



Manulife Financial Corporation Management's Discussion & Analysis

For the year ended December 31, 2021

Caution regarding forward-looking statements

From time to time, Manulife Financial Corporation (“MFC”) makes written and/or oral forward-looking statements, including in this document. In addition, our representatives may make forward-looking statements orally to analysts, investors, the media and others. All such statements are made pursuant to the “safe harbour” provisions of Canadian provincial securities laws and the U.S. Private Securities Litigation Reform Act of 1995.

The forward-looking statements in this document include, but are not limited to, statements with respect to expected annual savings related to actions taken in 2021, the Company’s strategic priorities and 2022 targets and 2025 supplemental goals for net promoter score, straight-through-processing, employee engagement, its highest potential businesses, expense efficiency and portfolio optimization, possible share buybacks under our normal course issuer bid (“NCIB”), the impact related to the reinsurance of our legacy U.S. variable annuity block, and also relate to, among other things, our objectives, goals, strategies, intentions, plans, beliefs, expectations and estimates, and can generally be identified by the use of words such as “may”, “will”, “could”, “should”, “would”, “likely”, “suspect”, “outlook”, “expect”, “intend”, “estimate”, “anticipate”, “believe”, “plan”, “forecast”, “objective”, “seek”, “aim”, “continue”, “goal”, “restore”, “embark” and “endeavour” (or the negative thereof) and words and expressions of similar import, and include statements concerning possible or assumed future results. 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 and they should not be interpreted as confirming market or analysts’ expectations in any way.

Certain material factors or assumptions are applied in making forward-looking statements 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.

Additional information about material risk factors that could cause actual results to differ materially from expectations and about material factors or assumptions applied in making forward-looking statements may be found in this document under “Risk Management and Risk Factors” and “Critical Actuarial and Accounting Policies” and in the “Risk Management” note to the Consolidated Financial Statements as well as elsewhere in our filings with Canadian and U.S. securities regulators. The forward-looking statements in this document are, unless otherwise indicated, stated as of the date hereof and are presented for the purpose of assisting investors and others in understanding our financial position and results of operations, our future operations, as well as our objectives and strategic priorities, and may not be appropriate for other purposes. We do not undertake to update any forward-looking statements, except as required by law.

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Management's Discussion and Analysis



This Management's Discussion and Analysis ("MD&A") is current as of February 9, 2022.

1. Manulife Financial Corporation

Manulife Financial Corporation is a leading international financial services group that helps people make their decisions easier and lives better. With our global headquarters in Toronto, Canada, we operate as Manulife across our offices in Asia, Canada, and Europe, and primarily as John Hancock in the United States. We provide financial advice, insurance, and wealth and asset management solutions for individuals, groups and institutions. At the end of 2021, we had more than 38,000 employees, over 119,000 agents, and thousands of distribution partners, serving over 33 million customers. At the end of 2021, we had \$1.4 trillion (US\$1.1 trillion) in assets under management and administration¹, including total invested assets of \$0.4 trillion (US \$0.3 trillion), and segregated funds net assets of \$0.4 trillion (US\$0.3 trillion), and during 2021, we made \$31.8 billion in payments to our customers. Our principal operations are in Asia, Canada and the United States where we have served customers for more than 155 years. We trade as 'MFC' on the Toronto, New York, and the Philippine stock exchanges, and under '945' in Hong Kong.

Our reporting segments are:

- Asia – providing insurance products and insurance-based wealth accumulation products in Asia.
- Canada – providing insurance products, insurance-based wealth accumulation products, and banking services in Canada and has an in-force variable annuity business.
- U.S. – providing life insurance products, insurance-based wealth accumulation products and has an in-force long-term care insurance business and an in-force annuity business.
- Global Wealth and Asset Management ("Global WAM") – providing investment advice and innovative solutions to our retail, retirement and institutional clients around the world under the Manulife Investment Management ("MIM") brand.
- Corporate and Other – comprised of investment performance on assets backing capital, net of amounts allocated to operating segments; financing costs; costs incurred by the corporate office related to shareholder activities (not allocated to operating segments); our Property and Casualty ("P&C") Reinsurance business; and run-off reinsurance business lines.

In this document, the terms "Company", "Manulife", "we" and "our" mean Manulife Financial Corporation ("MFC") and its subsidiaries. The term "MLI" means The Manufacturers Life Insurance Company and its subsidiaries.

Profitability

Profitability

As at and for the years ended December 31,
(\$ millions, unless otherwise stated)

	2021	2020
Net income attributed to shareholders	\$ 7,105	\$ 5,871
Core earnings ⁽¹⁾	\$ 6,536	\$ 5,516
Diluted earnings per common share (\$)	\$ 3.54	\$ 2.93
Diluted core earnings per common share (\$) ⁽²⁾	\$ 3.25	\$ 2.75
Return on common shareholders' equity ("ROE")	14.2%	11.6%
Core ROE ⁽²⁾	13.0%	10.9%
Expense efficiency ratio ⁽²⁾	48.9%	52.9%
General expenses	\$ 7,828	\$ 7,510

⁽¹⁾ This item is a non-GAAP financial measure. See "Non-GAAP and Other Financial Measures" below for more information.

⁽²⁾ This item is a non-GAAP ratio. See "Non-GAAP and Other Financial Measures" below for more information.

Our net income attributed to shareholders was \$7.1 billion in 2021 compared with \$5.9 billion in 2020. Net income attributed to shareholders is comprised of core earnings (consisting of items we believe reflect the underlying earnings capacity of the business), which amounted to \$6.5 billion in 2021 compared with \$5.5 billion in 2020, and items excluded from core earnings of \$0.6 billion of net gains in 2021 compared with \$0.4 billion of net gains in 2020.

¹ This item is a non-GAAP financial measure. See "Non-GAAP and Other Financial Measures" below for more information.

The \$1.2 billion increase in net income attributed to shareholders in 2021 compared with 2020 was driven by gains from investment-related experience compared with losses in 2020 and growth in core earnings. Investment-related experience gains reflected higher-than-expected returns (including fair value changes) on alternative long duration assets (“ALDA”) primarily driven by gains on private equity and infrastructure, strong credit experience and the favourable impact of fixed income reinvestment activities. Partially offsetting the gains was a net charge from the direct impacts of markets (compared with gains in 2020). The net charge was primarily driven by a \$532 million charge relating to the impact of updated ultimate reinvestment rate (“URR”) assumptions issued by the Canadian Actuarial Standards Board (“ASB”).

