May 22, 2020
Tokio Marine Holdings, Inc.
President: Satoru Komiya
TSE code number: 8766

Tokio Marine & Nichido Life
Disclosure of Market Consistent Embedded Value as at March 31, 2020

Tokio Marine & Nichido Life Insurance Co., Ltd. ("TMNL", President: Katsumi Nakazato) herein reports its Market Consistent Embedded Value (MCEV) as at March 31, 2020 in compliance with the European Insurance CFO Forum Market Consistent Embedded Value Principles©[1] (referred to as "MCEV Principles" hereinafter) as one of various indices used to assess the value of the domestic life insurance business of Tokio Marine Group.

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*This report is a reference translation of the Japanese version (Japanese version is reviewed by an independent third party). This translation may be used only for reference purposes.

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1. Introduction

1.1. About MCEV

The current Japanese financial accounting standards focus on conservativeness and have the limitation that the profits generated from life insurance business are often undervalued, especially shortly after acquisition of the business, leading to challenges in terms of the valuation and assessment of performance of life insurance business.
Embedded values (EV) are calculated as the total of the “corporate net asset value” and the “value of existing business”. EV is designed to address the limitations of the financial accounting standards in order to facilitate an appropriate evaluation of value and improve performance assessment, considering the actual situation of the business performance.
While there have been various methodologies for calculation of EV, the CFO Forum released its MCEV Principles in June 2008 and additional guidance subsequently to enhance the consistency of valuation standards and unify the standards for disclosures. TMNL has been disclosing its EV in compliance with the MCEV Principles to enhance the disclosure since the period ending March 2015.

1.2. Covered business

The business covered in this report is the business written by TMNL and its subsidiaries. We have reflected book values of subsidiaries on a Japanese GAAP basis in calculating adjusted net worth. Calculation results in this report do not reflect business written by other business entities in the Tokio Marine Group.

1.3. Statement of directors

The Directors of TMNL state that the MCEV results presented here were prepared in compliance with MCEV Principles, except for points of special notice. Please refer to “1.5. Compliance with MCEV Principles” for areas of non-compliance with MCEV Principles.

1.4. Review by an independent third party

TMNL has requested Milliman, Inc., an independent third-party with actuarial expertise, to conduct a review to assure the appropriateness and reasonableness of the EV calculations, and has received an opinion (Only for the Japanese version).

1.5. Compliance with MCEV Principles

We have calculated our MCEV in accordance with the calculation methodologies and assumptions prescribed in the MCEV Principles. Points of special notice regarding compliance with MCEV Principles are as follows:

- The reference rate used in the calculations has been defined as government bond yields rather than the swap rate curve as stipulated in the MCEV Principles.
- MCEV results are solely for TMNL, and they are not the consolidated results of the Tokio Marine Group. Group MCEV, as prescribed in the MCEV Principles, is not considered in this

report, as the report is for TMNL on a standalone basis.

1.6. Use of government bond yields as reference rates

While MCEV Principles stipulate that swap rates should be employed as reference rates as a proxy for risk free rates, we use government bond yields as reference rates for the following reasons:

- While swap rates reflect credit risks with regard to LIBOR in general, it is believed that the Japanese government bond yields and US Treasury bond yields we have employed as reference rates have no credit risk.
- We have been conducting ALM focusing on government bonds, from which we can in practice earn income equivalent to the risk free rates. This also allows a consistent valuation of assets and liabilities.
- Both Japanese government bonds and US Treasury bonds have sufficient liquidity.

Please refer to “2.7 Sensitivity analysis” to see the impact of a change in the reference rates from government bond yields to swap rates.

2. MCEV Results

2.1. MCEV results

The MCEV of TMNL as at March 31, 2020 is 990.5 billion yen, which consists of 1,113.0 billion yen of adjusted net worth and (122.4) billion yen of value of in-force. New business value for FY2019 is 37.3 billion yen.

MCEV as at March 31, 2020 decreased by 85.4 billion yen from the last fiscal year end (March 2019) primarily due to “Economic Variances” of (132.4) billion yen. Please refer to “2.6 Reconciliation analysis of MCEV from the end of the prior year” for more details.

(in Billions of Yen)

	As at March 31, 2019	As at March 31, 2020	Change
MCEV	1,076.0	990.5	(85.4)
Adjusted net worth	1,119.5	1,113.0	(6.5)
Value of in-force	(43.5)	(122.4)	(78.9)

	As at March 31, 2019	As at March 31, 2020	Change
New business value	59.5	37.3	(22.2)

2.2. Adjusted net worth

Adjusted net worth is defined as the market value of assets allocated to the covered business in excess of statutory policy reserves and other liabilities as at the valuation date. Please refer to “4.3 Adjusted net worth” for more details.

(in Billions of Yen)

	As at March 31, 2019	As at March 31, 2020	Change
Adjusted net worth	1,119.5	1,113.0	(6.5)
Total net assets (*)	378.7	380.6	1.9
Reserve for price fluctuations	10.0	13.4	3.3
Contingency reserves	51.2	51.6	0.3
General provision for loan losses	0.4	0.4	(0.0)
Unallocated amount within policyholders’ dividend reserves	82.2	69.1	(13.0)
Unrealized gains or losses on held-to-maturity securities	867.9	873.7	5.8
Unrealized gains or losses on bonds backing policy reserves	20.1	10.8	(9.2)
Unrealized gains or losses on subordinated debt	(2.4)	(1.7)	0.7
Unfunded pension liabilities	(0.7)	(0.4)	0.2
Tax effect related to the above 8 items	(288.0)	(284.8)	3.2

(*) Unrealized foreign exchange gains or losses on investments in affiliates ((1.3) billion yen) are included.

The table below shows free surplus and required capital. Please refer to “4.4 Required capital” and “4.5 Free surplus” for the detail of required capital and free surplus.

