Manulife

2022 Embedded Value Report for Manulife's Insurance[1] Businesses

(Excludes the value of in-force business for Global Wealth and Asset Management, Bank and Property and Casualty Reinsurance businesses)

[1] Includes variable and fixed annuities, and single premium products sold in Asia

Overview:

Manulife Financial Corporation (the "Company" or "Manulife") generated New Business Value ("NBV")[1] of $2,063 million in 2022, down $180 million or 9%[2] from 2021. In addition, NBV margin[1] decreased to 38.9% in 2022 from 39.2% in 2021.

Manulife's Embedded Value ("EV")[1] was $63.9 billion, or $34.29 per share, as at December 31, 2022, a decrease of $0.9 billion from December 31, 2021. EV before non-operating variances contributed $7.6 billion or 11.7% from December 31, 2021. Investment variances including increases to risk discount rates, and return of capital to shareholders, net of currency movements, decreased EV.

Background:

EV is a measure of the present value of shareholders' interests in the expected future distributable earnings on in-force business reflected in the Consolidated Statements of Financial Position of the Company. It does not include any value associated with future new business. The change in EV between reporting periods is used by Manulife's management as a measure of the value created by the Company's operations in the reporting period. NBV is the change in EV due to sales in the reporting period.

We use a traditional deterministic discounted cash flow methodology for determining our EV and NBV. This methodology makes implicit allowance for all material sources of risk embedded in our products using a risk-adjusted discount rate. It should be noted that this allowance for risk is approximate and may not correspond with the allowance determined using market consistent techniques.

The calculation of EV and NBV necessarily requires several assumptions with respect to future experience. Future experience may vary from that assumed in the calculation, which may materially impact EV and NBV. See "Caution Regarding Forward-Looking Statements" below.

[1] For more information on NBV, NBV margin, and EV, see "Methodology" below.
[2] Percentage growth in NBV is stated on a constant exchange rate basis.

Willis Towers Watson Review Opinion on Embedded Value

Manulife and its subsidiaries have prepared EV results for the year ended December 31, 2022. The EV results, together with a description of the methodology and assumptions that have been used, were shown in the "2022 Embedded Value Report for Manulife's Insurance Businesses (excludes the value of in-force business for Global Wealth and Asset Management, Bank and Property and Casualty Reinsurance businesses)".

Our scope of work covered:

- a review of methodology and assumptions used to determine the EV results for the year ended 2022, and the NBV for 2022, on standards in place at December 31 2022, and
- a review of the results of Manulife's calculation of the EV results.

Willis Towers Watson has concluded that:

- the methodology used for the North American and Asian business is consistent with recent industry practice in each respective region as regards to traditional embedded value calculations based on discounted values of projected deterministic after-tax cash flows. This methodology makes an overall allowance for risk for the Company using risk discount rates which incorporate risk margins which vary by business, together with an explicit allowance for the cost of holding required capital. Willis Towers Watson has not considered how this compares to a capital markets valuation of such risk (so called "market consistent valuation"),
- the economic assumptions used have made allowance for the Company's current and expected future asset mix and investment strategy and are internally consistent, and
- the operating assumptions have been set with appropriate regard to past, current, and expected future experience, considering the nature of the business.

Willis Towers Watson has performed a number of high-level checks on the results of the calculations, without undertaking detailed checks on the models and processes involved, and has confirmed that no issues have been discovered that have a material impact on the disclosed EV as at December 31, 2022, the NBV for the twelve-month period January 1, 2022 to December 31, 2022, the analysis of movement in EV for the twelve-month period December 31, 2021 to December 31, 2022, or the sensitivity analysis.

Our opinion on the Embedded Value of Manulife Financial is based on standards in place at December 31, 2022 and does not include a review of the impact on the Embedded Value of Manulife from the move to IFRS 17 earnings and LICAT capital for Canada, and to local statutory earnings and capital requirements for the U.S.

Embedded Value Results

Embedded Value Summary

As at December 31, (C$ millions)	**2022**	2021
Adjusted net worth excluding holding company activities [1]	**$ 53,515**	$ 53,964
Present value of future profits	**$ 45,967**	$ 49,502
Cost of capital	**(16,522)**	(20,420)
Value of in-force business [2]	**$ 29,445**	$ 29,082
Holding company activities		
Carrying value of debt, preferred shares, and other equity	**$ (19,016)**	$ (18,243)
Embedded value	**$ 63,944**	$ 64,803

(1) Adjusted net worth excluding holding company activities ("adjusted net worth") reflects the equity for the Company, adjusted for the items listed under the "Summary of Adjusted Net Worth Excluding Holding Company Activities" table below.