The \$1.0 billion or 26%¹ increase in core earnings on a constant exchange rate basis compared with 2020 was driven by the recognition of core investment gains² in 2021 (compared with nil core investment gains in 2020), higher new business gains in all segments, higher net fee income from higher average AUMA³ in Global WAM, which benefitted from the favourable impact of markets and net inflows, higher investment income in Corporate and Other which benefitted from higher net gains from available-for-sale (“AFS”) equities and seed money investments in 2021, and in-force business growth in all segments. These items were partially offset by unfavourable policyholder experience and a charge in our P&C Reinsurance business for losses related to Hurricane Ida and the European floods. In 2021, core earnings included a net charge of \$110 million (\$127 million pre-tax) related to policyholder insurance and annuity experience compared with a net gain of \$83 million (\$76 million pre-tax) in 2020.⁴ Actions to improve the capital efficiency of our legacy business resulted in \$3 million lower core earnings in 2021 compared with 2020.

Core earnings by segment is presented in the following table. See Asia, Canada, U.S., and Global WAM sections below.

For the years ended December 31, (\$ millions)	2021	2020	% change ⁽¹⁾ 2021 vs 2020
Core earnings by segment			
Asia	\$ 2,176	\$ 2,110	10%
Canada	1,179	1,174	–
U.S.	1,936	1,995	4%
Global Wealth and Asset Management	1,406	1,100	33%
Corporate and Other (excluding core investment gains)	(561)	(863)	35%
Core investment gains ⁽²⁾	400	–	100%
Total core earnings	\$ 6,536	\$ 5,516	26%

⁽¹⁾ Percentage change in core earnings on a constant exchange rate basis is a non-GAAP ratio. See “Non-GAAP and Other Financial Measures” below for more information.

⁽²⁾ See note (2) in the table below. This item is disclosed under the Office of the Superintendent of Financial Institution’s (“OSFI’s”) Source of Earnings Disclosure (Life Insurance Companies) guideline.

¹ Percentage growth / declines in core earnings, core general expenses, pre-tax core earnings, assets under management and administration, assets under management, core EBITDA, general expenses, Manulife Bank average net lending assets and Global Wealth and Asset Management revenue are stated on a constant exchange rate basis, a non-GAAP ratio. See “Non-GAAP and Other Financial Measures” below for more information.

² Core investment gains are disclosed under OSFI’s Source of Earnings Disclosure (Life Insurance Companies) guideline.

³ For more information on this metric, see “Non-GAAP and Other Financial Measures” below.

⁴ Policyholder experience includes gains of \$29 million post-tax in 2021 (2020 – gains of \$60 million post-tax) from the release of margins on medical policies in Hong Kong that have lapsed for customers who have opted to change their existing policies to the new Voluntary Health Insurance Scheme (“VHIS”) products. These gains did not have a material impact on core earnings as they were mostly offset by new business strain.

The table below presents 2021 and 2020 net income attributed to shareholders consisting of core earnings and items excluded from core earnings.

For the years ended December 31,
(\$ millions)

	2021	2020
Core earnings	\$ 6,536	\$ 5,516
Items excluded from core earnings: ⁽¹⁾		
Investment-related experience outside of core earnings ⁽²⁾	1,642	(792)
Direct impact of equity markets and interest rates and variable annuity guarantee liabilities	(817)	932
<i>Direct impact of equity markets and variable annuity guarantee liabilities</i> ⁽³⁾	289	(228)
<i>Fixed income reinvestment rates assumed in the valuation of policy liabilities</i> ⁽⁴⁾	(346)	(1,015)
<i>Sale of AFS bonds and derivative positions in the Corporate and Other segment</i>	(228)	2,175
<i>Changes to the ultimate reinvestment rate</i> ⁽⁵⁾	(532)	–
Change in actuarial methods and assumptions ⁽⁶⁾	(41)	(198)
Restructuring charge ⁽⁷⁾	(115)	–
Reinsurance transactions, tax-related items and other ⁽⁸⁾	(100)	413
Total items excluded from core earnings	569	355
Net income attributed to shareholders	\$ 7,105	\$ 5,871

⁽¹⁾ These items are disclosed under OSFI's Source of Earnings Disclosure (Life Insurance Companies) guideline.

⁽²⁾ In accordance with our definition of core earnings, we include up to \$400 million of net favourable investment-related experience reported in a single year, as core investment gains (see "Non-GAAP and Other Financial Measures" below). Items excluded from core earnings include net investment-related experience in excess of \$400 million per annum or net unfavourable investment-related experience on a year-to-date basis. In 2021, the investment-related experience net gain of \$1,642 million reflected higher-than-expected returns (including fair value changes) on ALDA primarily driven by gains on private equity and infrastructure, strong credit experience and the favourable impact of fixed income reinvestment activities. In 2020, the investment-related experience net charge of \$792 million reflected lower-than-expected returns (including fair value changes) on ALDA primarily driven by investments in oil & gas and real estate, partially offset by the favourable impact of fixed income reinvestment activities.

⁽³⁾ In 2021, the net gain related to equity markets of \$289 million included a gain of \$1,873 million from gross equity exposure, partially offset by a loss of \$1,581 million from dynamic hedge experience and a modest charge of \$3 million from macro hedging experience. In 2020, the net charge of \$228 million included a charge of \$1,641 million from gross equity exposure and a modest charge of \$7 million from macro hedging experience, partially offset by a gain of \$1,420 million from dynamic hedge experience.

⁽⁴⁾ In 2021, the charge due to fixed income reinvestment rates of \$346 million was primarily due to the increase in risk-free interest rates and the overall steepening of the yield curve in U.S. and Canada. In 2020, the charge due to fixed income reinvestment rates of \$1,015 million was primarily due to the reduction in risk-free rates and, to a much lesser extent, lower corporate spreads, with spreads for some tenors and ratings being slightly below their respective 2019 levels.

⁽⁵⁾ In June 2021, the Canadian Actuarial Standards Board issued a new promulgation with reductions to the URR and updates to the calibration criteria for stochastic risk-free rates. The updated standard included a reduction of 15 basis points in the URR and a corresponding change to stochastic risk-free rate modeling and was effective October 15, 2021. The long-term URR for risk-free rates in Canada is prescribed at 2.9% and we use the same assumption for the U.S. Our assumption for Japan is 1.5%.

⁽⁶⁾ See "Critical Actuarial and Accounting Policies – Review of Actuarial Methods and Assumptions" section below for further information on the 2021 and 2020 charges.

⁽⁷⁾ In 2021, we reported a restructuring charge of \$150 million pre-tax (\$115 million post-tax) related to actions that are expected to result in recurring annual expense savings of \$250 million (pre-tax) by 2023; \$100 million (pre-tax) of these savings have been realized in 2021, and \$200 (pre-tax) million is expected to emerge in 2022.¹

⁽⁸⁾ The 2021 net charge of \$100 million included a \$119 million charge relating to updating the impact of the 2017 U.S. Tax Cuts and Jobs Act and a \$37 million charge resulting from a reinsurance transaction in the U.S., partially offset by a \$37 million gain related to affiliate reinsurance transactions in Asia and a \$19 million gain related to the divestment of our Thailand operation. In 2020, the \$413 million gain included the impact of reinsurance transactions in the U.S., Asia and Canada which contributed gains of \$262 million, \$58 million and \$21 million, respectively. In addition, we reported tax benefits of \$72 million in 2020 from the U.S. CARES Act, as a result of carrying back net operating losses to prior years, which had higher tax rates.