(in Billions of Yen)

		As at March 31, 2019	As at March 31, 2020	Change
Adjusted net worth		1,119.5	1,113.0	(6.5)
	Free surplus	298.5	401.2	102.7
	Required capital	821.0	711.7	(109.3)

2.3. Value of in-force

The value of in-force reflects the value of distributable earnings to shareholders generated in the future from the existing business, expressed as a present value as at the valuation date. Its breakdown is shown below. Please refer to “4.6 Value of in-force” for details of each component.

(in Billions of Yen)

		As at March 31, 2019	As at March 31, 2020	Change
Value of in-force		(43.5)	(122.4)	(78.9)
	Certainty equivalent present value of future profits	363.3	332.4	(30.8)
	Time value of options and guarantees	(37.4)	(21.9)	15.5
	Frictional costs	(1.8)	(2.3)	(0.5)
	Cost of non-hedgeable risks	(367.5)	(430.7)	(63.1)

2.4. New business value

New business value shows the value of business acquired during the Japanese fiscal year starting April 1, 2019 and ending March 31, 2020 (referred to as “the fiscal year” hereinafter), consistent with the financial information we have disclosed. Policies expected to be acquired in the future are not considered in the calculation of the new business value. Please refer to “4.7 New business value” for more details.

(in Billions of Yen)

		As at March 31, 2019	As at March 31, 2020	Change
Value of new business		59.5	37.3	(22.2)
	Certainty equivalent present value of future profits	85.5	68.7	(16.7)
	Time value of options and guarantees	(1.8)	(0.6)	1.1
	Frictional costs	(0.0)	(0.3)	(0.3)
	Cost of non-hedgeable risks	(24.0)	(30.3)	(6.2)

2.5. New business margin

New business margin, which is the ratio of the new business value to the present value of new business premium income, is shown in the table below. There was a shift towards protection business, and lower sales of corporate owned life insurance business, which has a low new business margin. Despite this, the decline in JPY interest rates caused a decrease in new business margin in aggregate.

(in Billions of Yen)

	As at March 31, 2019	As at March 31, 2020	Change
Value of new business ①	59.5	37.3	(22.2)
Present value of new business premiums collected ②	832.9	589.6	(243.2)
New business margin ①÷②	7.2%	6.3%	(0.8%)

The relationships between the total annualized amount of regular premiums and the present value of new business premiums collected are as follows:

(in Billions of Yen)

	As at March 31, 2019	As at March 31, 2020	Change
Single premiums from new business ③	5.4	5.5	0.0
Total annualized amount of regular premiums (Note) ④	73.7	41.6	(32.0)
Average annual premium multiplier (②－③) ÷④	11.2	14.0	2.8

(Note) The total annualized amount of regular premiums is calculated as the number of premium payments made in one year multiplied by the premium amount per payment, before deduction of reinsurance premiums. The definition of annualized premiums here is different from that used in disclosures such as the financial results and annual reports.

2.6. Reconciliation analysis of MCEV from the end of the prior year

The table below shows the reconciliation analysis of the MCEV as at March 31, 2020 with the MCEV as at March 31, 2019, in the format prescribed by the MCEV Principles.

(in Billions of Yen)

	Free surplus	Required capital	Value of in-force	MCEV
Opening MCEV (MCEV as at March 31, 2019)	298.5	821.0	(43.5)	1,076.0
(1) Opening adjustments	(15.1)	-	-	(15.1)
Adjusted opening MCEV	283.4	821.0	(43.5)	1,060.9
(2) New business value	(1.1)	1.1	37.3	37.3
(3) Expected existing business contribution (risk-free rate)	22.0	(24.1)	24.1	22.1
(4) Expected existing business contribution (in excess of risk free rate)	3.3	-	-	3.3
(5) Transfers from value of in-force and required capital to free surplus	50.8	(92.1)	41.3	-
On existing business	91.0	(92.1)	1.1	-
On new business	(40.2)	-	40.2	-
(6) Actuarial experience variances	(21.3)	11.4	(11.9)	(21.7)
(7) Actuarial assumption changes	21.4	(21.4)	16.7	16.7
(8) Other operating variances	50.8	(50.8)	4.2	4.2
(9) Operating MCEV earnings	126.1	(175.9)	111.9	62.0
(10) Economic variances	(8.2)	66.6	(190.8)	(132.4)
(11) Other non-operating variances	-	-	-	-
Total MCEV earnings	117.8	(109.3)	(78.9)	(70.3)
(12) Closing adjustments on MCEV	-	-	-	-
Closing MCEV (MCEV as at March 31, 2020)	401.2	711.7	(122.4)	990.5

(1) Opening adjustments

This item shows the amount of decrease due to payment of shareholders' dividends.

(2) New business value

This item reflects the value of new business acquired during the fiscal year as at the valuation date. With regard to the calculation method of new business value, please refer to "4.7 New business value".

(3) Expected existing business contribution (risk-free rate)

This represents the aggregate amount of release for this fiscal year due to existing business contributions at a risk free rate from the opening value of in-force, expected investment income from assets corresponding to the adjusted net worth as of March 31, 2019 invested at a risk free rate, and the allowance for non-hedgeable risks.

(4) Expected existing business contribution (in excess of risk-free rate)

This item reflects the profits expected in excess of the risk free rate generated by holding risk assets such as stocks and foreign securities. While our asset portfolio is still primarily comprised of government bonds, for assets for which excess earnings can be expected, we reflected an amount of expected spread applied to the balance at the end of the previous fiscal year. The

expected spread is 0.08% of the general account asset balance at the end of the previous fiscal year.

(5) Transfers from value of in-force and required capital to free surplus
This reflects changes in free surplus arising from (i) the transfer of the profits expected during this fiscal year from existing business value to the adjusted net worth, (ii) the profits generated in this fiscal year from the new business value, and (iii) the changes in the required capital. The value of MCEV itself does not change as a result of this transfer as the transfer merely constitutes an internal shift among MCEV components.