(2) The value of in-force business excludes Global WAM, Bank and P&C Reinsurance businesses.

As at December 31, 2022, Manulife's EV was $63.9 billion, a decrease of $0.9 billion from December 31, 2021. EV before non-operating variances contributed $7.6 billion. This increase in EV was primarily due to the interest on the prior year's EV, NBV, as well as current period earnings from the Global Wealth and Asset Management ("Global WAM"), Manulife Bank of Canada ("Bank") and Property and Casualty ("P&C") Reinsurance businesses. Investment variances, return of capital to shareholders, currency and other non-operating items amounted to a reduction of $8.5 billion. Of the $5.8 billion decrease in EV related to investment variances, $5.0 billion was due to increases in risk discount rates, with losses from equity market returns partially offset by the impact of higher interest rates.

Embedded Value Movement

For the year ended December 31, (C$ millions)	**2022**	2021
Embedded value as at January 1	**$ 64,803**	$ 61,082
Current period earnings from Global WAM, Bank and P&C Reinsurance businesses [1]	**1,483**	1,613
Interest on embedded value	**5,195**	4,906
New business value	**2,063**	2,243
Changes in operating assumptions and operating experience	**(879)**	(560)
Unallocated overhead expenses [2]	**(254)**	(375)
Embedded value before non-operating variances	**$ 72,411**	$ 68,909
Changes in investment assumptions and investment experience [3]	**(5,808)**	(782)
Other non-operating items and exchange rates [4]	**1,738**	(1,052)
Embedded value before returns to shareholders	**$ 68,341**	$ 67,075
Common shareholder dividends	**(2,513)**	(2,272)
Share repurchases	**(1,884)**	-
Embedded value as at December 31	**$ 63,944**	$ 64,803

(1) The value of in-force business excludes Global WAM, Bank and P&C Reinsurance businesses. As a result, the current period earnings from Global WAM, Bank and P&C Reinsurance businesses contribute to the total embedded value movement.

(2) Unallocated overhead expenses include both Group unallocated expenses and Asia regional office unallocated expenses.

(3) Changes in investment assumptions and investment experience includes changes in the fair value adjustments made for the Company's long-term debt, preferred shares, other equity, and surplus assets.

(4) Includes a reduction in EV from reinsuring over 80% of our legacy US Variable Annuity block, which reflects the earnings impact of the transaction adjusted for the reduced future earnings, net of the Cost of Capital release, included in Embedded Value, as well as the impact to adjusted net worth in 2022 related to the Manulife TEDA acquisition. Also includes share issues, option exercises, preferred share dividends, as well as other equity distributions.

Embedded Value Components by Segment

As at December 31, 2022 (C$ millions)	Asia	Canada	U.S.	Corporate and Other [1]	**Total**
Required capital [2]	$ 5,592	$ 7,839	$ 16,015	$ 57	**$ 29,503**
Allocated surplus [2]	7,055	2,979	5,258	8,720	**24,012**
Adjusted net worth excluding holding company activities [3]	$ 12,647	$ 10,818	$ 21,273	$ 8,777	**$ 53,515**
Present value of future profits	$ 18,566	$ 9,389	$ 17,980	$ 32	**$ 45,967**
Cost of capital	(2,764)	(4,432)	(9,318)	(8)	**(16,522)**
Value of in-force business [4]	$ 15,802	$ 4,957	$ 8,662	$ 24	**$ 29,445**
Embedded value excluding holding company activities	$ 28,449	$ 15,775	$ 29,935	$ 8,801	**$ 82,960**
Holding company activities					
Carrying value of debt, preferred shares, and other equity					**$ (19,016)**
Total embedded value					**$ 63,944**

(1) Adjusted net worth related to the Global WAM segment is grouped with Corporate and Other.

(2) Required capital is based on the required capital ratios as outlined in the "Assumptions" section below. The allocated surplus by segment is based on our capital ratio operating range for each territory in Asia, Canada, and the U.S., with the remainder allocated to Corporate and Other.

(3) Adjusted net worth reflects the equity for the Company, adjusted for the items listed under the "Summary of Adjusted Net Worth Excluding Holding Company Activities" table below.

