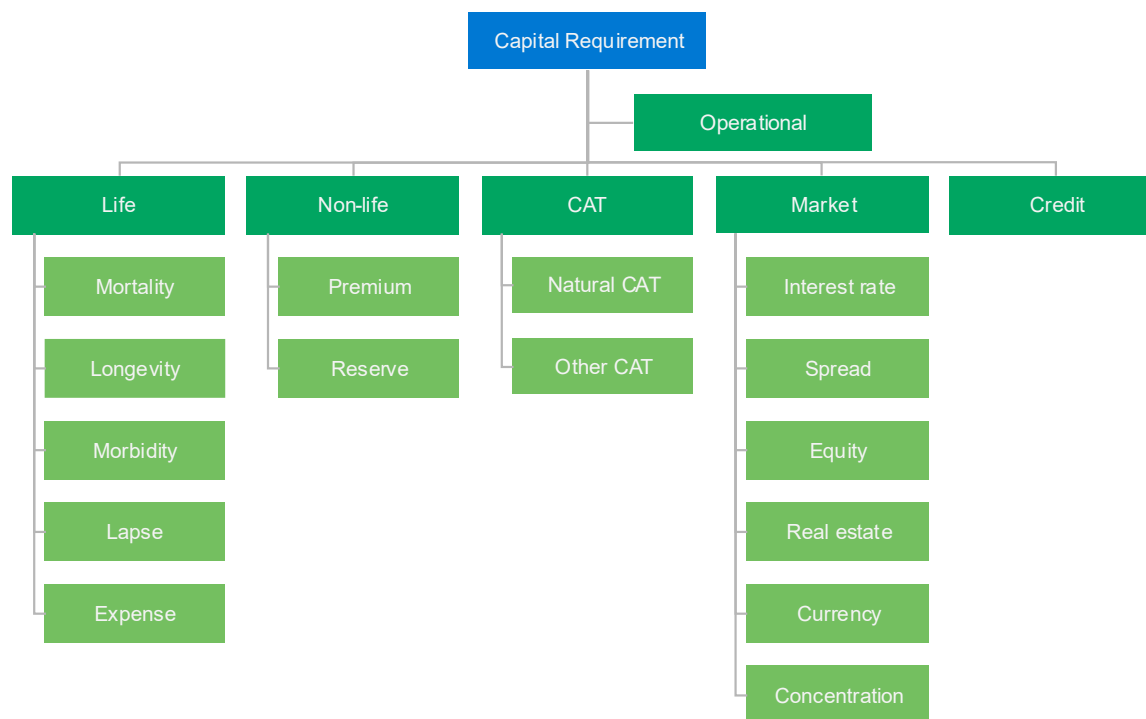
The capital requirement under J-ICS and ICS is calculated by aggregating various risk amounts measured as VaR with a 99.5% confidence level over a one-year period, taking into account diversification effects. This is similar to the SCR under Solvency II, but there are some differences in risk components, calculation methods and factors.

Additionally, under Solvency II, the MCR is used as another indicator, which is measured as VaR with a 85% confidence level over a one-year period. The calculation of MCR combines a linear formula with a floor of 20% and a cap of 45% of the SCR. If own funds fall below the MCR, the supervisory authority will take strong corrective actions, such as restricting or suspending operations. Under J-ICS and ICS, the MCR has not been introduced.

The risk module structure of capital requirement under J-ICS and ICS is shown in Figure 12, and the total capital requirement is calculated as follows.

- The amounts of life insurance risk, non-life insurance risk, catastrophe risk, market risk and credit risk are aggregated with the correlation matrix shown in Figure 13.
- The amount of operational risk is then added to the above amount.
- The excess amount over the limit of management action effects and the amount of tax effects on capital requirement are deducted from the above amount.

**FIGURE 12: RISK MODULE STRUCTURE OF CAPITAL REQUIREMENT UNDER J-ICS AND ICS**



4. Since this report focuses on life insurance companies, detailed description regarding risks related to non-life insurance is omitted.

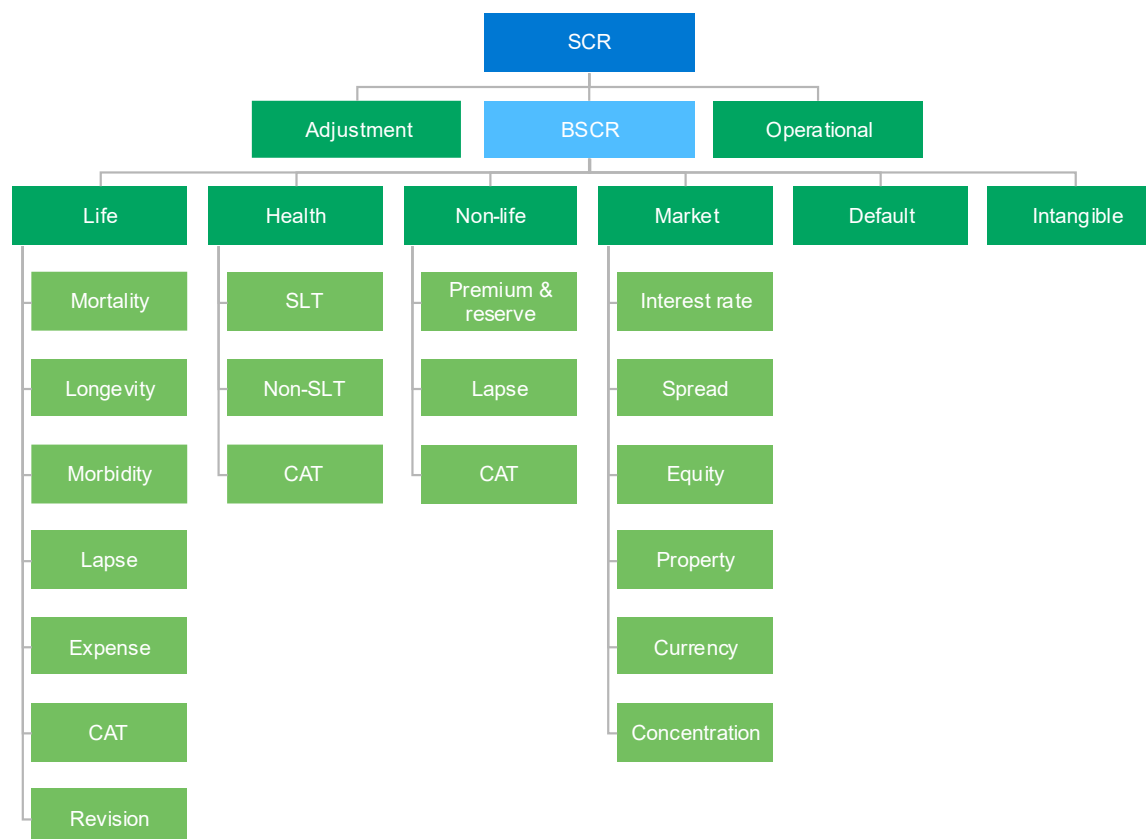
**FIGURE 13: CORRELATION MATRIX FOR OVERALL RISK AGGREGATION UNDER J-ICS AND ICS**

	LIFE	NON-LIFE	CAT	MARKET	CREDIT
LIFE	1.00	0.00	0.25	0.25	0.25
NON-LIFE	0.00	1.00	0.25	0.25	0.25
CAT	0.25	0.25	1.00	0.25	0.25
MARKET	0.25	0.25	0.25	1.00	0.25
CREDIT	0.25	0.25	0.25	0.25	1.00

The risk module structure of SCR under Solvency II is shown in Figure 14, and the total SCR is calculated as follows.

- The basic SCR (BSCR) is calculated by aggregating the amounts of life insurance risk, health insurance risk, non-life insurance risk, market risk and counterparty default risk with the correlation matrix shown in Figure 15, and then adding the amount of intangible asset risk.
- The amount of operational risk is then added to BSCR.
- Adjustment for the risk-absorbing effects of technical provisions and deferred taxes is reflected in the above amount.

**FIGURE 14: RISK MODULE STRUCTURE OF SCR UNDER SOLVENCY II**



**FIGURE 15: CORRELATION MATRIX FOR OVERALL RISK AGGREGATION UNDER SOLVENCY II**

	LIFE	HEALTH	NON-LIFE	MARKET	DEFAULT
LIFE	1.00	0.25	0.00	0.25	0.25
HEALTH	0.25	1.00	0.00	0.25	0.25
NON-LIFE	0.00	0.00	1.00	0.25	0.50
MARKET	0.25	0.25	0.25	1.00	0.25
DEFAULT	0.25	0.25	0.50	0.25	1.00

## 2.5 LIFE INSURANCE RISK

The sub-risks of life insurance risk under J-ICS and ICS are mortality risk, longevity risk, morbidity/disability risk, lapse risk and expense risk. There are catastrophe risk and revision risk in addition to these risks under Solvency II.