(6) Actuarial experience variances
These variances reflect the difference between actual and expected profits during this fiscal year caused by actuarial assumptions. It also includes the amount of the impact arising from the difference between the actual policies in-force as at March 31, 2020 and the sum of expected business remaining as at March 31, 2020 among the policies in-force as at March 31, 2019 and the new business acquired during this fiscal year.

(7) Actuarial assumption changes
This item shows the impact of changes in the non-financial assumptions, mainly mortality and morbidity rates, surrender and lapse rates and operating expenses. MCEV increased primarily due to lower mortality and morbidity rates.

(8) Other operating variances
This item reflects the impact of non-operating activities that are not included in the above (2) through (7) and that of model improvements and updates used in calculating MCEV. Required capital decreased primarily due to revision of some correlation coefficients for aggregating hedgeable risks.

(9) Operating MCEV earnings
This item is the sum of items (2) through (8).

(10) Economic variances
This reflects (i) the impact of changes in economic assumptions such as risk free rates, equity prices, implied volatilities, and inflation rates between March 31, 2019 and March 31, 2020 (including the impact of interest rate level and movements of implied volatilities of interest rate swaptions between the time of new business issue (as at the end of each month) in this fiscal year and the end of this fiscal year), (ii) the impact of the difference between actual and expected investment income for this fiscal year, and (iii) the release during the fiscal year of the time value of options and guarantees.

The value of in-force decreased due to a decline in JPY interest rates. This outweighed an increase of 103.0 billion yen due to a change in the extrapolation method for forward rates beyond the 40th year, as noted in “(1) Risk-free rates” in “3.1 Economic Assumptions”.

Required capital increased due to a decrease in the value of in-force primarily due to a decline in JPY interest rates.

(11) Other non-operating variances
There are no other non-operating variances this year.

(12) Closing adjustments on MCEV
There are no closing adjustments this year.

2.7. Sensitivity analysis

The impacts of changing specified assumptions underlying the MCEV and new business value calculations are as follows. New business sensitivities are quantified after the change in the method to extrapolate ultra-long term interest rates beyond the 40th year. Details on the extrapolation method for ultra-long term rates are described in "(1) Risk-free rates" in "3.1 Economic Assumptions".

Sensitivity analysis of change in MCEV

(in Billions of Yen)

Assumption	Change in assumption	MCEV	Change in amount	Rate of change
Base case: MCEV at the end of March 2020	No change	990.5	-	-
(1) Interest rates	50bp decrease	809.0	(181.4)	(18.3%)
	50bp increase	1,055.3	64.7	6.5%
	Swap	489.5	(501.0)	(50.6%)
	Constant fwd rate	887.4	(103.0)	(10.4%)
	Ultimate fwd rate	1,469.8	479.3	48.4%
(2) Stock / Real estate market values	10% decrease	987.8	(2.7)	(0.3%)
(3) Stock / Real estate implied volatility	25% increase	988.4	(2.1)	(0.2%)
(4) Interest swaption implied volatility	25% increase	958.3	(32.2)	(3.3%)
(5) Maintenance expenses	10% decrease	1,034.9	44.4	4.5%
(6) Surrender and lapse rates	x 0.9	929.1	(61.4)	(6.2%)
(7) Mortality rates	Death protection products: x 0.95	1,009.3	18.7	1.9%
	A&H products and annuity products: x 0.95	974.8	(15.6)	(1.6%)
(8) Morbidity rates	x 0.95	1,069.8	79.3	8.0%
(9) Required capital	Solvency margin ratio of 200%	990.5	-	-
(10) Foreign exchange rates	10% appreciation of JPY	991.6	1.1	0.1%

The change in adjusted net worth under the sensitivities to interest rates, market values of stock and real estate, implied volatility of stock and real estate, and foreign exchange rates are shown in the table below. For the other sensitivities, unless otherwise specified, only the value of in-force was changed.

(in Billions of Yen)

Interest rates	50bp decrease	758.0
	50bp increase	(667.1)
Stock/ Real estate market value (*)	10% decrease	0.1
Stock/ Real estate implied volatility (*)	25% increase	0.1
Foreign exchange rates	10% appreciation of JPY	1.9

(*)Increase in market value of put options holding for the purpose of hedging minimum guarantee risk of variable business.

Sensitivity analysis of new business value

(in Billions of Yen)

Assumption	Change in assumption	New Business Value	Change in amount	Rate of change
Base case: New Business Value at the end of March 2020 (After extrapolation method change)	No change	42.1	-	-
(1) Interest rates	50bp decrease	22.6	(19.4)	(46.2%)
	50bp increase	55.2	13.1	31.3%
	Swap	28.3	(13.7)	(32.6%)
	Constant fwd rate	37.3	(4.7)	(11.4%)
	Ultimate fwd rate	63.1	21.0	50.0%
(2) Stock / Real estate market values	10% decrease	41.0	(1.0)	(2.5%)
(3) Stock / Real estate implied volatility	25% increase	42.1	0.0	0.1%
(4) Interest swaption implied volatility	25% increase	42.0	(0.0)	(0.1%)
(5) Maintenance expenses	10% decrease	45.3	3.1	7.6%
(6) Surrender and lapse rates	x 0.9	40.8	(1.2)	(3.0%)
(7) Mortality rates	Death protection products: x 0.95	43.1	1.0	2.6%
	A&H products and annuity products: x 0.95	41.2	(0.8)	(2.0%)
(8) Morbidity rates	x 0.95	49.3	7.2	17.2%
(9) Required capital	Solvency margin ratio of 200%	42.1	-	-
(10) Foreign exchange rates	10% appreciation of JPY	41.7	(0.3)	(0.9%)

(1) Interest rates
These sensitivities show the impact of immediate parallel shifts of the risk free rates in each currency, of using a swap yield curve as at March 31, 2020, and of adjusting the extrapolation of JPY interest rates beyond the 40th year to use constant forward rate and ultimate forward rate (UFR) methods[2]. The adjusted net worth would change due to the change in market values of bonds and other assets. The value of in-force would also change as the discount rate and the future asset investment yields change. Here, the adjusted net worth is unchanged if the swap yield curve is used. The volatility parameters of the interest rate model are the same as for the base case parameters. Only the term structure parameters are changed. Negative interest rates are not floored at zero.