(4) The value of in-force business excludes Global WAM, Bank and P&C Reinsurance businesses.

Summary of Adjusted Net Worth Excluding Holding Company Activities

As at December 31, 2022 (C$ millions)	**2022**	2021
Common shareholders' equity [1]	**$ 49,401**	$ 52,027
Carrying value of debt, preferred shares, and other equity	**19,016**	18,243
Fair value adjustments [2]	**1,822**	(675)
Goodwill and intangible assets [3]	**(9,693)**	(9,256)
Impact of differences between IFRS and statutory values of insurance and investment contract liabilities and assets in Asia [4]	**(7,031)**	(6,375)
Adjusted net worth excluding holding company activities	**$ 53,515**	$ 53,964

(1) Common shareholders' equity is equal to total shareholders' equity minus preferred shares and other equity on the Consolidated Statements of Financial Position of the Company.

(2) Fair value adjustments are made for the Company's long-term debt, preferred shares, and other equity which are measured at amortized cost under IFRS reporting and fair value for EV reporting. Adjustments are also made for certain surplus assets which are measured at amortized cost under IFRS reporting but fair value for EV reporting.

(3) Goodwill and intangible assets are a component of adjusted net worth; however, they are excluded from EV, net of deferred tax.

(4) This adjustment represents the difference between adjusted net worth for our Asian businesses as measured under IFRS for Canadian insurance companies and adjusted net worth for our Asian businesses as measured under the relevant local statutory accounting bases.

Projected After-tax Discounted Distributable Earnings

(C$ millions)	Discounted Amount
December 31, 2022	$ 4,996
2023 – 2027	18,470
2028 – 2032	14,888
2033 – 2037	9,943
2038 – 2042	6,749
2043 and later	8,898
Total embedded value	$ 63,944

The discounted distributable earnings value as at December 31, 2022 represents allocated surplus, net of holding company activities, as of the valuation date. The remaining discounted distributable earnings values are expected to emerge after the valuation date. Distributable earnings for Canada and the U.S. reflect IFRS reserving requirements for Canadian insurance companies and LICAT required capital. Distributable earnings for Asia reflect local regulatory reserving and capital requirements, except business ceded to an affiliate reinsurer, where it reflects Canadian IFRS reserving and LICAT required capital. The sum of the discounted distributable earnings equals the total EV as at December 31, 2022.

New Business Value Results

	New Business Value		APE Sales (1)		New Business Value Margin (2)	
(C$ millions)	**2022**	2021	**2022**	2021	**2022**	2021
Canada	**$ 362**	$ 307	**$ 1,261**	$ 1,227	**28.7%**	25.0%
U.S.	**352**	270	**823**	788	**42.8%**	34.3%
Hong Kong	**581**	767	**744**	1,066	**78.1%**	72.0%
Japan	**133**	122	**400**	544	**33.2%**	22.4%
Asia Other	**635**	777	**2,082**	2,104	**30.5%**	36.9%
Asia	**1,349**	1,666	**3,226**	3,714	**41.8%**	44.9%
Total (3)	**$ 2,063**	$ 2,243	**$ 5,310**	$ 5,729	**38.9%**	39.2%

(1) Annualized Premium Equivalent ("APE") sales are calculated as 100% of regular premiums/deposits sales and 10% of single premiums/deposits sales. APE Sales excludes non-controlling interest and does not include the Global WAM or Bank businesses.

(2) New Business Value ("NBV") margin is calculated as NBV divided by APE sales excluding non-controlling interest.

(3) NBV does not include Global WAM, Bank and P&C Reinsurance businesses.

In 2022 Manulife's NBV decreased by 9%[1] compared with 2021. In Asia, NBV was $1.3 billion in 2022, a decrease of 20%[1] compared with 2021, due to lower NBV in Hong Kong, Singapore, and mainland China, partially offset by higher NBV in Japan and Other Emerging Markets. NBV in Hong Kong decreased 27%[1] compared with 2021, reflecting lower sales volumes, partially offset by favourable product mix and the impact of higher interest rates. NBV in Singapore and mainland China decreased 19%[1] and 58%[1], respectively, compared with 2021, reflecting changes in product mix. NBV in Vietnam was in line compared with 2021, as the impact of favourable product mix was offset by lower sales volumes. NBV in Japan and Other Emerging Markets increased 28%[1] and 5%[1], respectively, compared with 2021, reflecting favourable product mix, partially offset by lower sales volumes. In Canada, NBV of $362 million increased 18% compared with 2021, driven by higher margins across all businesses and higher group insurance volumes, partially offset by lower volumes in annuities. In the U.S., NBV of $352 million increased 25%[1] compared with 2021, driven by higher interest rates, higher international sales volumes and product actions partially offset by lower brokerage sales volumes.