Additionally, under Solvency II, health insurance risk is separated from life insurance risk and non-life insurance risk, and is divided into similar to life techniques (SLT) health insurance risk, not SLT (non-SLT) health insurance risk and catastrophe risk as its sub-risks. SLT health insurance risk is calculated in the same manner as life insurance risk, and non-SLT health insurance risk is calculated in the same manner as non-life insurance risk.

The correlation matrix for aggregating the sub-risks of life insurance risk is the same under J-ICS, ICS and Solvency II, except for the inclusion of catastrophe risk and revision risk, as shown in Figure 16. The correlation matrix for aggregating the sub-risks of health insurance risk under Solvency II is shown in Figure 17, and the correlation matrix for aggregating the sub-risks of SLT health insurance risk is the same as Figure 16, except for the inclusion of catastrophe risk.

**FIGURE 16: CORRELATION MATRIX FOR LIFE INSURANCE RISK AGGREGATION UNDER J-ICS, ICS AND SOLVENCY II**

	MORTALITY	LONGEVITY	MORBIDITY	LAPSE	EXPENSE	CAT*	REVISION*
MORTALITY	1.00	-0.25	0.25	0.00	0.25	0.25	0.00
LONGEVITY	-0.25	1.00	0.00	0.25	0.25	0.00	0.25
MORBIDITY	0.25	0.00	1.00	0.00	0.50	0.25	0.00
LAPSE	0.00	0.25	0.00	1.00	0.50	0.25	0.00
EXPENSE	0.25	0.25	0.50	0.50	1.00	0.25	0.50
CAT*	0.25	0.00	0.25	0.25	0.25	1.00	0.00
REVISION*	0.00	0.25	0.00	0.00	0.50	0.00	1.00

\* Catastrophe risk and revision risk are for Solvency II only.

**FIGURE 17: CORRELATION MATRIX FOR HEALTH INSURANCE RISK AGGREGATION UNDER SOLVENCY II**

	SLT	NON-SLT	CAT
SLT	1.00	0.50	0.25
NON-SLT	0.50	1.00	0.25
CAT	0.25	0.25	1.00

Under J-ICS and ICS, the stress factors for life insurance risk differ by geographic region. Hereinafter, the stress factors for Japan are described.

Under Solvency II, in addition to the standard method using a stress approach, the simplified method using a factor-based approach is also specified. Under J-ICS and ICS, no simplified method is specified.

### 2.5.1 Mortality risk

Under J-ICS and ICS, the amount of mortality risk is defined as the decrease in net asset value resulting from a future increase in mortality rates to all homogeneous risk groups where an increase in mortality rates leads to a decrease in net asset value. Under Solvency II, in principle, a similar calculation shall be performed on a per-policy basis with a floor of 0 (or per homogeneous risk group if not materially different). The stress factors differ among J-ICS, ICS and Solvency II, as shown in Figure 18.

**FIGURE 18: STRESS FACTORS FOR MORTALITY RISK (INCREASE RATES IN MORTALITY RATES)**

J-ICS	ICS	SOLVENCY II*
12.5%	10%	15%

\* Under Solvency II, the same applies to mortality sub-risk of SLT health insurance risk.

### 2.5.2 Longevity risk

Under J-ICS and ICS, the amount of longevity risk is defined as the decrease in net asset value resulting from a future decrease in mortality rates to all homogeneous risk groups where a decrease in mortality rates leads to a decrease in net asset value. Under Solvency II, in principle, a similar calculation shall be performed on a per-policy basis with a floor of 0 (or per homogeneous risk group if not materially different). The stress factors differ among J-ICS, ICS and Solvency II, as shown in Figure 19.

**FIGURE 19: STRESS FACTORS FOR LONGEVITY RISK (DECREASE RATES IN MORTALITY RATES)**

J-ICS	ICS	SOLVENCY II*
20%	17.5%	20%

\* Under Solvency II, the same applies to longevity sub-risk of SLT health insurance risk.

### 2.5.3 Morbidity/disability risk

The amount of morbidity/disability risk is defined as the decrease in net asset value resulting from a future increase in incidence rates or a future decrease in recovery rates.

Under J-ICS and ICS, insurance policies are classified into four mutually exclusive product categories shown in Figure 20. The stress factors are set according to these product categories and the insurance term (an insurance term of five years or less is short-term, and long-term is an insurance term of more than five years) as shown in Figure 21. For product category 4, the larger of the amounts resulting from applying the incidence increase scenario and the recovery decrease scenario is adopted.

**FIGURE 20: PRODUCT CATEGORIES FOR MORBIDITY/DISABILITY RISK UNDER J-ICS AND ICS**

CATEGORY	DEFINITION	EXAMPLE
<b>Product category 1</b>	Products that provide coverage for medical expenses	Surgery, outpatient, treatment costs (fixed amount, indemnity)
<b>Product category 2</b>	Products that provide lump-sum payments at the occurrence of a health event	Accidental death, cancer diagnosis, permanent disability
<b>Product category 3</b>	Products that provide short-term recurring payments	Hospitalization, disability income
<b>Product category 4</b>	Products that provide long-term recurring payments	Long-term care

**FIGURE 21: STRESS FACTORS FOR MORBIDITY/DISABILITY RISK (INCREASE RATES IN INCIDENCE RATES AND DECREASE RATES IN RECOVERY RATES) UNDER J-ICS AND ICS**

CATEGORY	SUBJECT TO BE STRESSED	SHORT-TERM		LONG-TERM	
		J-ICS/ICS	J-ICS	ICS	ICS
Product category 1	Incidence rates	20%	12%	8%	
Product category 2	Incidence rates	25%	20%	15%	
Product category 3	Incidence rates	20%	12%	10%	
Product category 4	Incidence rates	25%	20%	20%	
	Recovery rates	20%	20%	20%	

Under Solvency II, morbidity/disability risk that cannot be unbundled from life insurance policies are classified as life insurance risk, while other morbidity/disability risk is classified as health insurance risk. For morbidity/disability sub-risk of SLT health insurance risk, insurance policies are classified into two product categories shown in Figure 22. The stress scenarios and factors for each category are shown in Figure 23.

**FIGURE 22: PRODUCT CATEGORIES FOR MORBIDITY/DISABILITY SUB-RISK OF SLT HEALTH INSURANCE RISK UNDER SOLVENCY II**

CATEGORY	DEFINITION
Medical expense insurance	Products that provide financial compensation for medical treatment or care due to illness, accident, disability, or infirmity
Income protection insurance	Products that provide financial compensation in consequence of illness, accident, disability, or infirmity other than the above insurance

**FIGURE 23: STRESS SCENARIOS AND FACTORS FOR MORBIDITY/DISABILITY RISK UNDER SOLVENCY II**

CATEGORY	STRESS SCENARIOS AND FACTORS
Life insurance risk	Increase of 35% in incidence rates for the next year, increase of 25% in incidence rates for all years thereafter and decrease of 20% in recovery rates for all future years
SLT health insurance risk	<b>Medical expense insurance</b> The larger of the amounts resulting from applying the following scenarios: <ul style="list-style-type: none"> <li>▪ Upward stress: Increase of 5% in the amount of medical expenses and increase of 1%pt in the inflation rate for all future years</li> <li>▪ Downward stress: Decrease of 5% in the amount of medical expenses and decrease of 1%pt in the inflation rate for all future years</li> </ul>
	<b>Income protection insurance</b> Similar to morbidity/disability sub-risk of life insurance risk, but the recovery decrease stress is replaced by the following stresses: <ul style="list-style-type: none"> <li>▪ Decrease of 20% in recovery rates where those rates are less than 50%</li> <li>▪ Decrease of 20% in incidence rates where those rates are 50% or less</li> </ul>

## 2.5.4 Lapse risk

In the calculation of lapse risk, all legal or contractual options that can change the value of future cash flows (surrender, lapse, renewal, etc.) shall be taken into account. The amount of lapse risk is defined as the largest of the amounts resulting from applying the following three scenarios.