(2) Stock and real estate market value
This sensitivity shows the impact of an immediate drop in the market values of stock and real estate as at March 31, 2020. The decrease in the market values of stock and real estate decreases the adjusted net worth, as well as the value of in-force due to a resulting change in the value of liabilities on variable business.

(3) Implied volatility of stock and real estate
This sensitivity represents the impact of an immediate increase in the implied volatilities of stock and real estate used in calculating the time value of options and guarantees, etc. Changes in implied volatility affect the market value of options held on stocks and therefore affect the adjusted net worth, as well as the time value of options and guarantees.

(4) Interest swaption implied volatility
This sensitivity shows the impact of an immediate increase in the implied volatility of interest swaptions used in calculating the time value of options and guarantees, which results in a change in the time value of options and guarantees.

(5) Maintenance expenses
This sensitivity shows the change in value due to a decrease in maintenance expense. It should be noted that maintenance expenses subject to this sensitivity do not include commissions for agents and Life Partner employees payable on policies projected to be in-force in future periods.

(6) Surrender and lapse rates
This sensitivity shows the change in value due to decreases in surrender and lapse rates.

(7) Mortality rates
This sensitivity shows the change in value due to a decrease in mortality rates. We have shown the impact on death protection products and the impact on A&H insurance and annuity products separately, as they behave differently under this sensitivity. Within the A&H insurance and annuity product segment, we have included base policies and riders for which the primary benefits are accidental death, sickness and cancer, and individual annuities. No management actions are

[2] The sensitivity results based on the ultimate forward rate method are outside the scope of the review conducted by independent third-party reviewer Milliman, Inc. For details, please refer to “5. Review by an Independent Third Party”.

reflected.

(8) Morbidity rates
This sensitivity shows the change in value due to a decrease in the morbidity rates on A&H products. No management actions are taken into account.

(9) Required capital
This sensitivity shows the change in value that arises when the minimum required capital assumption is based on the statutory minimum required solvency margin ratio of 200%.

(10) Foreign exchange rates
This sensitivity shows the change in value due to an immediate appreciation of Japanese Yen. The change in the market values of foreign currency denominated securities and other assets affects the adjusted net worth, as well as the value of in-force due to a resulting change in the value of liabilities denominated in foreign currencies or those on variable business.

(11) Others
Other items to note are as follows:

- The frictional costs are assumed to remain unchanged under all of the sensitivity analyses other than that of required capital and constant forward rate. Although the level of required capital is unchanged for these sensitivities, costs for non-hedgeable risks are changed.
- Each of the sensitivity analyses above shows only the impact of changing one assumption. The impact of changing multiple assumptions at one time would not be equal to the sum of the impacts for each assumption.

3. Assumptions

3.1. Economic assumptions

(1) Risk-free rates

We have used government bond yields as of the end of March 2020 as risk free rates for the calculation of the certainty equivalent present value of future profits. Previously it was assumed that forward rates in the 41st year (31st year for USD) and thereafter were equal to the 1-year forward rate in the 40th year (30th year for USD). Beginning with year's report, JPY forward rates in the 41st year and thereafter are set to the 40-year spot rate adjusted based on historical interest rate movements. We have adjusted and used Bloomberg's government bond yields as our data source. The government bond yields (spot rates) for key terms are shown below.

	JPY			USD	
Term (in years)	End of March 2019	End of March 2020 (Prev. Method)	End of March 2020	End of March 2019	End of March 2020
1	(0.18%)	(0.14%)	(0.14%)	2.60%	0.19%
5	(0.21%)	(0.12%)	(0.12%)	2.34%	0.52%
10	(0.08%)	0.04%	0.04%	2.53%	0.85%
20	0.37%	0.35%	0.35%	2.82%	1.29%
30	0.55%	0.45%	0.45%	2.95%	1.48%
40	0.62%	0.44%	0.44%	3.01%	1.51%
50	0.67%	0.41%	0.53%	3.04%	1.53%

The table below shows swap rates (spot rates) for key terms used for sensitivity analyses of changing the reference rate under 2.7 (1). One-year forward rates beyond the 40th year (30th year for USD) are set in the same methodology as for government bonds, as described above.

	JPY	USD
Term (in years)	End of March 2020	End of March 2020
1	(0.02%)	0.67%
5	(0.05%)	0.52%
10	0.01%	0.72%
20	0.12%	0.87%
30	0.17%	0.89%
40	0.16%	0.89%
50	0.22%	0.90%

The sensitivity analysis in 2.7 (1) presented the impact of changing the extrapolation of JPY-interest rates beyond the 40th year to use an ultimate forward rate (UFR) method. This UFR method entails setting the JPY ultimate forward rate to 3.8%, extrapolating rates from year 30, and applying the Smith-Wilson method so that forward rates from the 31st year onwards approach to the UFR in 30 years. This method was established with reference to the global Insurance Capital Standard (ICS) currently in development by the International Association of Insurance Supervisors (IAIS). Representative JPY interest rates are as follows:

	JPY
Term (in years)	End of March 2020
1	(0.14%)
5	(0.12%)
10	0.04%
20	0.35%
30	0.45%
40	0.92%
50	1.45%

We have not included a liquidity premium in the risk free rates given that definitions in the MCEV Principles are not clear and generally accepted practice has not yet been established. Negative interest rates are not floored at zero.