[1] Growth in NBV is stated on a constant currency basis.

Potential Impact on Embedded Value and New Business Value Arising from Changes in Assumptions

The "Potential Impact on Embedded Value Arising from Changes in Assumptions" table below outlines the potential impact on EV at December 31, 2022, and NBV for the year ended December 31, 2022 of changes in the assumptions used for EV and NBV, respectively.

This includes sensitivities due to specific changes in market prices and interest rate levels projected using internal models as at a specific date. The sensitivities measure the impact of changing one factor at a time and assume that all other factors remain unchanged. For example, the discount rate, public equity return, and alternative long-duration asset ("ALDA") return remain unchanged when we test a 50 basis points ("bps") increase or decrease in fixed income market yields. Actual results can differ significantly from these estimates for a variety of reasons including the interaction among these factors when more than one changes; changes in investment return and future investment activity assumptions; changes in business mix, effective tax rates and other market factors; and the general limitations of our internal models.

The potential impact on EV of changes in assumptions includes impacts due to changes in adjusted net worth, the present value of expected future earnings, and the present value of the cost of holding capital to support the in-force business. The potential impact on NBV of changes in assumptions includes impacts due to changes in the present value of expected future earnings on new business, and the present value of the cost of holding capital to support new business. We reflected a change in reserve assumptions only where the assumptions are set with reference to current market rates. This applies to the change in fixed income market yield in Canada, the U.S., and some Asia territories.

These estimates assume that the dynamic hedging program continues to operate effectively under the economic scenarios reflected in the EV calculation.

The sensitivities should only be viewed as directional estimates of the underlying sensitivities for the respective factors based on the changes in assumptions outlined below. Given the nature of these calculations, we cannot provide assurance that the actual impact on EV or NBV will be as indicated.

Potential Impact on Embedded Value Arising from Changes in Assumptions (1), (2)

As at December 31, 2022 (C$ millions)	Canada	U.S.	Asia	Corporate and Other	**Total**
Embedded Value excluding holding company activities	**$ 15,775**	**$ 29,935**	**$ 28,449**	**$ 8,801**	**$ 82,960**
Carrying value of debt, preferred shares, and other equity					**(19,016)**
Total Embedded Value					**63,944**
Potential impact on Embedded Value of changes in assumptions:					
100 bps increase in discount rate	$ (1,314)	$ (2,386)	$ (1,731)	$ -	$ (5,431)
100 bps decrease in discount rate	1,600	2,835	2,083	-	6,518
50 bps increase in fixed income market yields for all future years	470	861	(552)	(285)	494
50 bps decrease in fixed income market yields for all future years	(498)	(857)	264	318	(773)
100 bps increase in public equity and ALDA returns (3)	1,300	1,942	959	-	4,201
100 bps decrease in public equity and ALDA returns (3)	(1,301)	(2,016)	(1,012)	-	(4,329)
10% immediate increase in public equity and ALDA market values (3)	987	1,808	1,150	114	4,059
10% immediate decrease in public equity and ALDA market values (3)	(1,068)	(1,830)	(1,117)	(114)	(4,129)
Required surplus – relative 25% increase (4)	(1,663)	(3,322)	(1,041)	-	(6,026)

(1) For general fund adjustable benefit products subject to minimum rate guarantee, the sensitivities assume that credited rates are floored at the minimum.

(2) The EV sensitivities include impacts from both adjusted net worth, where applicable, and the value of in-force business. The adjusted net worth is affected by the 50 bps changes in fixed income market yields, which causes changes in the fair value of fixed income assets held, and by the 10% immediate increase and decrease in public equity and ALDA market values.

(3) ALDA includes commercial real estate, power and infrastructure, timber and farmland real estate, oil and gas, and private equities.

(4) This shows the impact of increasing required capital levels by a relative 25% above those shown in the assumptions table below. For businesses subject to LICAT, this was modeled as 125% Base Solvency Buffer – Surplus Allowance – Eligible Deposits.