- **Lapse up:** Under J-ICS and ICS, the amount of lapse-up risk is defined as the decrease in net asset value resulting from a future increase in lapse rates to all homogeneous risk groups where an increase in lapse rates leads to a decrease in net asset value. Under Solvency II, in principle, a similar calculation shall be performed on a per-policy basis with a floor of 0.
- **Lapse down:** Under J-ICS and ICS, the amount of lapse-down risk is defined as the decrease in net asset value resulting from a future decrease in lapse rates to all homogeneous risk groups where a decrease in lapse rates leads to a decrease in net asset value. Under Solvency II, in principle, a similar calculation shall be performed on a per-policy basis with a floor of 0.
- **Mass lapse:** Under J-ICS and ICS, the amount of mass lapse risk is defined as the total amount of the decrease with a floor of 0 in net asset value resulting from mass lapse at the valuation date to each product category as shown in Figure 24. Under Solvency II, in principle, a similar calculation shall be performed on a per-policy basis with a floor of 0, only for the type of discontinuance that most negatively affects net asset value.

The stress factors differ among J-ICS, ICS and Solvency II, as shown in Figure 24.

FIGURE 24: STRESS FACTORS FOR LAPSE RISK (INCREASE/DECREASE RATES IN LAPSE RATES)

STRESS SCENARIO	J-ICS	ICS	SOLVENCY II*
Lapse up	25%	20%	50%
Lapse down	25%	20%	50% with a cap of 20%pt of the decrement
Mass lapse	Others: 30% Group pension: 50%	Individual: 30% Others: 50%	Others: 40% Pension fund: 70%

\* Under Solvency II, the same applies to lapse sub-risk of SLT health insurance risk.

## 2.5.5 Expense risk

The amount of expense risk is defined as the decrease in net asset value resulting from a future increase in unit expense and the inflation rate. The stress factors differ among J-ICS, ICS and Solvency II, as shown in Figure 25.

FIGURE 25: STRESS FACTORS FOR EXPENSE RISK (INCREASE RATES IN UNIT EXPENSE AND INCREMENTS IN INFLATION RATE)

SUBJECT TO BE STRESSED	J-ICS/ICS	SOLVENCY II*
Unit expense	6%	10%
Inflation rate	1%pt	1%pt

\* Under Solvency II, the same applies to expense sub-risk of SLT health insurance risk.

## 2.6 CATASTROPHE RISK

Catastrophe risk stems from low-frequency and high-severity events. Catastrophe risk under J-ICS and ICS is on the same level as life insurance risk and non-life insurance risk, whereas catastrophe risk under Solvency II is divided into sub-risks of life insurance risk, health insurance risk and non-life insurance risk. The calculation methods of catastrophe risk are shown in Figure 26.

FIGURE 26: CALCULATION METHODS OF CATASTROPHE RISK

ITEM	J-ICS/ICS	SOLVENCY II									
<b>Covered perils and aggregation method</b>	<p>Aggregate the risk amounts for the following perils with a correlation coefficient of 0.</p> <ul style="list-style-type: none"> <li>▪ Natural catastrophe (non-life only)</li> <li>▪ Terrorist attack</li> <li>▪ Pandemic</li> <li>▪ Credit and surety (non-life only)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Life insurance risk: The peril is not specified.</li> <li>▪ Health insurance risk: Aggregate the risk amounts for the following perils with a correlation coefficient of 0.               <ul style="list-style-type: none"> <li>– Mass accident</li> <li>– Concentration</li> <li>– Pandemic</li> </ul> </li> <li>▪ Non-life insurance risk: For the risk amounts of the following perils, after summing the risk amounts for natural catastrophe and non-proportional property reinsurance, aggregate them with a correlation coefficient of 0.               <ul style="list-style-type: none"> <li>– Natural catastrophe</li> <li>– Non-proportional property reinsurance</li> <li>– Man-made catastrophe</li> <li>– Other non-life catastrophe</li> </ul> </li> </ul>									
<b>Stress scenarios and factors</b>	<ul style="list-style-type: none"> <li>▪ Terrorist attack: The decrease in net asset value resulting from death and disability occurring at the following rates due to a five-ton bomb blast for the largest geographical risk concentration partly or fully located within 500m radius.               <table border="1" data-bbox="462 1096 906 1297"> <thead> <tr> <th>Zone</th> <th>Mortality Rate</th> <th>Disability Rate</th> </tr> </thead> <tbody> <tr> <td>Within 200m radius</td> <td>15%</td> <td>20%</td> </tr> <tr> <td>Between 200m and 500m radius</td> <td>1.5%</td> <td>10%</td> </tr> </tbody> </table> </li> <li>▪ Pandemic: The decrease in net asset value resulting from an instantaneous increase of 0.1%pt in mortality rates</li> </ul>	Zone	Mortality Rate	Disability Rate	Within 200m radius	15%	20%	Between 200m and 500m radius	1.5%	10%	<ul style="list-style-type: none"> <li>▪ Life insurance risk: The decrease in net asset value resulting from an instantaneous increase of 0.15%pt in mortality rates to all insurance policies where an increase in mortality rates leads to a decrease in net asset value; the factor-based simplified method is also specified.</li> <li>▪ Health insurance risk: Calculate using a factor-based approach for each peril.</li> </ul>
Zone	Mortality Rate	Disability Rate									
Within 200m radius	15%	20%									
Between 200m and 500m radius	1.5%	10%									

## 2.7 MARKET RISK

The sub-risks of market risk under J-ICS and ICS are interest rate risk, (non-default) spread risk, equity risk, real estate risk, currency risk and asset concentration risk. The sub-risks of market risk under Solvency II are the same as these.

The correlation matrix for aggregating the sub-risks of market risk is shown in Figure 27 for J-ICS and ICS, and in Figure 28 for Solvency II.

**FIGURE 27: CORRELATION MATRIX FOR MARKET RISK AGGREGATION UNDER J-ICS AND ICS**

	INTEREST	SPREAD UP*	SPREAD DOWN*	EQUITY	REAL ESTATE	CURRENCY	CONCENTRATION
INTEREST	1.00	0.25	0.25	0.25	0.25	0.25	0.00
SPREAD UP*	0.25	1.00	1.00	0.75	0.50	0.25	0.00
SPREAD DOWN*	0.25	1.00	1.00	0.00	0.00	0.25	0.00
EQUITY	0.25	0.75	0.00	1.00	0.50	0.25	0.00
REAL ESTATE	0.25	0.50	0.00	0.50	1.00	0.25	0.00
CURRENCY	0.25	0.25	0.25	0.25	0.25	1.00	0.00
CONCENTRATION	0.00	0.00	0.00	0.00	0.00	0.00	1.00

\* Regarding spread risk, either spread-up risk or spread-down risk is adopted.

**FIGURE 28: CORRELATION MATRIX FOR MARKET RISK AGGREGATION UNDER SOLVENCY II**

	INTEREST UP* <sup>1</sup>	INTEREST DOWN* <sup>1</sup>	SPREAD	EQUITY	PROPERTY	CURRENCY	CONCENTRATION
INTEREST UP* <sup>1</sup>	1.00	1.00	0.00	0.00	0.00	0.25	0.00
INTEREST DOWN* <sup>1</sup>	1.00	1.00	0.50 <sup>2</sup>	0.50	0.50	0.25	0.00
SPREAD	0.00	0.50 <sup>2</sup>	1.00	0.75	0.50	0.25	0.00
EQUITY	0.00	0.50	0.75	1.00	0.75	0.25	0.00
PROPERTY	0.00	0.50	0.50	0.75	1.00	0.25	0.00
CURRENCY	0.25	0.25	0.25	0.25	0.25	1.00	0.00
CONCENTRATION	0.00	0.00	0.00	0.00	0.00	0.00	1.00

\*<sup>1</sup> Regarding interest rate risk, either interest rate up risk or interest rate down risk is adopted.

\*<sup>2</sup> In the upcoming Solvency II reforms, the correlation coefficient between interest rate down risk and spread risk will be revised to 0.25.

Other than some exceptions, the calculation methods and factors for each sub-risk are basically the same between J-ICS and ICS. Therefore, it should be noted that, particularly for companies with a large proportion of investments in Japanese domestic assets, the results may differ from those obtained by calibrating risk only for Japanese domestic assets.

Under J-ICS and ICS, there are some criteria on risk mitigation techniques for market risk such as limits on renewal frequency; for equity risk and currency risk, the replacement of the risk mitigation instrument does not take place more often than every month, while for other sub-risks, the replacement of the risk mitigation instrument does not take place more often than every three months unless certain criteria are met. Additionally, it should be noted that the renewal cost is deducted from the amount of risk mitigation effect.