(2) Interest-rate model

We have calibrated the interest rate model to the market at the end of March 2020. We have estimated parameters for the interest rate model from the yield curve and the implied volatilities of interest swaptions with different terms. In calculating the time value of options and guarantees, we have used the Hull-White model. These scenarios used were developed by TMNL.
The implied volatilities for key terms of the interest swaptions used in our estimation of parameters are shown below.

Term of swap (in years)	Term of option (in years)	End of March 2019			End of March 2020	
		JPY	USD	EUR	JPY	USD
5	1	14 bp	64 bp	33 bp	-	72 bp
5	5	21 bp	76 bp	48 bp	21 bp	63 bp
5	7	24 bp	75 bp	52 bp	22 bp	62 bp
5	10	27 bp	71 bp	54 bp	24 bp	57 bp
5	15	30 bp	-	-	26 bp	-
5	20	32 bp	-	-	27 bp	-
10	1	17 bp	61 bp	39 bp	24 bp	93 bp
10	5	23 bp	66 bp	48 bp	23 bp	67 bp
10	7	26 bp	74 bp	51 bp	25 bp	66 bp
10	10	29 bp	71 bp	54 bp	26 bp	63 bp
10	15	31 bp	-	-	28 bp	-
10	20	33 bp	-	-	28 bp	-
15	5	25 bp	-	-	26 bp	-
15	10	30 bp	-	-	28 bp	-
15	15	32 bp	-	-	30 bp	-
15	20	34 bp	-	-	31 bp	-
20	5	27 bp	-	-	30 bp	-
20	10	31 bp	-	-	30 bp	-
20	15	33 bp	-	-	31 bp	-
20	20	35 bp	-	-	31 bp	-

(3) Foreign exchange and stock price modeling

We have calibrated the log-normal model for foreign exchange and stock prices to the market as at the end of March 2020. Parameters are estimated from implied volatilities of options with different terms.

Implied volatilities for key terms used for the estimation are shown below.

Implied volatilities of foreign exchange options (at-the-money)

Term of option (in years)	End of March 2019		End of March 2020
	USD	EUR	USD
1	7.1%	8.2%	9.3%
5	8.2%	9.3%	7.9%
10	10.8%	11.0%	8.7%
15	-	12.5%	-
20	-	12.5%	-

Implied volatilities of stock options (at-the-money)

Term of option (in years)	End of March 2019			End of March 2020	
	JPY	USD	EUR	JPY	USD
1	15.7%	14.9%	14.0%	24.4%	29.7%
2	16.3%	16.5%	14.8%	20.9%	24.9%
3	16.5%	17.4%	15.4%	20.0%	23.4%
4	16.5%	18.0%	15.7%	19.8%	23.4%
5	16.6%	18.6%	16.0%	19.7%	23.4%
7	16.7%	20.8%	16.3%	18.8%	23.5%
10	16.8%	23.1%	17.0%	18.0%	24.4%

(4) Correlation factor

As there is no market consistent data for correlation factors, we have calculated correlation factors from the monthly return of each index during the last 10 years.

As of March 31, 2020

	JPY 30Y interest	USD 10Y interest	USD /JPY	TOPIX	S&P
JPY Interest rate 30Y	1.00	0.31	0.30	0.26	0.04
USD Interest rate 10Y	0.31	1.00	0.41	0.52	0.51
USD/ JPY	0.30	0.41	1.00	0.61	0.24
TOPIX	0.26	0.52	0.61	1.00	0.68
S&P	0.04	0.51	0.24	0.68	1.00

As of March 31, 2019

	JPY 30Y interest	USD 10Y interest	EUR 30Y interest	USD /JPY	EUR /JPY	TOPIX	S&P	EURO STOXX
JPY Interest rate 30Y	1.00	0.33	0.46	0.28	0.23	0.26	0.06	0.20
USD Interest rate 10Y	0.33	1.00	0.67	0.46	0.57	0.51	0.42	0.38
EUR Interest rate 30Y	0.46	0.67	1.00	0.26	0.48	0.32	0.15	0.17
USD/ JPY	0.28	0.46	0.26	1.00	0.63	0.61	0.19	0.26
EUR/ JPY	0.23	0.57	0.48	0.63	1.00	0.60	0.51	0.43
TOPIX	0.26	0.51	0.32	0.61	0.60	1.00	0.64	0.62
S&P	0.06	0.42	0.15	0.19	0.51	0.64	1.00	0.77
EURO STOXX	0.20	0.38	0.17	0.26	0.43	0.62	0.77	1.00

(5) Foreign exchange

Values of liabilities denominated in foreign currencies are converted to Japanese yen using the TTM (telegraphic transfer middle exchange rate) as at March 31, 2020. Exchange rates of major currencies are shown below.

Currency	As of March 31, 2019	As of March 31, 2020
USD	JPY 110.99	JPY 108.83

(6) Future asset allocation

① General account assets

General account assets are assumed to be entirely invested in Japanese government bonds, as current ALM practice is continued for the future.

② Separate account assets

Asset allocation of the separate account assets are developed for variable products based on the experience at the end of March 2020. No adjustments were made to maintain a certain asset allocation for the future.

3.2. Other assumptions

The table below shows major assumptions such as mortality and morbidity rates, surrender and lapse rates and operating expense rates.