The sensitivity to a 50-bps decrease in fixed income market yields for all future yields is a decrease in EV of $773 million, driven by losses in Canada and U.S., partially offset by gains in the Asia, and Group. In this scenario, the change in the present value of earnings results in a $1,120 million reduction in EV, which is partially offset by a $347 million net improvement in EV from the impact of mark-to-market gains on surplus assets (net of debt) and a higher cost of capital due to the strengthening in required capital.

The sensitivity to a 50-bps increase in fixed income market yields for all future yields is an increase in EV of $494 million, driven by gains in Canada and U.S., partially offset by losses in the Asia, and Group. In this scenario, the change in the present value of earnings results in a $842 million improvement in EV, which is partially offset by a $348 million net deterioration in EV from the impact of mark-to-market losses on surplus assets (net of debt) and a lower cost of capital due to the release in required capital.

Potential Impact on New Business Value Arising from Changes in Assumptions [(1), (2)]

(C$ millions)	Canada	U.S.	Japan	Hong Kong	Asia Other	Total
New Business Value for the period January 1 to December 31, 2022	**$ 362**	**$ 352**	**$ 133**	**$ 581**	**$ 635**	**$ 2,063**
100 bps increase in discount rate	$ (43)	$ (21)	$ (30)	$ (58)	$ (63)	$ (215)
100 bps decrease in discount rate	50	27	37	72	73	259
50 bps increase in fixed income market yields for all future years	11	10	8	7	28	64
50 bps decrease in fixed income market yields for all future years	(13)	(10)	(10)	(8)	(26)	(67)
100 bps increase in public equity and ALDA return [(3)]	13	2	5	22	31	73
100 bps decrease in public equity and ALDA return [(3)]	(14)	(2)	(6)	(21)	(29)	(72)
10% immediate increase in public equity and ALDA market values [(3)]	8	1	0	25	20	54
10% immediate decrease in public equity and ALDA market values [(3)]	(10)	(1)	0	(26)	(20)	(57)
Required surplus – relative 25% increase [(4)]	(22)	(29)	(18)	(9)	(19)	(97)

(1) For general fund adjustable benefit products subject to minimum rate guarantee, the sensitivities assume that credited rates are floored at the minimum.

(2) For the purpose of NBV sensitivities, assumption changes have been assumed to occur after the point-of-sale. Therefore, the NBV sensitivity gives an indication of how the NBV written during the year would have been affected by an economic shock occurring after the point-of-sale. NBV sensitivities consider hedging strategies on new business which are intended to be implemented shortly after sale. Actual changes in NBV due to experience being different from assumed may vary from what is shown above due to changes in product mix.

(3) ALDA include commercial real estate, timber and farmland real estate, oil and gas, and private equities.

(4) This shows the impact of increasing required capital levels by a relative 25% above those shown in the "Assumptions" table below. For businesses subject to LICAT, this was modeled as 125% Base Solvency Buffer – Surplus Allowance – Eligible Deposits – Par Surplus.

The potential impact of changes in fixed income market rates for all future years is relatively higher for NBV than EV. This occurs because invested assets partially mitigate exposure to changes in fixed income market yields, and EV has relatively higher invested assets than NBV.

Methodology

Embedded value ("EV") is a measure of the present value of shareholders' interests in the expected future distributable earnings on in-force business reflected in the Consolidated Statements of Financial Position of Manulife, excluding any value associated with future new business. EV is calculated as the sum of the adjusted net worth and the value of in-force business calculated as at December 31.

Adjusted net worth is the IFRS shareholders' equity adjusted for goodwill and intangible assets, fair value of surplus assets, the fair value of debt, preferred shares, and other equity, and local statutory balance sheet, regulatory reserve, and capital for our Asian businesses. In the 2023 EV report (to be released in 2024), ANW will be adjusted to reflect local statutory basis for US.

Value of in-force business in Canada and the U.S. is the present value of expected future IFRS earnings, on an IFRS 4 basis, on in-force business less the present value of the cost of holding capital to support the in-force business under the Life Insurance Capital Adequacy Test ("LICAT") framework. The value of in-force business in Asia reflects local statutory earnings and capital requirements. The value of in-force excludes Global WAM, Bank or P&C Reinsurance businesses. In the 2023 EV report (to be released in 2024), Canada will reflect IFRS17 earnings and LICAT capital, while US and Asia will reflect local statutory earnings and capital requirements.