Net income attributed to shareholders by segment is presented in the following table. See Asia, Canada, U.S., and Global WAM sections below.

For the years ended December 31,
(\$ millions)

	2021	2020	% change ⁽¹⁾ 2021 vs 2020
Net income attributed to shareholders by segment			
Asia	\$ 3,057	\$ 1,762	73%
Canada	1,354	195	594%
U.S.	2,080	1,269	64%
Global Wealth and Asset Management	1,406	1,100	28%
Corporate and Other	(792)	1,545	–
Total net income attributed to shareholders	\$ 7,105	\$ 5,871	21%

⁽¹⁾ Percentage change is on an actual exchange rate basis.

Diluted earnings per common share was \$3.54 in 2021, compared with \$2.93 in 2020. Diluted core earnings per common share was \$3.25 in 2021, compared with \$2.75 in 2020. The changes in these measures were related to the increase in both net income and core earnings, respectively. The diluted weighted average common shares outstanding was 1,946 million in 2021 and 1,943 million in 2020.

Return on common shareholders' equity ("ROE") for 2021 was 14.2%, compared with 11.6% for 2020 and core return on shareholders' equity ("core ROE") was 13.0% in 2021 compared with 10.9% in 2020. The increase in 2021 ROE was primarily driven by an increase in common shareholders' net income and the increase in 2021 core ROE was primarily driven by an increase in common shareholders' core earnings.

¹ See "Caution regarding forward-looking statements" above.

Expense efficiency ratio was 48.9% for 2021, compared with 52.9% in 2020. The 4.0 percentage point improvement in the ratio compared with 2020 was driven by a 25% increase in pre-tax core earnings¹ and a 5% increase in core general expenses¹. The 5% increase in core general expenses on a constant exchange rate basis was due to temporary reductions in discretionary and distribution-related expenses in 2020 and the impact of stronger 2021 sales, substantially offset by 2021 efficiency programs.

Total general expenses increased 9% on a constant exchange rate basis due to the items noted above for core general expenses as well as a restructuring charge and the establishment of a legal provision. Total general expenses increased 4% on an actual exchange rate basis reflecting the previously-noted items partially offset by the favourable impact of the strengthening of the Canadian dollar compared with the U.S. dollar.

Business Performance

Business performance

As at and for the years ended December 31,
(\$ millions, unless otherwise stated)

	2021	2020
Asia APE sales	\$ 4,050	\$ 3,869
Canada APE sales	1,227	1,148
U.S. APE sales	788	609
Total APE sales ⁽¹⁾	6,065	5,626
Asia new business value	1,666	1,387
Canada new business value	307	255
U.S. new business value	270	160
Total new business value ⁽¹⁾	2,243	1,802
Global Wealth and Asset Management gross flows (\$ billions) ⁽¹⁾	144.7	130.2
Global Wealth and Asset Management net flows (\$ billions) ⁽¹⁾	27.9	8.9
Global Wealth and Asset Management assets under management and administration (\$ billions) ^{(2),(3)}	855.9	753.6
Global Wealth and Asset Management total invested assets (\$ billions) ⁽³⁾	4.5	4.8
Global Wealth and Asset Management segregated funds net assets (\$ billions) ⁽³⁾	252.6	229.8
Total assets under management and administration (\$ billions)	1,425.8	1,297.4
Total invested assets (\$ billions)	427.1	411.0
Total net segregated funds net assets (\$ billions)	399.8	367.4

⁽¹⁾ For more information on this metric, see “Non-GAAP and Other Financial Measures” below.

⁽²⁾ This item is a non-GAAP financial measure. See “Non-GAAP and Other Financial Measures” below for more information.

⁽³⁾ The Global WAM portion of AUMA as at December 31, 2021 was \$855.9 billion, an increase of 14%, compared with December 31, 2020, driven by the favourable impact of markets, 2021 net inflows of \$27.9 billion, and assets acquired of \$1.6 billion. The Global WAM segregated funds net assets were \$252.6 billion as at December 31, 2021, an increase of 10%, compared with December 31, 2020 on an actual exchange rate basis driven primarily by the favourable impact of markets partially offset by segregated funds net outflows.

Annualized premium equivalent (“APE”) sales were \$6.1 billion in 2021, an increase of 13%² compared with 2020. In Asia, there continued to be varying degrees of adverse impacts on select markets across the region related to COVID-19. Asia APE sales increased 11% compared with 2020 primarily as a result of strong APE sales in Hong Kong, Singapore, mainland China and Other Emerging Markets³ partially offset by a decline in APE sales in Japan resulting from lower corporate-owned life insurance (“COLI”) product sales. In Hong Kong, APE sales increased 10% compared with 2020, reflecting strong growth in our bank channel, demand from mainland Chinese visitors through our Macau branch, and an expanded agency force. Singapore APE sales increased 51% compared with 2020, reflecting double-digit growth across agency, bank and broker channels. China APE sales increased 12% compared with 2020, primarily reflecting growth in our bank channel. Vietnam APE sales increased 7% compared with 2020, reflecting growth in agency and bank channels, partially offset by the impact of COVID-19 containment measures during the second half of the year. In Other Emerging Markets, APE sales increased 17% compared with 2020, despite the impact of COVID-19 containment measures in 2021. Japan APE sales decreased 26% compared with 2020, driven by lower COLI product sales. In Canada, APE sales increased 7% compared with 2020 primarily driven by increased customer demand for our lower risk segregated fund products and higher individual insurance sales in participating products, partially offset by variability in the large-case group insurance market. In the U.S., APE sales increased 38% compared with 2020, due to strong international sales, which is reported as a part of the U.S. segment results, and our differentiated domestic product offerings which include the John Hancock Vitality feature and higher customer demand for insurance protection in the current COVID-19 environment of greater consumer interest in improving baseline health. APE sales of products with the John Hancock Vitality PLUS feature in 2021 increased 34% compared with 2020.

New business value (“NBV”) was \$2.2 billion in 2021, an increase of 31% compared with 2020. In Asia, NBV of \$1.7 billion increased 27% compared with 2020 driven by higher sales volumes in Hong Kong, Singapore, mainland China, Vietnam and Other Emerging Markets, favourable product mix in Singapore and Vietnam and favourable interest rates and product management actions in Hong Kong; partially offset by a decline in Japan due to lower sales. In Canada, NBV of \$307 million increased 20% compared with 2020 primarily due to higher margins in annuities and individual insurance. In the U.S., NBV of \$270 million was up 80% compared with 2020 primarily driven by higher sales volumes and improved margins, notably due to higher international sales.