### 2.7.1 Interest rate risk

In the calculation of interest rate risk, all assets and liabilities that are sensitive to changes in interest rates shall be taken into account. Interest rate risk under J-ICS and ICS takes into account both level risk and mean-reversion risk, making the calculation complex, whereas interest rate risk under Solvency II takes into account level risk only. The calculation methods for each are shown in Figure 29.

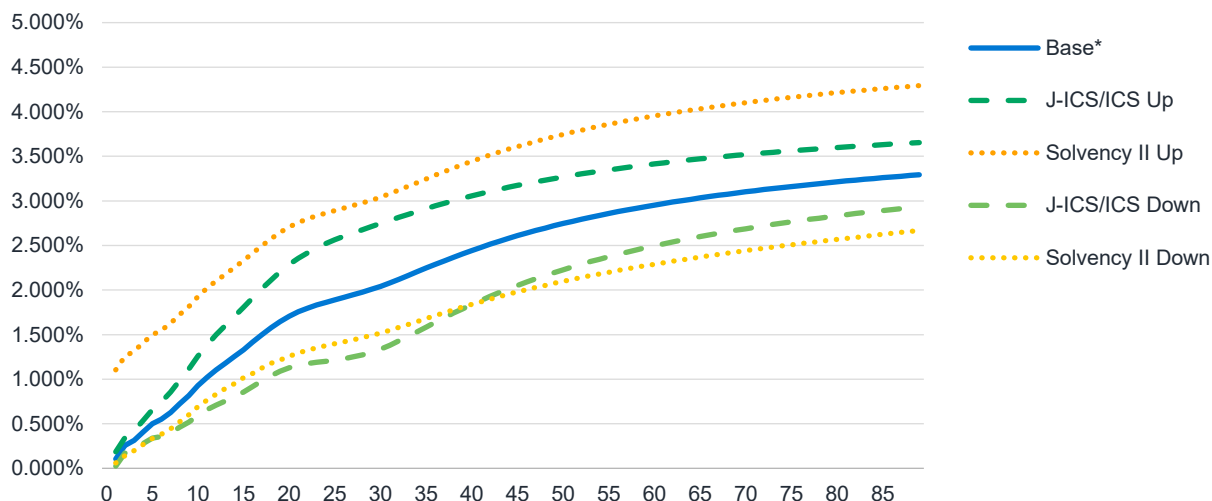
FIGURE 29: CALCULATION METHODS OF INTEREST RATE RISK

ITEM	J-ICS/ICS	SOLVENCY II
<b>Risk amount</b>	The sum of the following amounts: <ul style="list-style-type: none"> <li>The total currency amount of the decrease with a floor of 0 in net asset value based on the mean-reversion scenario</li> <li>VaR 99.5% of the total currency amount of random variable aggregating the results of the level-up and level-down scenarios</li> </ul>	The larger of the following amounts: <ul style="list-style-type: none"> <li>The total currency amount of the decrease in net asset value based on the interest rate up scenario</li> <li>The total currency amount of the decrease in net asset value based on the interest rate down scenario</li> </ul>
<b>Stress scenarios</b>	For each scenario, after adjusting segment 1 and 3 of the yield curve, segment 2 is calculated based on the Smith-Wilson method.	For each scenario, stress factors (relative change rates in interest rates) according to the maturity are applied to the yield curve, with a floor of 1%pt of the increment for the interest rate up scenario and no down stress if the rate at a given maturity is negative.

Under J-ICS, the internal discount rate method may be applied to JPY with supervisory approval. This method calculates the amount of interest rate risk based on the discount rates derived from the yield curve used in an economic valuation approach that each company deems appropriate.

Assuming that the risk-free rates and spreads under Solvency II are the same as those under J-ICS and ICS, the differences in the levels of stressed interest rates are shown in Figure 30. For the interest rate up scenario under Solvency II, since there is the minimum limit of 1%pt stress, the level of stressed interest rates is higher than that of the level-up scenario under J-ICS and ICS in JPY, where the level of interest rates is low. For the interest rate down scenario under Solvency II, the level of stressed interest rates is almost the same as that of the level-down scenario under J-ICS and ICS. However, in the upcoming Solvency II reforms, the stresses will be a combination of absolute and relative shocks, which will become substantially larger than the current stresses and can also lead to negative interest rates after stress.

FIGURE 30: LEVELS OF STRESSED INTEREST RATES



\* The base yield curve is calculated from the interest rates of general bucket for JPY as of March 2024 in ICS data collection 2024.

## 2.7.2 (Non-default) spread risk

Regarding (non-default) spread risk, the scope is slightly different between J-ICS/ICS and Solvency II. In other words, non-default spread risk under J-ICS and ICS does not include any default risk, whereas spread risk under Solvency II includes default risk on bonds and loans other than residential mortgage loans meeting certain criteria. Non-default spread risk under J-ICS and ICS is calculated using a stress approach, whereas spread risk under Solvency II is calculated using a factor-based approach except for credit derivatives. The calculation methods for each are shown in Figure 31.

FIGURE 31: CALCULATION METHODS OF (NON-DEFAULT) SPREAD RISK

ITEM	J-ICS/ICS NON-DEFAULT SPREAD RISK	SOLVENCY II SPREAD RISK
<b>Risk amount</b>	<p>The larger of the following amounts:</p> <ul style="list-style-type: none"> <li>a. The decrease in net asset value based on the upward stress scenario</li> <li>b. The decrease in net asset value based on the downward stress scenario</li> </ul>	<p>The sum of the following amounts:</p> <ul style="list-style-type: none"> <li>a. Spread risk on bonds and loans other than residential mortgage loans meeting certain criteria: The amount of credit risk exposure × risk factor; the simplified method is also specified</li> <li>b. Spread risk on securitization positions: The amount of credit risk exposure × risk factor</li> <li>c. Spread risk on credit derivatives: The larger of the following amounts with a floor of 0 <ul style="list-style-type: none"> <li>– The decrease in net asset value based on the upward stress scenario</li> <li>– The decrease in net asset value based on the downward stress scenario</li> </ul> </li> </ul>
<b>Stress scenarios and factors</b>	<ul style="list-style-type: none"> <li>a. <math>\text{Spread} + \max\{0.4\%, \min(1.5\%, 75\% \times  \text{spread} \}\}</math></li> <li>b. <math>\text{Spread} - 75\% \times  \text{spread} </math></li> </ul>	<ul style="list-style-type: none"> <li>a. Risk factors according to the credit rating and duration</li> <li>b. Same as above</li> <li>c. Stress factors according to the credit rating are applied to the spread</li> </ul>

Under J-ICS and ICS, since a stress approach is applied, the spreads included in the discount rates for insurance liabilities are also stressed, causing a change not only in asset value but also in liability value. In particular, when the duration of liabilities is sufficiently longer than that of assets, the decrease in liability value caused by spread widening can exceed the decrease in the asset value, leading to recognition of spread-down risk. In this situation, spread-up risk for assets may not be appropriately recognized. It is necessary to pay attention to this point in actual risk management.

### 2.7.3 Equity risk

In the calculation of equity risk, all exposures related to equity risk (including funds and derivatives) that have a direct or indirect impact on the economic balance sheet shall be taken into account. Equity risk under J-ICS and ICS takes into account both level risk and volatility risk, whereas equity risk under Solvency II takes into account level risk only. The calculation methods for each are shown in Figure 32.