New business value ("NBV") is the change in embedded value as a result of sales in the reporting period. NBV is calculated as the present value of shareholders' interests in expected future distributable earnings, after the cost of capital calculated under the LICAT framework in Canada and the U.S., and the local capital requirements in Asia, on actual new business sold in the period using assumptions that are consistent with the assumptions used in the calculation of embedded value. NBV excludes businesses with immaterial insurance risks, such as the Company's Global WAM, Manulife Bank and the P&C Reinsurance businesses. NBV is a useful metric to evaluate the value created by the Company's new business franchise.

New business value margin ("NBV margin") is calculated as NBV divided by APE sales excluding non-controlling interests. APE sales are calculated as 100% of regular premiums/deposits sales and 10% of single premiums/deposits sales. NBV margin is a useful metric to help understand the profitability of our new business.

Assumptions

Investment assumptions are consistent with the Company's best estimate assumptions reflected in the valuation of policy liabilities, updated to reflect market assumptions consistent with the market environment in the quarter the business was sold. Best estimate fixed income yields are updated quarterly, and long-term expected yields for ALDA are typically reviewed during the annual review of actuarial methods and assumptions.

The principal economic assumptions used in the EV calculation as at December 31, 2022 were:

Principal Economic Assumptions as at December 31, 2022

Territory	Canada	U.S.	Japan	Hong Kong
Required capital	100% LICAT [(1)]	100% LICAT [(1)]	400% solvency margin	150% solvency margin
Discount rate	8.00%	8.75%	6.50%	9.75%
Public equity return	8.80%	9.80%	6.00%	9.50%
Jurisdictional income tax rate [(2)]	27.80%	21.00%	28.00%	16.50%
Reinvestment assumption for 10-year government bonds:				
Immediate	3.30%	3.88%	0.41%	3.61%
10 years in future	3.44%	4.55%	2.27%	4.38%
20 years in future	4.13%	4.67%	2.61%	4.13%
30 years in future	4.30%	4.69%	2.93%	4.04%
Ultimate Reinvestment Rate	4.65%	4.65%	3.36%	4.10%

(1) 100% of LICAT Required Capital = 100% Base Solvency Buffer – Surplus Allowance – Eligible Deposits.

(2) For Hong Kong, individual insurance products are taxed on a premium tax basis due to a Company election under Hong Kong tax regulations.

Assumption	Additional information
Required Capital:	The capital ratios in jurisdictions not included in the table above are as follows: Mainland China: 100% of required capital as specified under China Association of Actuaries EV assessment guidance Indonesia: 120% of regulatory risk-based capital requirement Malaysia: 160% of regulatory capital adequacy ratio The Philippines: 125% of regulatory risk-based capital requirement Singapore: 120% of regulatory capital adequacy ratio Vietnam: 100% of required minimum solvency margin
Discount rate:	A risk-adjusted discount rate is used which is based on the risk profile of the business and makes an allowance for all material sources of risk embedded in our products, the risk that actual experience in future years differs from that assumed, and for the economic cost of capital. For US and Canada, the discount rates are set based on our target equity/debt structure, which assumes that 25% of the capital is in the form of debt. For Asia, the discount rates are set based on a risk margin over risk-free interest rate. For 2022 EV, the discount rates in Asia incorporate the average in 2022 of the monthly risk-free interest rates. The 2022 EV discount rates are used for 2023 NBV.
Public equity returns:	The equity return assumptions are based on long-term historical observed experience. The return assumptions for public equity in Asia excluding Hong Kong and Japan vary between 8.5% and 10.75%.
Risk-free interest rates:	The risk-free interest rates are based on forward interest rates implied by the equilibrium risk-free market curve at December 31, 2022. The rates transition to the long-term risk-free interest rates over a 60-year period. The long-term risk-free interest rates were developed in accordance with Canadian actuarial standards of practice. NBV reflects the implied forward risk-free interest rates in effect during the quarter the business was written.
Expenses:	Expenses are allocated to acquisition of new business and maintenance of in-force business and are derived based on internal cost studies. Expenses are then projected into the future with an allowance for inflation. Where certain expenses were identified

Assumption	Additional information
	as being non-recurring and distinct in nature these expenses were excluded from the analysis. Unallocated Group office and Asia regional office expenses are charged to EV as incurred.
Exchange rates:	The foreign exchange rate used for the translation of EV results at December 31, 2021 and 2022 are the respective year-end statements of financial position rates. The foreign exchange rates used for translation of the NBV results each quarter are the respective quarterly statements of income rates.
Other assumptions:	For the EV calculation, other operating assumptions such as mortality, morbidity, lapses and expenses are consistent with best estimate assumptions used in the valuation of insurance and investment contract liabilities as at December 31, 2022 on an IFRS basis. For the quarterly NBV calculation, these other operating assumptions are consistent with the best estimate assumptions used in the valuation of insurance and investment contract liabilities for each quarter on an IFRS basis. Local statutory earnings in Asia are calculated using assumptions as required under the local reserving bases.