¹ This item is a non-GAAP financial measure. See “Non-GAAP and Other Financial Measures” below for more information.

² Percentage growth / declines in APE sales, gross flows, net flows, and NBV are stated on a constant exchange rate basis.

³ Other Emerging Markets includes Indonesia, the Philippines, Malaysia, Thailand, Cambodia, and Myanmar.

Global WAM gross flows of \$144.7 billion increased \$14.5 billion or 16% compared with 2020, driven by higher gross flows in Retirement and Retail partially offset by a decline in Institutional Asset Management. See “Global Wealth and Asset Management” section below for further details.

Global WAM net inflows were \$27.9 billion in 2021, compared with net inflows of \$8.9 billion in 2020. Net inflows in Retail were \$29.2 billion in 2021 compared with net inflows of \$3.5 billion in 2020, driven by double-digit growth in gross flows across all geographies amid increased investor demand and lower mutual fund redemption rates. Net outflows in Institutional Asset Management were \$2.4 billion in 2021 compared with net inflows of \$3.8 billion in 2020, driven by a \$9.4 billion redemption in Asia in the first quarter of 2021 (“1Q21”), and the non-recurrence of a \$6.9 billion sale in Canada in 2020. This was partially offset by the non-recurrence of a \$5.0 billion redemption in Europe in 2020, lower redemptions in Asia and the U.S., and higher sales of infrastructure, timberland and real estate mandates. Net inflows in Retirement were \$1.1 billion in 2021 compared with net inflows of \$1.6 billion in 2020, reflecting the non-recurrence of a large-case plan sale in 2020 and higher member redemptions, partially offset by growth in member contributions.

Assets under Management and Administration (“AUMA”)

AUMA as at December 31, 2021 was \$1.4 trillion, an increase of 11%, compared with December 31, 2020, primarily due to the net favourable impact of markets and net inflows. Total invested assets and segregated funds net assets increased 4% and 9%, respectively, on an actual exchange rate basis primarily due to the favourable impact of markets.

Assets under Management and Administration

As at December 31,
(\$ millions)

	2021	2020
Total invested assets	\$ 427,098	\$ 410,977
Segregated funds net assets ⁽¹⁾	399,788	367,436
Mutual funds, institutional asset management and other ^{(1),(2)}	411,271	356,335
Total assets under management	1,238,157	1,134,748
Other assets under administration	187,631	162,688
Total assets under management and administration	\$ 1,425,788	\$ 1,297,436

⁽¹⁾ Segregated fund assets, mutual fund assets and other funds are not available to satisfy the liabilities of the Company's general fund.

⁽²⁾ Other funds represent pension funds, pooled funds, endowment funds and other institutional funds managed by the Company on behalf of others.

Revenue

Revenue includes (i) premiums received on life and health insurance policies and fixed annuity products, net of premiums ceded to reinsurers; (ii) investment income comprised of income earned on general fund assets, credit experience and realized gains and losses on assets held in the Corporate and Other segment; (iii) fee and other income received for services provided; and (iv) realized and unrealized gains and losses on assets supporting insurance and investment contract liabilities and on our macro hedging program. Premium equivalents from administrative services only (“ASO”), as well as deposits received by the Company on investment contracts such as segregated funds, mutual funds and managed funds are not included in revenue; however, the Company does receive fee income from these products, which is included in revenue. Fees generated from deposits and ASO premium and deposit equivalents are an important part of our business and as a result, revenue does not fully represent sales and other activity taking place during the respective periods.

In 2021, revenue before realized and unrealized investment gains and losses was \$65.8 billion compared with \$59.9 billion in 2020. The increase was driven primarily by the non-recurrence of a large ceded premium from the reinsurance of a block of legacy U.S. Bank-Owned Life Insurance (“BOLI”) business in 2020 and higher premiums from in-force business growth.

In 2021, the net realized and unrealized investment losses on assets supporting insurance and investment contract liabilities and on the macro hedging program were \$4.0 billion compared with gains of \$19.0 billion for 2020. The 2021 losses were primarily due to the impact of interest rate increases partially offset by fair value gains in ALDA and higher equity markets. The 2020 gains were primarily due to the impact of interest rate declines and higher equity markets.

See “Impact of Fair Value Accounting” below. Also, see “Profitability” above for additional information on the impact on 2021 net income attributed to shareholders from the direct impact of equity markets and interest rates and variable annuity guarantee liabilities.

Revenue

For the years ended December 31,
(\$ millions)

	2021	2020
Gross premiums	\$ 44,344	\$ 41,408
Premiums ceded to reinsurers	(5,279)	(8,491)
Net premium income	39,065	32,917
Investment income	15,627	16,433
Other revenue	11,132	10,591
Revenue before realized and unrealized investment gains and losses	65,824	59,941
Realized and unrealized investment gains and losses on assets supporting insurance and investment contract liabilities and on the macro hedge program ⁽¹⁾	(4,003)	18,967
Total revenue	\$ 61,821	\$ 78,908

⁽¹⁾ See "Impact of fair value accounting" section below. Also see "Profitability – Items excluded from core earnings" section above for information on direct impact of equity markets and interest rates and variable annuity guarantee liabilities.

Financial Strength

Financial strength metrics

As at and for the years ended December 31,
(\$ millions, unless otherwise stated)

	2021	2020
MLI's LICAT ratio ⁽¹⁾	142%	149%
Financial leverage ratio	25.8%	26.6%
Consolidated capital ⁽²⁾	\$ 66,005	\$ 61,064
Book value per common share (\$)	\$ 26.78	\$ 25.00
Book value per common share excluding accumulated other comprehensive income (\$)	\$ 24.12	\$ 21.74

⁽¹⁾ This item is disclosed under OSFI's Life Insurance Capital Adequacy Test Public Disclosure Requirements guideline.

⁽²⁾ This item is a capital management measure. For more information on this metric, see "Non-GAAP and Other Financial Measures" below.

The Life Insurance Capital Adequacy Test ("LICAT") ratio for MLI was 142% as at December 31, 2021, compared with 149% as at December 31, 2020. The seven percentage point decrease from December 31, 2020 was driven by the impact of market movements primarily from an increase in risk-free interest rates and a narrowing of spreads.

MFC's financial leverage ratio decreased to 25.8% as at December 31, 2021 from 26.6% as at December 31, 2020, driven by growth in retained earnings, partially offset by net issuance of securities¹, a reduction in the carrying value of AFS debt securities, and the unfavourable impact of a stronger Canadian dollar.

Consolidated capital was \$66.0 billion as at December 31, 2021 compared with \$61.1 billion as at December 31, 2020, an increase of \$4.9 billion. The increase was primarily driven by growth in total equity, partially offset by redemption of capital instruments. The increase in total equity is due to higher retained earnings and the net issuance of preferred shares and other equity instruments.