Assumptions	Development methods
Mortality and morbidity rates	They are developed based on claim experience of the latest 1-3 years, in principle by type of protection, policy year, attained age and other attributes. For policy years with no experience data, assumptions are developed with reference to industry data. We have reflected improvement trends for mortality rates and improvement trends or deteriorating trends for A&H morbidity rates of some benefits. The projection period for which these trends are reflected is limited to 5 years.
Surrender & lapse rates	Surrender & lapse rates are developed based on experience of the most recent year, in principle by line of business, premium mode and policy year.
Flexible premium	For variable universal life insurance, it is assumed that future premium level of each policy does not change from the current premium.
Renewal rates	Renewal rates are developed based on past experience. Here, policies for which renewals are projected are A&H products, whose impact is large due to a large number of limited term in-force policies. For the sake of simplicity, we have not reflected future renewals for some riders.
Operating expense rates	Operating expense rates are developed from past experience based on the ratio (unit cost) of overall actual operating expenditures to the policy count or the premium separately for acquisition and maintenance expenses. Some of the operating expense rates were adjusted by removing one-off costs which are not ordinarily expected to be incurred in future periods. The removed one-off cost is 290 million yen, which is tied primarily to a portion of system development costs. With regard to system development costs for policy acquisition and maintenance, and the information technology device costs for policy maintenance, the average amount incurred over the past five years is reflected in the corresponding unit costs. An increase due to inflation is reflected in future maintenance expenses. Corporate administration costs paid to the parent company are reflected in unit costs. Other than this, there is no look-through effect with regards to other companies within the Tokio Marine Group that needs to be reflected.
Effective tax rate	It is set as follows: Fiscal year 2019 and thereafter: 28.0%

Consumption tax rate	It is set as follows: April 2019-September 2019: 8% October 2019 and thereafter: 10%
Inflation rate	With reference to the break-even inflation rate from the most recently issued inflation index-linked government bond and the past Consumer Price Index (CPI), as well as the impact of the consumption tax increase and other factors, inflation rates are set as shown below. MCEV as of March 31, 2020: 0.3%
Policyholder dividend	For products with interest dividends paid in every 5 years, interest dividends are set based on the interest rate level in future periods, using the method consistent with the one applied to determine the most recent dividend rates.
Reinsurance	We have designated reinsurance premium as an expense and reinsurance benefits and others as income in the projections, because we cede mortality risks on death protection insurance products, A&H risks on A&H products and part of the minimum guarantee risks of the variable products. The reinsurance premium and the level of reinsurance benefits are set based on reinsurance treaty provisions.

4. Calculation method of MCEV

4.1. Covered business

The business covered here is the business operated by TMNL and its subsidiaries. Any calculation results here do not reflect the business operated by other entities within the Tokio Marine Group.

4.2. MCEV

MCEV represents the present value of distributable earnings to shareholders generated from covered business after sufficient allowance is made for the aggregate risks in the covered business, and consists of "corporate net asset value" and "present value of future profit from existing business".

4.3. Adjusted net worth

Adjusted net worth is defined as the market value of assets allocated to the covered business in excess of statutory policy reserves and other liabilities as at the valuation date. More specifically, adjusted net worth is the net asset value on the statutory balance sheet (*) plus the price fluctuation reserve, contingency reserves, general provision for loan losses, unallocated amount within policyholders' dividend reserves, unrealized gains or losses on held-to-maturity bonds, bonds backing policy reserves, subordinated debt, and unfunded pension liabilities, minus tax adjustments on the preceding eight items. It is made up of required capital and free surplus.
(*) Unrealized foreign exchange gains or losses on investments in affiliates are included.

4.4. Required capital

Required capital is the portion of adjusted net worth whose immediate distribution to shareholders is restricted. The level of required capital is defined as the larger of the capital required to meet internal objectives and the solvency capital satisfying the statutory minimum required level. The capital required to meet internal objectives specifically means the amount of capital the company requires from a risk management perspective or to maintain a credit rating. We have defined the capital required to meet internal objectives as the total amount of the economic value based liabilities and the economic value based risk volume in excess of statutory policy reserves (excluding contingency reserves).
The economic value based risk volume has been calculated using an internal model assuming a confidence level of 99.95% value at risk over a 1 year time horizon. The internal model has been developed taking account of the trends in discussions on Solvency II in Europe and on economic value based solvency regulations in Japan. The primary differences from EU Solvency II are as follows:
(1) Implied volatility risk
Risk of change in implied volatility is reflected based on past market data, which is not explicitly taken into account by Solvency II.

(2) Interest rate risk
Interest rate risk is measured by simulating asset transactions in a way consistent with the investment policy endorsed by the board of directors over a one year time horizon, where interest rates are generated on a weekly basis based on historical interest rate volatility.

(3) Parameter risk on mortality and morbidity rates
With regard to the risk that mortality and morbidity rates estimated from the past experience is different from the actual rates in the future, own risk parameters are developed by calibrating to the confidence level.

(4) Trend risk on mortality and morbidity rates
For the products exposed to unknown risks such as claim increase due to medical and technology improvements in the future, trend risk is reflected based on available public information as well as judgmental decisions.

(5) Surrender & lapse risk
Surrender & lapse rate shock parameters applied in the entire remaining period are set based on the measurement definitions for the international capital regulations and TMNL's own experience data.

Required capital as at the end of March 2020 is 711.7 billion yen, which corresponds to 1,271% of the regulatory minimum required capital.

4.5. Free surplus

Free surplus is calculated as the adjusted net worth minus the required capital.

4.6. Value of in-force

Value of in-force is calculated as the certainty equivalent present value of future profits deducting the time value of options and guarantees, frictional costs and the cost of non-hedgeable risks.

4.7. New business value

New business value shows the value of business acquired during the fiscal year, consistent with the financial information we have disclosed. Policies expected to be acquired in the future are not considered in the calculation of the new business value.
As with value of in-force, the new business value is calculated as the certainty equivalent present value of future profits deducting the time value of options and guarantees, frictional costs and the cost of non-hedgeable risks. Frictional costs and cost of non-hedgeable risks are calculated as incremental costs by adding new business acquired during the fiscal year to consider diversification effects between the business in force as at the beginning of the year and the new business.
The new business value is calculated under the same assumptions used for the value of in-force as at the end of the fiscal year except for the asset investment yields (the level of interest rates) and implied volatilities of interest rate swaption.