The principal economic assumptions used in the EV calculation as at December 31, 2021 were:

Principal Economic Assumptions as at December 31, 2021

Territory	Canada	U.S.	Japan	Hong Kong
Required Capital	100% LICAT (1)	100% LICAT (1)	400% solvency margin	150% solvency margin
Discount rate	7.25%	8.00%	5.75%	8.50%
Public equity return	8.80%	9.80%	6.00%	9.50%
Jurisdictional income tax rate (2)	26.50%	21.00%	28.00%	16.50%
Reinvestment assumption for 10-year government bonds				
Immediate	1.44%	1.52%	0.08%	1.50%
10 years in future	1.91%	2.44%	0.89%	1.71%
20 years in future	3.24%	3.47%	2.00%	2.73%
30 years in future	3.72%	3.89%	2.48%	3.08%
Ultimate Reinvestment Rate	4.65%	4.65%	3.36%	4.10%

(1) 100% of LICAT Required Capital = 100% Base Solvency Buffer – Surplus Allowance – Eligible Deposits.

(2) For Hong Kong, individual insurance products are taxed on a premium tax basis due to a Company election under Hong Kong tax regulations.

Caution Regarding Forward-Looking Statements

This report contains forward-looking statements within the “safe harbor” provisions of Canadian provincial securities laws and the U.S. Private Securities Litigation Reform Act of 1995.

Although we believe that the expectations reflected in such forward-looking statements are reasonable, such statements involve risks and uncertainties, and undue reliance should not be placed on such statements.

Certain material factors or assumptions are applied in making forward-looking statements, including the assumptions described in this report, and actual results may differ materially from those expressed or implied in such statements.

Important factors that could cause actual results to differ materially from expectations include but are not limited to: general business and economic conditions (including but not limited to the performance, volatility and correlation of equity markets, interest rates, credit and swap spreads, currency rates, investment losses and defaults, market liquidity and creditworthiness of guarantors, reinsurers and counterparties); the ongoing prevalence of COVID-19, including any variants, as well as actions that have been, or may be taken by governmental authorities in response to COVID-19, including the impacts of any variants; changes in laws and regulations; changes in accounting standards applicable in any of the territories in which we operate; changes in regulatory capital requirements; our ability to execute strategic plans and changes to strategic plans; downgrades in our financial strength or credit ratings; our ability to maintain our reputation; impairments of goodwill or intangible assets or the establishment of provisions against future tax assets; the accuracy of estimates relating to morbidity, mortality and policyholder behaviour; the accuracy of other estimates used in applying accounting policies, actuarial methods and embedded value methods; our ability to implement effective hedging strategies and unforeseen consequences arising from such strategies; our ability to source appropriate assets to back our long-dated liabilities; level of competition and consolidation; our ability to market and distribute products through current and future distribution channels; unforeseen liabilities or asset impairments arising from acquisitions and dispositions of businesses; the realization of losses arising from the sale of investments classified as available-for-sale; our liquidity, including the availability of financing to satisfy existing financial liabilities on expected maturity dates when required; obligations to pledge additional collateral; the availability of letters of credit to provide capital management flexibility; accuracy of information received from counterparties and the ability of counterparties to meet their obligations; the availability, affordability and adequacy of reinsurance; legal and regulatory proceedings, including tax audits, tax litigation or similar proceedings; our ability to adapt products and services to the changing market; our ability to attract and retain key executives, employees and agents; the appropriate use and interpretation of complex models or deficiencies in models used; political, legal, operational and other risks associated with our non-North American operations; acquisitions and our ability to complete acquisitions including the availability of equity and debt financing for this purpose; the disruption of or changes to key elements of the Company's or public infrastructure systems; environmental concerns; our ability to protect our intellectual property and exposure to claims of infringement; and our inability to withdraw cash from subsidiaries.

We do not undertake to update any forward-looking statements, except as required by law.