Remittances² were \$4.4 billion in 2021 compared with \$1.6 billion in 2020, an increase of \$2.8 billion. The increase was primarily due to capital injections made to our Asia operations in 2020 in response to the COVID-19 related decline in interest rates.

Cash and cash equivalents and marketable assets³ was \$268.4 billion as at December 31, 2021 compared with \$262.9 billion as at December 31, 2020. The increase of \$5.5 billion was in line with the growth in value of total invested assets. Refer to "Liquidity Risk Management Strategy" below for more information.

Book value per common share as at December 31, 2021 was \$26.78, an increase of 7% compared with \$25.00 as at December 31, 2020, and the book value per common share excluding accumulated other comprehensive income ("AOCI") was \$24.12 as at December 31, 2021, an increase of 11% compared with \$21.74 as at December 31, 2020. The increase in the book value per common share was primarily driven by an increase in retained earnings and the issuance of other equity instruments, partially offset by a reduction in the carrying value of AFS debt securities. The number of common shares outstanding was 1,943 million as at December 31, 2021 and 1,940 million as at December 31, 2020.

¹ Net issuance of securities consists of issuance of Limited Recourse Capital Notes (reported as other equity instruments) of \$3.2 billion, and redemption of preferred shares of \$0.6 billion, long-term debt of \$1.3 billion, and capital instruments of \$0.8 billion.

² For more information on this metric, see "Non-GAAP and Other Financial Measures" below.

³ Includes cash & cash equivalents, comprised of cash on deposit, Canadian and U.S. Treasury Bills and high quality short-term investments, and marketable assets, comprised of investment grade government and agency bonds, investment grade corporate bonds, investment grade securitized instruments, publicly traded common stocks and preferred shares.

Impact of Fair Value Accounting

Fair value accounting policies affect the measurement of both our assets and our liabilities. The difference between the reported amounts of our assets and liabilities determined as of the balance sheet date and the immediately preceding balance sheet date in accordance with the applicable fair value accounting principles is reported as investment-related experience and the direct impact of equity markets and interest rates and variable annuity guarantees, each of which impacts net income.

We reported \$4.0 billion of net realized and unrealized investment losses in investment income in 2021 (2020 – gains of \$19.0 billion).

As outlined under “Critical Actuarial and Accounting Policies” below, net insurance contract liabilities under IFRS are determined using Canadian Asset Liability Method (“CALM”), as required by the Canadian Institute of Actuaries (“CIA”). The measurement of policy liabilities includes the estimated value of future policyholder benefits and settlement obligations to be paid over the term remaining on in-force policies, including the costs of servicing the policies, reduced by the future expected policy revenues and future expected investment income on assets supporting the policies. Investment returns are projected using the current asset portfolios and projected reinvestment strategies. Experience gains and losses are reported when current period activity differs from what was assumed in the policy liabilities at the beginning of the period. We classify gains and losses by assumption type. For example, current period investing activities that increase (decrease) the future expected investment income on assets supporting the policies will result in an investment-related experience gain (loss). See description of investment-related experience in “Non-GAAP and Other Financial Measures” below.

Public Equity Risk and Interest Rate Risk

At December 31, 2021, excluding impacts from asset-based fees earned on assets under management and policyholder account value, the impact of a 10% decline in equity markets was estimated to be a charge of \$570 million and the impact of a 50 basis point decline in interest rates, across all durations and markets, on our earnings was estimated to be a charge of \$200 million. See “Risk Management and Risk Factors” below.

Impact of Foreign Exchange Rates

We have worldwide operations, including in Canada, the United States and various markets in Asia, and generate revenues and incur expenses in local currencies in these jurisdictions, all of which are translated into Canadian dollars. The bulk of our exposure to foreign exchange rates is to movements in the U.S. dollar.

Items impacting our Consolidated Statements of Income are translated to Canadian dollars using average exchange rates for the respective quarterly period. For items impacting our Consolidated Statements of Financial Position, period end rates are used for currency translation purpose. The following table provides the most relevant foreign exchange rates for 2021 and 2020.

Exchange rate	Quarterly					Full Year	
	4Q21	3Q21	2Q21	1Q21	4Q20	2021	2020
Average ⁽¹⁾							
U.S. dollar	1.2601	1.2602	1.2282	1.2660	1.3030	1.2536	1.3414
Japanese yen	0.0111	0.0114	0.0112	0.0119	0.0125	0.0114	0.0126
Hong Kong dollar	0.1618	0.1620	0.1582	0.1632	0.1681	0.1613	0.1729
Period end							
U.S. dollar	1.2678	1.2741	1.2394	1.2575	1.2732	1.2678	1.2732
Japanese yen	0.0110	0.0114	0.0112	0.0114	0.0124	0.0110	0.0124
Hong Kong dollar	0.1626	0.1637	0.1596	0.1618	0.1642	0.1626	0.1642

⁽¹⁾ Average rates for the quarter are from Bank of Canada which are applied against Consolidated Statements of Income items for each period. Average rate for the full year is a 4-point average of the quarterly average rates.

Net income attributed to shareholders and core earnings from the Company’s foreign operations are translated to Canadian dollars, and in general, our net income attributed to shareholders and core earnings benefit from a weakening Canadian dollar and are adversely affected by a strengthening Canadian dollar. However, in a period of net losses in foreign operations, the weakening of the Canadian dollar has the effect of increasing the losses. The relative impact of foreign exchange in any given period is driven by the movement of currency rates as well as the proportion of earnings generated in our foreign operations.

Changes in foreign currency exchange rates from 2020 to 2021, primarily due to the strengthening of the Canadian dollar compared with the U.S. dollar, decreased core earnings by approximately \$351 million in 2021. The impact of foreign currency exchange rates on items excluded from core earnings does not provide relevant information given the nature of these items.

Mosten Litigation Update

In our third quarter of 2018 MD&A, we disclosed developments in the litigation Mosten Investment LP (“Mosten”) brought against the Company in Saskatchewan. The basis of the claims by Mosten has been that life insurers can be compelled to accept unlimited premium payments into certain universal life policies and associated side accounts. In effect, Mosten was seeking to use insurance policies to invest sizeable sums that have no connection to the insurance coverage.

On October 4, 2018 Manulife issued a press release regarding certain short-selling activity relating to the Mosten litigation, stating that the short seller's report was an attempt to profit at the expense of our shareholders. We further stated that we disagree with the conclusions of the report and that we continue to believe that Mosten's position is legally unfounded as we firmly believe that the consumers purchasing universal life policies, and the insurers issuing these policies, never intended to have the policies function as deposit or securities contracts. On October 29, 2018, the Government of Saskatchewan published new regulations that limit the amount of premiums a life insurer may receive or accept for deposit in certain life insurance policies and associated side accounts. In his March 15, 2019 decision, the trial judge accepted Manulife's position on the interpretation of the policies, namely that they do not permit making unlimited deposits for investment purposes unrelated to the payment of life insurance premiums. The trial judge also ruled that the 2018 regulations had prospective effect only with respect to new policies issued after the date of the regulation.