FIGURE 32: CALCULATION METHODS OF EQUITY RISK

ITEM	J-ICS/ICS	SOLVENCY II
<b>Risk amount</b>	The sum of the following amounts: <ol style="list-style-type: none"> <li>The decrease with a floor of 0 in net asset value based on the level stress scenario</li> <li>The decrease with a floor of 0 in net asset value based on the volatility stress scenario</li> </ol>	The amount of the decrease in net asset value based on a stress scenario of decreasing the value of equities, with a cap of 100% of net asset value
<b>Stress scenarios and factors</b>	<ol style="list-style-type: none"> <li>Decrease rates in the value of equities according to the following asset segments, as shown in Figure 33               <ul style="list-style-type: none"> <li>– Listed equities in developed markets</li> <li>– Infrastructure equities in developed markets</li> <li>– Listed equities in emerging markets</li> <li>– Infrastructure equities in emerging markets</li> <li>– Hybrid debts and preference shares</li> <li>– Other equities</li> </ul> </li> <li>Increase rates in the implied volatilities according to the maturity, as shown in Figure 34</li> </ol>	Decrease rates in the value of equities according to the following types, as shown in Figure 35 <ul style="list-style-type: none"> <li>▪ Type 1: Equities listed in the markets of EEA or OECD member countries</li> <li>▪ Type 2: Equities listed in the market of countries other than EEA or OECD member countries, unlisted equities, etc.</li> <li>▪ Qualifying infrastructure equities (QIE)</li> <li>▪ Qualifying infrastructure corporate equities (QICE)</li> </ul>
<b>Aggregation method</b>	<ol style="list-style-type: none"> <li>Aggregate as follows               <ul style="list-style-type: none"> <li>– Equities in developed markets: Aggregate the risk amounts for listed equities and infrastructure equities in developed markets with a correlation coefficient of 1</li> <li>– Equities in emerging markets: Aggregate the risk amounts for listed equities and infrastructure equities in emerging markets with a correlation coefficient of 0.75</li> <li>– Aggregate the risk amounts for equities in developed markets, equities in emerging markets, hybrid debts and preference shares, and other equities, with the correlation matrix shown in Figure 36</li> </ul> </li> </ol>	Aggregate the risk amounts for type 1 and type 2 with a correlation coefficient of 0.75, where QIE and QICE are considered as type 2

Under ICS, the neutral adjusted dampener (NAD) is applied to the level stress factors. This is an additional adjustment rate, within a range of  $\pm 10\%$ , that is based on the deviation rate from the three-year average of the equity index. Under Solvency II, a similar adjustment called the symmetric adjustment (SA) is applied. Under J-ICS, such adjustments are not applied.

FIGURE 33: LEVEL STRESS FACTORS FOR EQUITY RISK (DECREASE RATES IN THE VALUE OF EQUITIES) UNDER J-ICS AND ICS

ASSET SEGMENT	DECREASE RATE (BEFORE NAD UNDER ICS)
Listed equities in developed markets	35%
Infrastructure equities in developed markets	27%
Listed equities in emerging markets	48%
Infrastructure equities in emerging markets	37%
Hybrid debts and preference shares	4%–35% according to the rating
Other equities	49%

**FIGURE 34: VOLATILITY STRESS FACTORS FOR EQUITY RISK (INCREASE RATES IN THE IMPLIED VOLATILITIES) UNDER J-ICS AND ICS**

MATURITY (MONTHS)	INCREASE RATE
0-1	42%
3	28%
6	23%
12	20%
24	17%
36	16%
48	15%
60	14%
84	14%
120	12%
144	11%
180	10%
240	7%
300	4%
360 and above	0%

**FIGURE 35: STRESS FACTORS FOR EQUITY RISK (DECREASE RATES IN THE VALUE OF EQUITIES) UNDER SOLVENCY II**

ASSET SEGMENT*		DECREASE RATE
Type 1	Strategic participation and long-term equity	22%
	Others	39% + SA
Type 2	Strategic participation and long-term equity	22%
	Others	49% + SA
QIE	Strategic participation and long-term equity	22%
	Others	30% + 77% × SA
QICE	Strategic participation and long-term equity	22%
	Others	36% + 92% × SA

\* Long-term equity is defined as an equity that meets certain criteria; for example, the sub-set of equity investments as well as the holding period of each equity investment within the sub-set are clearly identified.

**FIGURE 36: CORRELATION MATRIX FOR EQUITY-LEVEL RISK AGGREGATION UNDER J-ICS AND ICS**

	DEVELOPED	EMERGING	HYBRID/PREFERENCE	OTHER
DEVELOPED	1.00	0.75	1.00	0.75
EMERGING	0.75	1.00	0.75	0.75
HYBRID/PREFERENCE	1.00	0.75	1.00	0.75
OTHER	0.75	0.75	0.75	1.00

### 2.7.4 Real estate risk/property risk

In the calculation of real estate risk or property risk, all exposures related to real estate risk (including funds) that have a direct or indirect impact on the economic balance sheet shall be taken into account. The amount of real estate risk under J-ICS and ICS and property risk under Solvency II are defined as the decrease in net asset value based on a stress scenario of decreasing real estate or property prices. Under Solvency II, a cap of 100% of net asset value is applied. The stress factor (the decrease rate in real estate or property prices) is the same under J-ICS, ICS and Solvency II, and is set at 25%. Additionally, under J-ICS and ICS, non-life insurance risk for mortgage insurance is also taken into account.

### 2.7.5 Currency risk

Currency risk under J-ICS and ICS is calculated by multiplying factors to the net open position that is the net asset equivalent amount adjusted by adding the present value of future profits from foreign exchange forward transactions and the delta equivalent amount of currency options, with other adjustments for each currency. In particular, for subsidiaries or branches located in foreign countries that meet certain criteria, 10% of the net amount of current estimate after offsetting with deferred tax assets and deferred tax liabilities is deducted in the net open position. In contrast, under Solvency II, currency risk is calculated based on the decrease in net asset value resulting from applying stress scenarios for each currency. The calculation methods for each are shown in Figure 37.

FIGURE 37: CALCULATION METHODS OF CURRENCY RISK

ITEM	J-ICS/ICS	SOLVENCY II
<b>Risk amount</b>	The larger of the following amounts: <ol style="list-style-type: none"> <li>The amount of risk from a net long-position decrease in the value of currencies</li> <li>The amount of risk from a net short-position increase in the value of currencies</li> </ol>	The total amount of the larger of the following amounts for each currency: <ul style="list-style-type: none"> <li>▪ The decrease in net asset value based on the exchange rate upward stress scenario</li> <li>▪ The decrease in net asset value based on the exchange rate downward stress scenario</li> </ul>
<b>Stress scenarios and factors</b>	<ol style="list-style-type: none"> <li>For currencies with a positive net open position               <ul style="list-style-type: none"> <li>– The amount of net open position for each currency × risk factor according to the currency pair; risk factors for major currencies against JPY are shown in Figure 38</li> <li>– Aggregate the risk amounts for each currency with a correlation coefficient of 0.5</li> </ul> </li> <li>For currencies with a negative net open position, same as above</li> </ol>	The stress factors (change rates in exchange rates) are set at ±25%; for currencies pegged to EUR, individual reduced stress factors are applied

FIGURE 38: RISK FACTORS FOR MAJOR CURRENCIES AGAINST JPY IN CURRENCY RISK (CHANGE RATES IN NET SHORT POSITION) UNDER J-ICS AND ICS

CURRENCY	CHANGE RATE
AUD	50%
EUR	35%
GBP	40%
USD	30%

## 2.7.6 Asset concentration risk

Asset concentration risk under J-ICS, ICS and Solvency II, that is a complement to other sub-risks of market risk and credit risk, is calculated using a factor-based approach. The calculation methods for each are shown in Figure 39.

FIGURE 39: CALCULATION METHODS OF ASSET CONCENTRATION RISK

ITEM	J-ICS/ICS	SOLVENCY II
<b>Risk amount</b>	The sum of the following amounts: a. The amount of asset concentration risk for asset exposures other than real estate b. The amount of asset concentration risk for real estate exposures	Aggregated amount of concentration risk amounts for each counterparty
<b>Risk factors</b>	a. The total amount of the following amounts for each counterparty group: (The amount of net exposure $\times$ 0.71656 $\times$ factor based on equity risk and credit risk); under J-ICS, upper limits are applied based on subsidiary shares and intra-group reinsurance b. The total amount of the following amounts for each real estate group: max (0, the amount of real estate exposure - the amount of investment assets for insurance business $\times$ 3%) $\times$ 25%	Aggregate the following amounts for each counterparty group with a correlation coefficient of 0: The amount of net exposure $\times$ max (0, the amount of net exposure/the amount of assets - threshold according to the credit rating) $\times$ risk factor according to the credit rating; counterparty groups that belong to the same group, provided that certain criteria are met, are excluded

## 2.8 CREDIT RISK/COUNTERPARTY DEFAULT RISK

Credit risk under J-ICS and ICS includes all default risk. In contrast, as described in 2.7.2, under Solvency II, default risk on bonds and loans other than residential mortgage loans meeting certain criteria is already included in spread risk, and therefore this risk component is not included in counterparty default risk. Under J-ICS and ICS, the net amount of the underlying asset is regarded as the exposure based on a replacement cost approach, whereas under Solvency II, the loss given default (LGD) is regarded as the exposure, where collateral is deducted from the amount of the underlying asset, based on a haircut approach. Additionally, under J-ICS and ICS, credit risk for insurance policies with special accounts, and non-life insurance risk for credit insurance are also taken into account. The calculation methods for each are shown in Figure 40.

In J-ICS, eligible rating agencies are explicitly designated and consist of the following seven companies. The number of available credit ratings is fewer compared to ICS.