The asset investment yields (the level of interest rates) and implied volatilities of interest rate swaptions are those at the end of the fiscal year for variable business, and those at issue (as at the end of each month) for the other business. The impact of movements in interest rates and implied volatilities of interest rate swaptions between the time of issue (as at the end of each month) and the end of the current fiscal year for the other business is included in “(10) Economic variances” in “2.6 Reconciliation analysis of MCEV from the end of the prior year”.
We treat the change in extrapolation method of forward rates beyond year 40 as discussed in “(1) Risk-free rates” in “3.1 Economic Assumptions” as a change as of the end of March 2020, and calculate New Business Value using the prior extrapolation method (with the exception of the values presented in “2.7 Sensitivity analysis”). The 4.7 billion yen impact on New Business Value changing to use the new extrapolation method is noted in “(10) Economic variances” in “2.6 Reconciliation analysis”.

4.8. Certainty equivalent present value of future profits

The certainty equivalent present value of future profits is the present value of future profits calculated deterministically under a single scenario, where the risk free rate is used for both the asset investment yield and the discount rate. In this calculation, the intrinsic value of options and guarantees embedded in insurance contracts is included in the certainty equivalent present value of future profits.
We have incorporated future bonds transaction costs, such as the bid ask spread, that cannot be measured as explicit costs using the internal model, in the certainty equivalent present value of future profits.

4.9. Time value of options and guarantees

Options and guarantees refer to policyholders’ rights and guarantees which can have asymmetric impacts on present value of future profits due to increase or decrease of interest rates, equity prices, etc. Specifically, the time value of options and guarantees is calculated as the difference between the average present value of future profits calculated over each of 2,000 or 1,000 risk neutral scenarios, and the certainty equivalent present value of future profits.
The time value of options and guarantees reflects the following components:

- Surrender option
  Policyholders have the right to surrender insurance policies at any time. In the case of highly savings oriented fixed products, such as whole life insurance and individual annuities, we assume that surrenders will be higher in the event of increased interest rates; we also assume that surrenders will be higher when variable products account values are higher. We have reflected the option cost of selective surrenders in the event of an interest hike for fixed products, and based on the ratio of the account value and the level of minimum guarantee for variable products.

- Minimum guaranteed benefits on variable products
  While an excess of account value over the minimum guarantee would be attributable to policyholders, the cost of guaranteed minimum benefits incurred when the account value is less than the minimum guarantee is attributable to shareholders. We have reflected the cost

of such options for the minimum guarantees.

- Policyholder dividends on products with interest dividends in every 5 years
  In the case where the investment yield exceeds the credited interest rate, part of the excess portion is paid to policyholders in the form of interest dividends, while interest losses would all be attributable to shareholders. We have reflected such option costs regarding the policyholder dividends.

- Annuity selections
  For individual annuities with interest dividends paid every 5 years, as policyholders have an option to select either annuity payments or a lump-sum payment at the time of annuitization, the cost for this annuity selection option on interest rate level is reflected.

4.10. Frictional costs

Frictional costs equal the present values of taxes projected on investment income from assets backing the required capital at each future point in time. We have assumed zero for asset investment expenses, as such expenses are extremely small.
We have reflected hypothetical bonds transaction costs, such as bid ask spread that cannot be measured as explicit costs, in the certainty equivalent present value of future profits.
In developing the internal target required capital used in calculating frictional costs, our calculation does not assume immediate shareholders' distribution of unrealized gains/losses on securities and unallocated amount under policyholders' dividend reserves but is projected in line with the insurance liabilities.

4.11. Cost of non-hedgeable risks

In the cost of non-hedgeable risks, we have reflected an allowance for the uncertainty of non-economic assumptions and the portion of economic assumptions considered to be non-hedgeable.
In calculating this cost, we have assumed a risk volume calculated based on the cost of capital approach using an internal model. In developing the internal model, we have taken account of trends in discussions on Solvency II in Europe and on economic value based solvency regulations in Japan.
The cost of non-hedgeable risks reflected in new business value is determined as the amount of change in the cost of non-hedgeable risks, if the new business in the fiscal year were excluded from the existing business.

4.12. Cost of capital rate

6% (risk free rates inclusive) is the cost of capital rate required by Tokio Marine Holdings on TMNL's capital at risk calibrated at 99.95% value at risk. This equates to 5.75% if applied to the risk volume at 99.5% value at risk, and adjusted for the portion equivalent to the risk free rate.

4.13. Treatment of reinsurance

We have designated reinsurance premium as an expense and reinsurance benefit and others as income under the projections, because we cede mortality risks of the death protection insurance products, A&H risks of the A&H products and part of the minimum guarantee risks of the variable products.

4.14. Treatment of semi-participating dividend policies

We have calculated dividend rates in accordance with the level of future investment yield based on the same method as that used to determine dividend rates for the account closing as of the end of March 2020, and reflected them in the calculation of the present value of certainty-equivalent profit and the time value of options and guarantees.

5. Review by an Independent Third Party

TMNL has requested Milliman, Inc., an independent third-party with actuarial expertise, to conduct a review to assure the appropriateness and reasonableness of the EV calculations, and received the opinion below.

Milliman, Inc. ("Milliman") has been engaged to review the methodology, assumptions and calculations used by Tokio Marine & Nichido Life Insurance Co., Ltd. ("TMNL") to determine the Market Consistent Embedded Value ("MCEV") as at March 31, 2020. Specifically, the scope of our review included the embedded value as at 31 March 2020, the sensitivities (with the exception of the ultimate forward rate method sensitivity), the new business value and the movement analysis from the MCEV as at 31 March 2019.

The board of directors made a statement in its News Release Form dated May 22, 2020 that the methodology, assumptions and calculations have been made in accordance with the MCEV Principles©[3], with the following exceptions:

- MCEV results were derived by using government bond yields as risk free rates rather than swap rates as stipulated in the MCEV Principles.
- MCEV results are solely for TMNL, and they are not the consolidated results of the Tokio Marine Group. Group MCEV, as prescribed in the MCEV Principles, is not considered in this report, as the report is for TMNL on a standalone basis.