In its March 10, 2021 decision, the Saskatchewan Court of Appeal rejected the trial judge's interpretation of the policies but, ruling in Manulife's favour, held that the 2018 regulations (and subsequent 2020 regulations) operate prospectively in a manner that prohibits Saskatchewan-licensed insurers from accepting deposits that do not relate to the payment of life insurance premiums, thereby preventing Mosten from using existing or new insurance policies as an investment vehicle. Similar legislation has been enacted by the governments of Ontario, Prince Edward Island, Alberta, New Brunswick, Nova Scotia and Quebec.

On May 10, 2021 Manulife received notice that Mosten has sought leave to appeal the Saskatchewan Court of Appeal's decision regarding the regulations to the Supreme Court of Canada. Manulife has opposed Mosten's application for leave to appeal and has also sought conditional leave to cross-appeal the Saskatchewan Court of Appeal's decision regarding interpretation of the policies to the Supreme Court of Canada. On November 4, 2021 the Supreme Court of Canada dismissed Mosten's application for leave to appeal with costs, and therefore did not decide Manulife's conditional application for leave to cross-appeal. With the Supreme Court's dismissal of Mosten's application for leave to appeal, we consider this matter closed.

Strategic priorities progress update

Strategy

Our ambition is to be the most digital, customer-centric global company in our industry. The goals for our stakeholders are:



Customers

Improve Net Promoter Score ("NPS") by +30 points and delight customers¹



Employees

Engage our employees — achieve top quartile engagement²



Shareholders

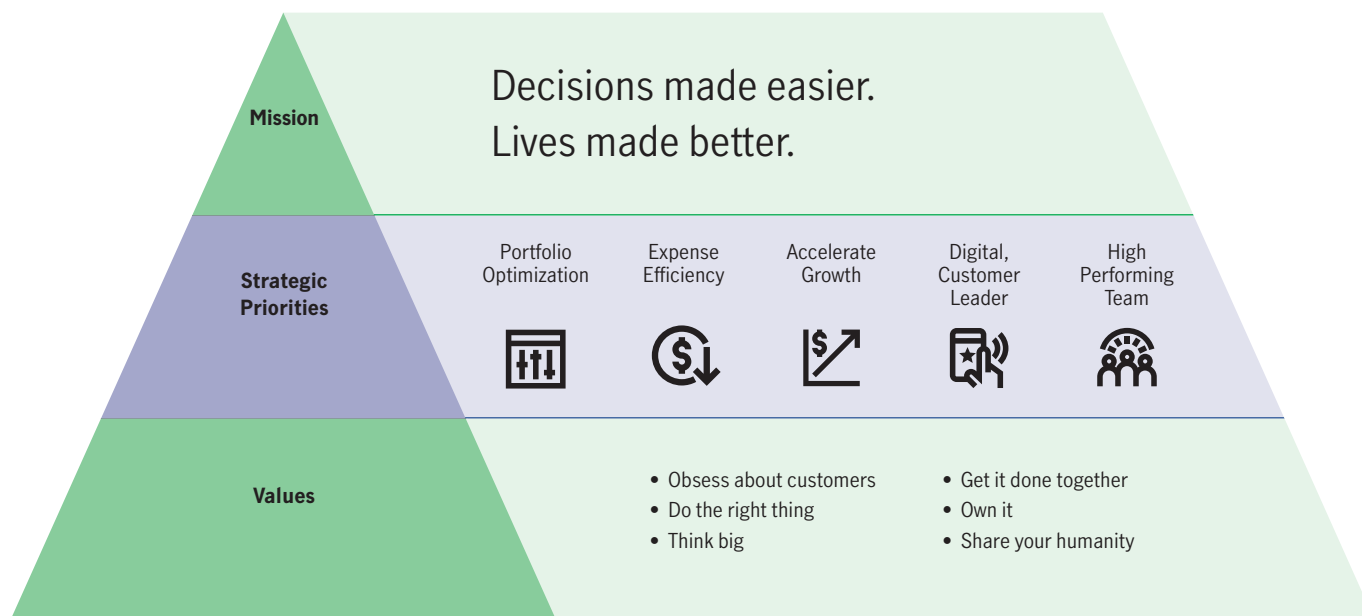
Deliver top quartile returns³

¹ As compared to a baseline of +1 in 2017, by 2022.

² Top quartile employee engagement compared to global financial services companies and insurance peers by 2022.

³ MFC's Total Shareholder Return was 26th percentile compared with our performance peer group for the five-year period ended December 31, 2021. Please refer to Manulife's most recent Management Information Circular for more information on our performance peer group.

Our mission, strategic priorities and values are summarized below:



Strategic Priorities

Our strategy is underpinned by five strategic priorities. At Manulife's Investor Day on June 29, 2021, we announced that we have entered a new phase of our strategy, with a greater focus on accelerating growth of our highest potential businesses and a commitment to meaningful metrics to measure our progress through to 2025. We are confident our five strategic priorities remain the right areas of focus to achieve our ambition of being the most digital, customer-centric global company in our industry.

Accelerate Growth – We remain committed to generating two-thirds of core earnings from our highest potential businesses¹ by 2022 and will target a 75% contribution by 2025. We also aspire to generate one-half of core earnings from our Asia region (Asia segment and Asia wealth and asset management (“Asia WAM”)) by 2025. Focal areas within this pillar are to:

- Execute on organic and inorganic growth opportunities in Asia
- Execute on organic and inorganic growth opportunities in Global WAM
- Expand our behavioural insurance offering to provide innovative solutions and support positive health for customers
- Drive new business growth and persistency in group insurance

Digital, Customer Leader – We remain committed to a NPS of +31 by 2022 and will target NPS of +37 by 2025. We also introduced a new metric, straight-through-processing (“STP”)², which represents customer interactions that are completely digital, and aim to achieve STP of 88% by 2025. Focal areas within this pillar are to:

- Have brilliant basics and industrialize improvements by harnessing the voice of the customer
- Build differentiated, market-leading priority customer experiences
- Extend customer relationships through value-added advice and new services by using open innovation
- Drive NPS through a globally consistent NPS system

Expense Efficiency – We have already delivered on our original 2022 target of \$1 billion in expense efficiencies and achieved an expense efficiency ratio of less than 50% in 2021. We remain focused on driving efficient growth and are committed to consistently achieving an expense efficiency ratio of less than 50% by 2022 and beyond while ensuring scalable growth, outstanding customer experience, and digital ways of working. Focal areas within this pillar are to:

- Leverage our global scale and operating environment
- Streamline business processes
- Eliminate activity not valued by our end customers
- Continue to sustain a culture of expense efficiency and driving efficient growth

¹ Highest potential businesses include Asia, Global WAM, Canada group benefits, and behavioural insurance products.