- Rating and Investment Information, Inc. (R&I)
- Japan Credit Rating Agency, Ltd. (JCR)
- Moody's Investors Service
- S&P Global Ratings
- Fitch Ratings
- DBRS
- AM Best

**FIGURE 40: CALCULATION METHODS OF CREDIT RISK/COUNTERPARTY DEFAULT RISK**

ITEM	J-ICS/ICS CREDIT RISK	SOLVENCY II COUNTERPARTY DEFAULT RISK
<b>Risk amount</b>	<p>The sum of the following amounts:</p> <p>a. The total amount of credit risk amounts for each of the following credit exposures:</p> <ul style="list-style-type: none"> <li>- Public sector entities; under J-ICS, municipal bonds are excluded</li> <li>- Corporations</li> <li>- Infrastructure investments</li> <li>- Securitized products</li> <li>- Re-securitized products</li> <li>- Reinsurance</li> <li>- Mortgage loans</li> <li>- Other assets</li> </ul> <p>b. The amount of credit risk for insurance policies with special accounts</p> <p>c. The amount of non-life insurance risk for credit insurance</p>	<p>Aggregated amount of risk amounts for the following two types:</p> <ul style="list-style-type: none"> <li>▪ Type 1: Rated exposures such as reinsurance, securitized products, derivatives, cash at bank, etc.</li> <li>▪ Type 2: Unrated exposures such as receivables, policyholder debts, mortgage loans, etc.</li> </ul>
<b>Risk factors</b>	<p>a. The total amount of the following amounts for each exposure category:</p> <p>The amount of net exposure × risk factor according to the rating and maturity</p> <p>b. The amount of the increase in liability value for insurance policies with special accounts, resulting from credit risk losses</p>	<p>Aggregate the following risk amounts for the two types with a correlation coefficient of 0.75:</p> <ul style="list-style-type: none"> <li>▪ Type 1: Factor × the standard deviation of exposures (<math>\sigma</math>) if <math>\sigma</math> is less than or equal to 20% of the sum of LGD, or the sum of LGD if otherwise</li> <li>▪ Type 2: <math>0.9 \times</math> the total LGD on all receivables due for more than three months + <math>0.15 \times</math> the total LGD on other exposures</li> </ul>

## 2.9 OPERATIONAL RISK

Under J-ICS, ICS and Solvency II, operational risk is calculated using a factor-based approach.

The amount of operational risk under J-ICS is as follows.

The amount of operational risk

= min (the amount of operational risk before applying a cap, capital requirement excluding operational risk × 20%)

The amount of operational risk before applying a cap

= the amount of operational risk for life insurance (risk) policies  
+ the amount of operational risk for life insurance (non-risk) policies  
+ the amount of operational risk for non-life insurance policies

Here, life insurance (non-risk) policies refer to life insurance policies where the investment risk is borne by the policyholders, while life insurance (risk) policies refer to life insurance policies other than life insurance (non-risk) policies. The amount of each operational risk is as follows.

The amount of operational risk for life insurance (risk) policies

= max (written premium for the relevant policies in the most recent year × 4%,  
current estimate for the relevant policies × 0.45%, 0)  
+ max (written premium for the relevant policies in the most recent year  
- written premium for the relevant policies in the previous year × 120%, 0) × 4%

The amount of operational risk for life insurance (non-risk) policies

= max (current estimate for the relevant policies × 0.40%, 0)

The amount of operational risk for non-life insurance policies  
 = max (written premium for the relevant policies in the most recent year  $\times$  2.75%,  
 current estimate for the relevant policies  $\times$  2.75%, 0)  
 + max (written premium for the relevant policies in the most recent year  
 - written premium for the relevant policies in the previous year  $\times$  120%, 0)  $\times$  2.75%

Here, written premium and current estimate are on a gross of reinsurance basis.

The amount of operational risk under ICS is the same as J-ICS, except that the cap of capital requirement excluding operational risk  $\times$  20% is not applied.

The amount of operational risk under Solvency II is as follows.

The amount of operational risk  
 = min (the amount of operational risk before applying a cap, BSCR  $\times$  30%)  
 + Expenses (excluding acquisition expenses) for life insurance (non-risk) policies in the most recent year  $\times$  25%

The amount of operational risk before applying a cap  
 = max (the amount of operational risk based on premium,  
 The amount of operational risk based on technical provisions)

The amount of each operational risk is as follows.

The amount of operational risk based on premium  
 = earned premium for life insurance (risk) policies in the most recent year  $\times$  4%  
 + earned premium for non-life insurance policies in the most recent year  $\times$  3%  
 + max (earned premium for life insurance (risk) policies in the most recent year  
 - earned premium for life insurance (risk) policies in the previous year  $\times$  120%, 0)  $\times$  4%  
 + max (earned premium for non-life insurance policies in the most recent year  
 - earned premium for non-life insurance policies in the previous year  $\times$  120%, 0)  $\times$  3%

The amount of operational risk based on technical provisions  
 = max (technical provisions for life insurance (risk) policies, 0)  $\times$  0.45%  
 + max (technical provisions for non-life insurance policies, 0)  $\times$  3%

Here, earned premium and technical provisions are on a gross of reinsurance basis.

## **2.10 RISKS FOR SOLVENCY II ONLY**

### **2.10.1 Revision risk**

Revision risk is the risk that arises resulting from fluctuations of revision rates applied to annuities, due to changes in the legal environment or health status of the insured. The amount of revision risk under Solvency II is defined as the decrease in net asset value resulting from a future increase in the annuity amount exposed to revision risk. The stress factors (the increase rate in the annuity amount) are 3% for life insurance risk and 4% for SLT health insurance risk.

### **2.10.2 Lapse sub-risk of non-life insurance risk**

Under Solvency II, there is lapse risk as a sub-risk of non-life insurance risk.

### **2.10.3 Intangible asset risk**

Intangible assets are exposed to market risk and internal risk. The amount of intangible asset risk under Solvency II is calculated as the amount of intangible assets on the balance sheet  $\times$  0.8.

## 2.11 UNDERTAKING-SPECIFIC PARAMETERS AND INTERNAL MODELS

Under J-ICS, it is permitted to replace the stress factors for some sub-risks of life insurance risk (mortality risk, longevity risk, morbidity/disability risk and lapse-up/-down risk) and the risk factors for non-life insurance risk with undertaking-specific parameters (USPs) based on the company's own experience. However, the application of USPs requires supervisory approval. Under Solvency II, USPs can be applied to non-life insurance risk and revision risk and, as with J-ICS, supervisory approval is required. In contrast, under ICS, the application of USPs is not permitted to ensure international comparability. According to the results of a survey conducted by Milliman in 2023 for 34 Japanese domestic life insurance companies, about 30% of the companies were considering the application of USPs at that time.

Under J-ICS, subject to supervisory approval, the application of internal models is permitted only for natural catastrophe risk. In contrast, under ICS and Solvency II, subject to supervisory approval, the application of partial or full internal models is permitted.

## 3 Discussions

### 3.1 RESULTS OF FT 2024

As shown in Figure 2, according to the results of FT 2024, ESR on an industry basis as of the end of March 2024 is 219% for life insurance companies and 200% for non-life insurance companies. Meanwhile, the composition of capital requirement is shown in Figure 41. For both life and non-life insurance companies, the ratio of market risk is the largest, with equity risk being the largest among them. The breakdown of each insurance risk is not disclosed. However, for the disclosure of each company's ESR under J-ICS, which will begin at the end of March 2025, there will be a reporting format that requires the composition of capital requirement, including the breakdown of each insurance risk.

FIGURE 41: COMPOSITION OF CAPITAL REQUIREMENT ON AN INDUSTRY BASIS AS OF THE END OF MARCH 2024<sup>5</sup>

RISK MODULE	LIFE	NON-LIFE
Life insurance risk	30%	3%
Non-life insurance risk	0%	10%
Catastrophe risk	1%	13%
Market risk	57%	68%
Credit risk	9%	3%
Operational risk	3%	2%
Capital requirement before diversification and tax effects	100%	100%
Diversification effects	-20%	-17%
Tax effects	-17%	-18%
Capital requirement after diversification and tax effects	63%	64%
Interest rate risk	10%	2%
Spread risk	4%	1%
Equity risk	46%	63%
Real estate risk	7%	4%
Currency risk	28%	23%
Asset concentration risk	4%	8%
Market risk before diversification effects	100%	100%

5. FSA. (June 2025). Results summary of field test 2024 on economic value-based evaluation and supervisory methods, p. 3. Retrieved 9 December 2025 from [https://www.fsa.go.jp/policy/economic\\_value-based\\_solveny/09\\_1.pdf](https://www.fsa.go.jp/policy/economic_value-based_solveny/09_1.pdf).