Milliman has concluded that the methodology and assumptions used comply with the MCEV Principles except for the points described in the above paragraph. In particular:

- The non-economic assumptions have been set with regard to past, current and expected future experience;
- The economic assumptions used in the calculations are internally consistent and consistent with observable market data as per the valuation date;
- TMNL's market consistent embedded value methodology makes allowance for aggregate risks in the covered business. The primary methodologies employed are:
  - a stochastic allowance for the cost of financial options and guarantees
  - a deduction for the cost of non-hedgeable risks
  - a deduction for the frictional costs of the required capital
- For participating insurance contracts, the assumptions and scenarios used in the projections are consistent with actual practice regarding the allocation of profits between policyholders and shareholders, the setting of policyholder dividend rates, and other management actions.

Milliman has reviewed the MCEV methodology, assumptions, calculations and analysis prepared by TMNL, but this does not mean that Milliman has conducted a detailed review in all aspects. During its review Milliman identified and discussed various MCEV calculation

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and definition issues with TMNL staff. Based upon those discussions and follow-up actions Milliman is not aware of any issues that would materially impact the disclosed market consistent embedded values, new business values, sensitivities or movement analysis from the prior period. In arriving at this conclusion, Milliman has relied on data and information provided by TMNL.

The calculation of MCEV is based on numerous assumptions with respect to economic conditions, operating conditions, taxes and other matters, many of which are beyond the control of TMNL. Although the methodology and assumptions used comply with the MCEV Principles, deviations between projection assumptions and actual experience in the future are to be expected. Such deviations may materially impact the value calculated.

This opinion is made solely to TMNL in accordance with the engagement letter between TMNL and Milliman. Milliman does not accept or assume any responsibility, duty of care or liability to anyone other than TMNL for or in connection with its review work, the opinion Milliman has formed or for any statements set forth in this opinion, to the fullest extent permitted by applicable law.

6. Caveats

Embedded values are calculated using various assumptions about the drivers of future results and the risks and uncertainties inherent in those results; future experience may deviate, possibly materially, from that underlying the forecasts used in the EV calculation. Also, the actual market value is determined as a result of informed judgments of investors and may differ materially from an embedded value. As such, embedded values should be used with sufficient caution.

7. Glossary

Term		Definition
C	Calibration	In the context of MCEV calculation, calibration means the process to derive various model parameters for stochastic economic scenarios in a way consistent to the market prices
	Certainty equivalent present value of future profits	Present value of after-tax future profits from covered business discounted at risk free rates
	Cost of capital approach	Cost of capital approach is one of the approaches to derive cost of non-hedgeable risks. It is the method to determine the cost of the risk as present value of costs to hold required capital in each of future years.
	Cost of non-hedgeable risks	Cost of non-hedgeable risks are set to allow for risks non-hedgeable in the market, which reflects uncertainty of non-economic assumptions such as mortality, morbidity, expenses, etc., as well as uncertainty of non-hedgeable economic assumptions such as ultra-long term interest rates beyond 40 years.
E	EU Solvency II	Economic value based solvency regulation effective from 2016 in Europe
F	Free Surplus	Portion of adjusted net worth in excess of required capital as of the valuation date
	Frictional costs	Frictional cost is the additional cost born by stockholders to invest through required capital of the company rather than direct investment. Frictional cost is derived as present value of corporate taxes and investment expenses projected on investment income from assets backing the required capital at each future point in time. In particular for TMNL's MCEV, we have assumed zero for investment expenses, as such expenses are extremely small.
I	ICS (Insurance Capital Standard)	A capital regulation being developed by International Association of Insurance Supervisors (IAIS) for internationally active insurance groups (IAIGs)
	Implied volatility	Expected rate of future volatility derived from option prices
L	Look through	Approach to quantify an effect on an entire business group rather than only on a particular part of the group
O	Options and guarantees	In the context of MCEV calculation, options and guarantees refer to policyholders' rights and guarantees which can have asymmetric impacts on future profits due to increase or decrease of interest rates, equity prices, etc. Described below are typical

		examples: • Selective surrenders of fixed products when interest rates are increasing, and of variable products depending on the ratio of account value to minimum guarantees • Guaranteed minimum benefits of variable products • Policyholder dividend of participating products • Annuitization option depending on interest rates level
R	Required capital	Required capital is the portion of capital necessary to hold in excess of statutory policy reserves (excluding contingency reserves) to fulfil the insurance liability. Specifically it is defined as the capital required to additionally hold to meet both of “statutory minimum level (200% statutory solvency margin ratio)” and “internally required level for the purposes such as retaining certain credit rating”.
	Risk free rates	Investment yields on assets free of credit risks
	Risk neutral scenarios	Economic scenarios used to derive time value of options and guarantees which are generated under risk neutral probability
T	Time value and intrinsic value	Value of options and guarantees can be broken into two components: intrinsic value and time value. Intrinsic value generally refers to the value which could be obtained if the option were exercised at the time of the valuation. In context of MCEV, it is the value of options and guarantees calculated based on the conditions applied to certainty equivalent present value of future profits. Time value generally refers to the allowance for volatility of option value in the option term. In context of MCEV, it is the difference between the intrinsic value and the value of options and guarantees based on risk neutral scenarios.

8. Disclaimer

These presentation materials include business projections and forecasts relating to expected financial and operating results of Tokio Marine Holdings and certain of its affiliates in current and future periods. All such forward looking information is based on information and assumptions available to Tokio Marine Holdings when the materials were prepared and is subject to a range of inherent risks and uncertainties. Actual results may vary materially from those estimated, anticipated, expected or projected in the accompanying materials and no assurances can be given that any such forward looking information will prove to have been accurate. Investors are cautioned not to place undue reliance on forward looking statements in these materials. Tokio Marine Holdings undertakes no obligation to update or revise any of this forward looking information, whether as a result of new information, recent or future developments, or otherwise.

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