² Straight-through processing includes money movement.

Portfolio Optimization – We have surpassed our 2022 target to release \$5 billion of capital by 2022. Together with a focus on increasing the core earnings from our highest potential businesses, we will continue to focus on optimizing our legacy businesses in the next phase of our strategy and plan to reduce the combined contributions from long-term care insurance (“LTC”) and variable annuities (“VA”) businesses to less than 15% of core earnings by 2025 through organic optimization. Focal areas within this pillar are to:

- Deliver capital release from legacy businesses, including legacy annuity businesses, long-term care insurance and select long-duration, guaranteed insurance products.
- Optimize our portfolio in order to improve our risk profile
- Optimize our portfolio in order to improve our Return on Equity
- Create tangible value through in-force management initiatives

High Performing Team – We are committed to enabling a high performing team and maintaining our top quartile employee engagement compared to global financial services and insurance peers. Focal areas within this pillar are to:

- Drive organizational effectiveness and speed of decision making
- Deepen Manulife’s diversity, equity, and inclusion
- Develop our talent with differentiated capabilities
- Enable a culture of recognition through a global recognition program to reward excellence and promote company values

Our medium-term targets include: core EPS growth of 10% to 12% over the medium term, core ROE of 13% or more, a leverage ratio of 25%, and a common share dividend payout ratio of 30% to 40% of core earnings.

Progress Update

Manulife’s mission – Decisions made easier. Lives made better – guided our business throughout 2021. Our focused efforts produced solid results on our five strategic priorities as noted below.

Strategic priorities	2022 Targets and 2025 Supplemental Goals ¹	2021 Performance	Highlights on our progress
1. Accelerate Growth 	• Generate two-thirds of core earnings from highest potential businesses by 2022 and 75% by 2025 • Generate one-half of core earnings from Asia region (Asia segment and Asia WAM) by 2025	• 63% of our core earnings in 2021 were generated from highest potential businesses, compared with 62% in 2020² • 39% of our core earnings in 2021 were generated from Asia region, compared with 41% in 2020²	• Continued to expand the reach of our agency in China as Manulife-Sinochem opened its 15th provincial branch in Shaanxi province • Completed the acquisition of Aviva Vietnam and commenced a 16-year bancassurance partnership with VietinBank to better meet the growing financial and insurance needs of the Vietnamese people • Surpassed \$1 trillion in Global WAM-managed AUMA • Continued to show strong momentum in Manulife iFUNDS, Asia Retail’s online investment platform, with a 39% increase in gross flows compared with 2020 • Secured Alternative Investment Fund Managers license to offer European Union private market funds in our key European markets • Continued our expansion of behavioural-based wellness insurance products through our Manulife <i>Vitality</i> program in Canada, “Vitality for All” strategy in the U.S. and ManulifeMOVE in Asia
2. Digital, Customer Leader 	• Achieve NPS of +31 points by 2022 and +37 points by 2025, an improvement of +30 and +36 respectively, as compared to a baseline of +1 in 2017 • Achieve straight-through-processing of 88% by 2025	• rNPS³ score of +21, a 20 point improvement from the 2017 baseline and a 9 point improvement from 2020 • STP of 82%, compared with 81% in 2020	• Continued use of ePOS in Asia, enabling our agents with faster, error free submissions • Completed the iPipeline integration with the JH brokerage eApp. This integration provides our regular distribution partners with access to next-generation sales tools and decreases the overall cycle time for applications submitted • Aided by the above initiatives, overall new business applications submitted digitally increased by 15 percentage points in 2021 to 71% • Launched Singapore’s first flexible digital retirement plan with DBS Bank • Entered into a new digital collaboration with Rewardz to further incentivize customers that are part of our ManulifeMOVE Program to be physically active • Became the first Canadian company to use artificial intelligence in underwriting mortgage creditor insurance in our individual insurance business, resulting in auto adjudication of more than \$1 billion of face amount in 2021

¹ See “Caution regarding forward-looking statements” above.

² To provide a consistent basis for year over year comparison, 2020 total company core earnings were normalized to include \$400 million of annual core investment gains.

³ Relationship Net Promoter Score (“rNPS”). In 2021, we adjusted the weightings in our relationship NPS methodology to more closely align with our focus on our highest potential businesses. This adjustment had no impact on the 2017 NPS baseline of +1 and would have modestly increased the score in 2018, 2019, and 2020.

Strategic priorities	2022 Targets and 2025 Supplemental Goals	2021 Performance	Highlights on our progress
3. Expense Efficiency 	- Achieve a less than 50% expense efficiency ratio - Deliver \$1 billion in expense efficiencies	- Delivered expense efficiency ratio of 48.9% and achieved the target of less than 50% in 2021. This compares with 52.9% in 2020 - Achieved expense efficiencies target of \$1 billion in 2020, 2 years ahead of schedule	- Pre-tax core earnings increase of 25% outpaced core general expense growth of 5% - Continued to implement automation across the organization to enable scalability of our operations both in terms of capacity and efficiency with lower cost per unit - Continued to invest in the consolidation and outsourcing of policy administration systems to make the cost base more variable - Achieved annual savings of \$100 million in 2021 resulting from restructuring in the first half of 2021
4. Portfolio Optimization 	- Release a total of \$5 billion in capital from legacy businesses - Reduce core earnings contribution to less than 15% from long-term care insurance and variable annuities businesses by 2025	- Achieved release of capital target 3 years ahead of schedule - Delivered \$6.3 billion of cumulative capital benefits, including \$0.4 billion in 2021 - Core earnings contribution of 20% from LTC and VA businesses, compared to 25% in 2020^{1,2}	- Entered into an agreement to reinsure over 75% of the U.S. Variable Annuity block, which is estimated to result in a capital release of approximately \$2.0 billion³, reducing risk, and unlocking value from legacy.⁴ The transaction closed on February 1, 2022 - Released \$225 million of capital through our annuity guaranteed minimum withdrawal benefit offer program in the U.S.
5. High Performing Team 	Achieve top quartile employee engagement compared to global financial services and insurance peers	Continued to rank in the top quartile amongst our designated peer group on employee engagement in 2021	- Ranked in the 86th percentile amongst global financial services and insurance peers on our 2021 employee engagement survey - Named a World's Best Employer by Forbes for the second year in a row - Recognized as one of Canada's Top 100 Employers 2022 by Mediacorp Canada Inc.

¹ To provide a consistent basis for year over year comparison, 2020 total company core earnings were normalized to include \$400 million of annual core investment gains.

² 2021 and 2020 total company and U.S. LTC core earnings were normalized to remove estimated gains on U.S. LTC policyholder experience due to COVID-19.

³ Projected capital release based on September 30, 2021.

⁴ See "Caution regarding forward-looking statements" above.