### 3.2 SAMPLE CALCULATION

Based on each solvency regulation, we calculated the sub-risks of life insurance risk: mortality risk, longevity risk, morbidity/disability risk and lapse risk, using a simplified cash flow model. Since expense situation varies across companies, expense risk is omitted.

The products subject to calculation are typical insurance products in Japan: endowment insurance, whole life insurance, term insurance, whole life medical insurance and term medical insurance. The details of each product are assumed as shown in Figure 42. The underlying assumptions are set to be simplified and considered general standard. The main assumptions are shown in Figure 43. The results of each risk amount for the average of male and female aged 45 who are issued at the valuation date as sample cells are shown in Figure 44.

FIGURE 42: CONTENTS OF MOCK INSURANCE PRODUCTS

ITEM	ENDOWMENT	WHOLE LIFE	TERM	WHOLE LIFE MEDICAL	TERM MEDICAL
Insurance term	10 years	Whole life	10 years renewable up to age 90	Whole life	10 years renewable up to age 90
Premium payment term	Same as insurance term				
Premium mode	Annal				
Sum insured	Death: 5 million yen Maturity: 5 million yen	Death: 5 million yen		Hospitalization: 5,000 yen per day up to 60 days Inpatient surgery: 50,000 yen Outpatient surgery: 25,000 yen	
Surrender benefit	Cash value (surrender charge is deducted)			None	

FIGURE 43: MAIN ASSUMPTIONS FOR MOCK INSURANCE PRODUCTS

ITEM		PRODUCT	ASSUMPTION
Pricing	Mortality rates	Endowment, whole life, term	Standard mortality table for life insurance 2018
		Whole life medical, term medical	Standard mortality table for medical insurance 2018
	Morbidity rates	Whole life medical, term medical	Morbidity rates based on public national statistics + safety margin of 30% for hospitalization/surgery
	Lapse rate	Whole life medical, term medical	Flat rate of 3.0%
	Interest rate	All	1.0%
Projection	Mortality rates	All	Pricing rates × flat rate of 70% with no trend
	Morbidity rates	Whole life medical, term medical	Pricing rates × flat rate of 77% with no trend for hospitalization/surgery
	Lapse rate	All	Flat rate of 5.0%
	Renewal rate	Term, term medical	70%
	Discount rates	All	FT 2024 JPY yield

**FIGURE 44: RESULTS OF EACH SUB-RISK OF LIFE INSURANCE RISK FOR THE AVERAGE OF MALE AND FEMALE AGED 45 WHO ARE ISSUED AT THE VALUATION DATE**

PRODUCT	ITEM*		J-ICS	ICS	SOLVENCY II
Endowment	Current estimate (1,000 yen)			79	
	Risk amount/current estimate	Mortality risk	+4.8%	+3.9%	+5.8%
		Longevity risk	-7.7%	-6.8%	-7.7%
		Morbidity/disability risk	-	-	-
		Lapse-up risk	+9.4%	+7.6%	+18.3%
		Lapse-down risk	-10.1%	-8.0%	-20.9%
		Mass lapse risk	+94.1%	+94.1%	+125.5%
Whole life	Current estimate (1,000 yen)			486	
	Risk amount/current estimate	Mortality risk	+5.9%	+4.7%	+7.0%
		Longevity risk	-10.0%	-8.7%	-10.0%
		Morbidity/disability risk	-	-	-
		Lapse-up risk	+18.5%	+15.2%	+31.8%
		Lapse-down risk	-26.0%	-20.1%	-63.4%
		Mass lapse risk	+32.7%	+32.7%	+43.6%
Term	Current estimate (1,000 yen)			35	
	Risk amount/current estimate	Mortality risk	+32.1%	+25.7%	+38.5%
		Longevity risk	-51.9%	-45.3%	-51.9%
		Morbidity/disability risk	-	-	-
		Lapse-up risk	+13.1%	+10.7%	+24.4%
		Lapse-down risk	-15.6%	-12.2%	-34.3%
		Mass lapse risk	+50.0%	+50.0%	+66.6%
Whole life medical	Current estimate (1,000 yen)			105	
	Risk amount/current estimate	Mortality risk	-1.2%	-1.0%	-1.4%
		Longevity risk	+2.3%	+1.9%	+2.3%
		Morbidity/disability risk	+20.7%	+16.0%	+43.7%
		Lapse-up risk	+2.9%	+2.1%	+8.5%
		Lapse-down risk	+2.4%	+1.3%	+14.9%
		Mass lapse risk	+36.7%	+36.7%	+48.9%
Term medical	Current estimate (1,000 yen)			50	
	Risk amount/current estimate	Mortality risk	+0.2%	+0.1%	+0.2%
		Longevity risk	-0.3%	-0.2%	-0.3%
		Morbidity/disability risk	+16.1%	+12.2%	+34.5%
		Lapse-up risk	+10.8%	+8.8%	+20.0%
		Lapse-down risk	-12.7%	-10.0%	-27.9%
		Mass lapse risk	+36.6%	+36.6%	+48.8%

\* For reference, the risk amounts are shown without a floor of 0.

For all products and regulations, mass lapse risk is the largest among the sub-risks of life insurance risk, excluding expense risk. However, since mass lapse risk is significantly affected by the level of interest rates, it should be noted that the results may vary depending on the interest rate environment. In particular, the impact is significant on savings-type products with surrender benefit. If we replace the yield curve with that of FT 2021, which has lower interest rates, and perform a similar calculation, the amount of mass lapse risk decreases by 30% for endowment insurance and by 24% for whole life insurance, but mass lapse risk remains the largest. Additionally, the calculation results for sample cells are shown, but in practice, under J-ICS and ICS, the calculation is performed for each product category as shown in Figure 24. Therefore, within each category, offsetting occurs among policies where the current estimate moves in the opposite direction in response to an increase in lapses. In contrast, under Solvency II, since the calculation is, in principle, performed on a per-policy basis with a floor of 0, such offsetting does not occur.

For each regulation, lapse-up risk is the second-largest for endowment and whole life insurance, mortality risk is the second-largest for term insurance and morbidity/disability risk is the second-largest for medical insurance. When comparing among regulations, the risk amounts are generally proportional to the level of stress factors.

Upon the introduction of J-ICS, it was pointed out that there is little evidence for adopting the level of stress factors for mass lapse risk under ICS, and that the stress factors are set at an excessively conservative level. However, due to the lack of quantitative evidence for modifying the ICS levels, as well as the consideration of lapse rates during the period when many Japanese insurance companies failed, the same stress factors as ICS have been adopted since the FT stage. In past FTs, some companies did not incorporate mass lapse risk using internal models, but under J-ICS, the application of USP or internal model for mass lapse risk is not permitted.

## 4 Summary

The main differences among J-ICS, ICS and Solvency II in the ESR calculation are summarized in the following table.

ITEM	J-ICS	ICS	SOLVENCY II
<b>Yield curves for discount rates</b>	Segment 1: Risk-free rates + spread adjustment Segment 2: Extrapolation using Smith-Wilson method Segment 3: UFR + spread	Same as left	Segment 1: Risk-free rates + VA Segment 2: Extrapolation using Smith-Wilson method Segment 3: None (only extrapolation towards UFR without spread adjustment)
<b>Margin for insurance liabilities</b>	MOCE using CoC method with CoC rate of 3%	MOCE using percentile method with 85 <sup>th</sup> percentile for life and 65 <sup>th</sup> percentile for non-life	Risk margin using CoC method with CoC rate of 6%
<b>Qualifying capital</b>	Qualifying capital classified into tier 1 and 2 with limits for each tier	Same as left	Own funds are classified into tier 1, 2 and 3 with limits for each tier Minimum requirements based on SCR and MCR are applied
<b>Capital requirement</b>	VaR 99.5% MCR does not exist Risk components <ul style="list-style-type: none"> <li>▪ Life insurance risk</li> <li>▪ Non-life insurance risk</li> <li>▪ Catastrophe risk</li> <li>▪ Market risk</li> <li>▪ Credit risk</li> <li>▪ Operational risk</li> </ul>	Same as left	SCR: VaR 99.5% MCR: VaR 85% Risk components <ul style="list-style-type: none"> <li>▪ Life insurance risk</li> <li>▪ Health insurance risk</li> <li>▪ Non-life insurance risk</li> <li>▪ Market risk</li> <li>▪ Counterparty default risk</li> <li>▪ Intangible asset risk</li> <li>▪ Operational risk</li> </ul> Catastrophe risk is divided into sub-risks of each insurance risk There is revision risk in life insurance risk There is lapse risk in non-life insurance risk
<b>USPs</b>	Applicable risks <ul style="list-style-type: none"> <li>▪ Mortality risk</li> <li>▪ Longevity risk</li> <li>▪ Morbidity/disability risk</li> <li>▪ Lapse-up/-down risk</li> <li>▪ Non-life risk</li> </ul> Supervisory approval is required	Not permitted	Applicable risks <ul style="list-style-type: none"> <li>▪ Non-life risk</li> <li>▪ Revision risk</li> </ul> Supervisory approval is required
<b>Internal models</b>	Internal models for natural catastrophe risk are permitted Supervisory approval is required	Partial or full internal models are permitted Supervisory approval is required	Same as left

ITEM	J-ICS	ICS	SOLVENCY II
<b>Life insurance risk</b>	Stress approach to homogeneous risk groups No simplified method is specified	Same as left	Standard method using stress approach on a per-policy basis in principle  Simplified method using factor-based approach is specified
<b>1. Mortality risk</b>	Stress factor: 12.5%	Stress factor: 10%	Stress factor: 15%
<b>2. Longevity risk</b>	Stress factor: 20%	Stress factor: 17.5%	Stress factor: 20%
<b>3. Morbidity/disability risk</b>	Stress factors for incidence rates <ul style="list-style-type: none"> <li>▪ Insurance term <math>\leq</math> 5 years <ul style="list-style-type: none"> <li>– Medical expense coverage: 20%</li> <li>– Lump-sum payments: 25%</li> <li>– Short-term recurring payments: 20%</li> <li>– Long-term recurring payments: 25%</li> </ul> </li> <li>▪ Insurance term &gt; 5 years <ul style="list-style-type: none"> <li>– Medical expense coverage: 12%</li> <li>– Lump-sum payments: 20%</li> <li>– Short-term recurring payments: 12%</li> <li>– Long-term recurring payments: 20%</li> </ul> </li> </ul>	Stress factors for incidence rates <ul style="list-style-type: none"> <li>▪ Insurance term <math>\leq</math> 5 years: Same as left</li> <li>▪ Insurance term &gt; 5 years <ul style="list-style-type: none"> <li>– Medical expense coverage: 8%</li> <li>– Lump-sum payments: 15%</li> <li>– Short-term recurring payments: 10%</li> <li>– Long-term recurring payments: 20%</li> </ul> </li> </ul>	Stress factors for incidence rates <ul style="list-style-type: none"> <li>▪ Medical expense insurance <ul style="list-style-type: none"> <li>– Medical expenses: 5%</li> <li>– Inflation rate: 1%pt</li> </ul> </li> <li>▪ Income protection insurance <ul style="list-style-type: none"> <li>– Year 1: 35%</li> <li>– Year 2+: 25%</li> </ul> </li> </ul>
<b>4. Lapse risk</b>	Stress factors <ul style="list-style-type: none"> <li>▪ Lapse up: 25%</li> <li>▪ Lapse down: 25%</li> <li>▪ Mass lapse <ul style="list-style-type: none"> <li>– Others: 30%</li> <li>– Group pension: 50%</li> </ul> </li> </ul>	Stress factors <ul style="list-style-type: none"> <li>▪ Lapse up: 20%</li> <li>▪ Lapse down: 20%</li> <li>▪ Mass lapse <ul style="list-style-type: none"> <li>– Individual: 30%</li> <li>– Others: 50%</li> </ul> </li> </ul>	Stress factors <ul style="list-style-type: none"> <li>▪ Lapse up: 50%</li> <li>▪ Lapse down: 50% with a cap of 20%pt of decrement</li> <li>▪ Mass lapse <ul style="list-style-type: none"> <li>– Others: 40%</li> <li>– Pension fund: 70%</li> </ul> </li> </ul>
<b>5. Expense risk</b>	Stress factors <ul style="list-style-type: none"> <li>▪ Unit expense: 6%</li> <li>▪ Inflation rate: 1%pt</li> </ul>	Same as left	Stress factors <ul style="list-style-type: none"> <li>▪ Unit expense: 10%</li> <li>▪ Inflation rate: 1%pt</li> </ul>
<b>Catastrophe risk</b>	Covered perils <ul style="list-style-type: none"> <li>▪ Natural catastrophe (non-life only)</li> <li>▪ Terrorist attack</li> <li>▪ Pandemic</li> <li>▪ Credit and surety (non-life only)</li> </ul>	Same as left	Covered perils <ul style="list-style-type: none"> <li>▪ Life insurance risk: Not specified</li> <li>▪ Health insurance risk <ul style="list-style-type: none"> <li>– Mass accident</li> <li>– Concentration</li> <li>– Pandemic</li> </ul> </li> <li>▪ Non-life insurance risk <ul style="list-style-type: none"> <li>– Natural catastrophe</li> <li>– Non-proportional property reinsurance</li> <li>– Man-made catastrophe</li> <li>– Other non-life catastrophe</li> </ul> </li> </ul>

ITEM	J-ICS	ICS	SOLVENCY II
<b>Market risk</b>	Correlation coefficients are different between spread-up/-down risks	Same as left	Correlation coefficients are different between interest rate up/down risks
<b>1. Interest rate risk</b>	Mean-reversion risk + aggregation of level-up/down risks  Internal discount rate method may be applied to JPY with supervisory approval	Same as left except for application of internal discount rate method	Larger of interest rate up/down risks
<b>2. (Non-default) spread risk</b>	No default risk is included Larger of spread-up/-down risks	Same as left	Default risk on bonds and loans other than a part of residential mortgage loans is included  Bonds and loans other than a part of residential mortgage loans and securitization positions: Factor-based approach + Credit derivatives: Larger of up/down risks
<b>3. Equity risk</b>	Level risk + volatility risk No adjustment for stress factors	Level risk + volatility risk NAD is applied to level stress factors	Level risk only SA is applied to stress factors
<b>4. Real estate risk/ property risk</b>	Real estate price risk + mortgage insurance risk (non-life only)	Same as left	Real estate price risk only
<b>5. Currency risk</b>	Larger of net long position down/net short position up risks	Same as left	Total of the larger of exchange rate up/down risks for each currency
<b>6. Asset concentration risk</b>	Total of asset concentration risks for each counterparty group other than real estate + total of asset concentration risks for each real estate group	Same as left	Aggregation of concentration risks for each counterparty
<b>Credit risk/ counterparty default risk</b>	All default risks are included Total of credit risks for each exposure + credit risk for insurance policies with special accounts + credit insurance risk (non-life only)	Same as left	Default risk on bonds and loans other than a part of residential mortgage is not included  Aggregation of risks for rated/unrated exposures
<b>Operational risk</b>	With a cap of 20% of capital requirement excluding operational risk	No cap	With a cap of 30% of BSCR Formula and factors are slightly different

## References

### J-ICS

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### ICS

- Instructions for the April 2024 Insurance Capital Standard (ICS) Data Collection Exercise of the Monitoring Period Project (the "ICS Technical Specifications"), IAIS (24 June 2024)  
<https://www.iais.org/uploads/2024/06/2024-ICS-data-collection-Technical-Specifications.pdf>
- Insurance Capital Standard Level 1 and Level 2 texts (December 2024)  
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### EU Solvency II (current regime)

- Technical specifications for the Solvency II preparatory phase, EIOPA (30 April 2014)  
<https://register.eiopa.europa.eu/regulation-supervision/insurance/solvency-ii/solvency-ii-technical-specifications>
- *Solvency II Single Rulebook*, EIOPA  
[https://www.eiopa.europa.eu/rulebook/solvency-ii-single-rulebook\\_en](https://www.eiopa.europa.eu/rulebook/solvency-ii-single-rulebook_en)

### EU Solvency II (upcoming reforms)

- Directive (EU) 2025/2 - EN - EUR-Lex, EIOPA (application as of 30 January 2027)  
[https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L\\_202500002](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L_202500002)
- Commission Delegated Regulation (EU) of 29.10.2025, EIOPA (not in force until publication in the Official Journal of the EU)  
[https://ec.europa.eu/finance/docs/level-2-measures/solvency2-delegated-regulation-2025-7206\\_en.pdf](https://ec.europa.eu/finance/docs/level-2-measures/solvency2-delegated-regulation-2025-7206_en.pdf)

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