2. Asia

Our Asia segment is a leading provider of insurance products and insurance-based wealth accumulation products, driven by a customer-centric strategy, leveraging the asset management expertise and products managed by our Global Wealth and Asset Management segment. Present in many of Asia's largest and fastest growing economies, we are well positioned to capitalize on the attractive underlying demographics of the region, underpinned by a rigorous focus on creating value for our customers, employees and shareholders.

We have insurance operations in 11 markets¹: Japan, Hong Kong, Macau, Singapore, mainland China, Vietnam, Indonesia, the Philippines, Malaysia, Cambodia, and Myanmar.

We have a diversified multi-channel distribution network, including over 117,000 contracted agents and over 100 bank partnerships. We also work with many independent agents, financial advisors, and brokers. Among our bancassurance partnerships we have exclusive partnerships, including a long-term partnership with DBS Bank across Singapore, Hong Kong, mainland China and Indonesia, and VietinBank in Vietnam, that give us access to over 30 million bank customers.

In 2021, Asia contributed 32%² of the Company's core earnings from operating segments and, as at December 31, 2021, accounted for 11%² of the Company's assets under management and administration.

Profitability

Asia reported net income attributed to shareholders of \$3,057 million in 2021 compared with \$1,762 million in 2020. Net income attributed to shareholders is comprised of core earnings, which were \$2,176 million in 2021 compared with \$2,110 million in 2020, and items excluded from core earnings, which amounted to a net gain of \$881 million for 2021 compared with a net charge of \$348 million in 2020.

Expressed in U.S. dollars, the presentation currency of the segment, net income attributed to shareholders was US\$2,437 million in 2021 compared with US\$1,322 million in 2020 and core earnings were US\$1,736 million in 2021 compared with US\$1,576 million in 2020. Items excluded from core earnings are outlined in the table below and amounted to a net gain of US\$701 million in 2021 compared with a net charge of US\$254 million in 2020.

Core earnings in 2021 increased 10% compared with 2020, after adjusting for the impact of changes in foreign currency exchange rates. Core earnings increased 17% in Hong Kong, 45% in Singapore and 24% in Vietnam, benefiting from higher new business volumes, favourable product mix, and in-force business growth. Core earnings increased 7% in Japan due to in-force business growth, partially offset by the impact of lower new business volumes. Core earnings decreased 36% in China and 24% in Other Emerging Markets reflecting unfavourable policyholder experience and, in China, unfavourable product mix. Asia was also impacted by lower investment income on allocated capital, which decreased by US\$21 million compared with 2020 (see Corporate and Other Segment).

The table below presents net income attributed to shareholders for Asia for 2021 and 2020 consisting of core earnings and items excluded from core earnings.

For the years ended December 31, (\$ millions)	Canadian \$		US \$	
	2021	2020	2021	2020
Core earnings	\$ 2,176	\$ 2,110	\$ 1,736	\$ 1,576
Items excluded from core earnings: ⁽¹⁾				
Investment-related experience related to fixed income trading, market value increases in excess of expected alternative assets investment returns, asset mix changes and credit experience	313	218	251	167
Direct impact of equity markets and interest rates and variable annuity guarantee liabilities ⁽²⁾	169	(583)	133	(433)
Change in actuarial methods and assumptions	343	(41)	273	(32)
Reinsurance transactions, tax-related items and other	56	58	44	44
Total items excluded from core earnings	881	(348)	701	(254)
Net income attributed to shareholders	\$ 3,057	\$ 1,762	\$ 2,437	\$ 1,322

⁽¹⁾ For explanations of items excluded from core earnings, see "Items excluded from core earnings" table in the total Company "Profitability" section above.

⁽²⁾ The direct impact of markets in 2021 was a gain of US\$133 million and included a gain of US\$98 million related to fixed income reinvestment rates and a gain of US\$35 million related to equity markets and variable annuity guarantee liabilities. The direct impact of markets in 2020 was a charge of US\$433 million and included a charge of US\$415 million related to fixed income reinvestment rates and a charge of US\$18 million related to equity markets and variable annuity guarantee liabilities.

¹ In 2019, we made the decision to exit Thailand, and we completed the transaction in the first half of 2021.

² This item is a non-GAAP ratio. See "Non-GAAP and Other Financial Measures" below for more information.

Business Performance

(all percentages quoted are on a constant exchange rate basis)

APE sales in 2021 were US\$3,229 million, representing an increase of 11% compared with 2020. APE sales increased in Hong Kong, Singapore, mainland China, Vietnam and Other Emerging Markets, and declined in Japan. There continued to be varying degrees of adverse impacts on select markets across the region related to COVID-19. In Hong Kong, APE sales in 2021 were US\$850 million, a 10% increase compared with 2020, primarily reflecting strong growth in our bank channel, demand from mainland Chinese visitors through our Macau branch, and an expanded agency force. Singapore APE sales in 2021 were US\$782 million, a 51% increase compared with 2020, reflecting double-digit growth across agency, bank and broker channels, as domestic demand rebounded from 2020 levels that were impacted by COVID-19 containment measures. China APE sales in 2021 were US\$478 million, a 12% increase compared with 2020, reflecting growth in our bank channel. Vietnam APE sales in 2021 were US\$375 million, a 7% increase compared with 2020, reflecting growth in agency and bank channels, partially offset by the impact of COVID-19 containment measures during the second half of the year. Other Emerging Markets APE sales in 2021 were US\$311 million, a 17% increase compared with 2020, despite the impact of COVID-19 containment measures in 2021. Japan APE sales in 2021 were US\$433 million, a decrease of 26% compared with 2020, reflecting lower COLI product sales.

New business value (“NBV”) was US\$1,329 million in 2021, an increase of 27% compared with 2020. We experienced higher NBV in Hong Kong, Singapore, mainland China, Vietnam and Other Emerging Markets, partially offset by lower NBV in Japan. In Hong Kong, NBV in 2021 was US\$612 million, a 32% increase compared with 2020, reflecting higher sales volumes, favourable interest rates and product management actions. NBV in 2021 was US\$260 million in Singapore, and US\$180 million in Vietnam, an increase of 75%, and 24%, respectively, compared with 2020. The increase reflects higher sales volumes and favourable product mix. NBV in China was US\$122 million in 2021, a 14% increase compared with 2020 primarily due to higher sales volumes. NBV of Other Emerging Markets in 2021 was US\$58 million, a 6% increase compared with 2020, reflecting higher sales volumes. Japan NBV in 2021 was US\$97 million, a decrease of 25% compared with 2020, reflecting lower APE sales.

The new business value margin (“NBV margin”)¹ was 44.9% in 2021, an increase of 6.1 percentage points compared with 2020.

APE Sales and NBV

For the years ended December 31, (\$ millions)	Canadian \$		US \$	
	2021	2020	2021	2020
Annualized premium equivalent sales	\$ 4,050	\$ 3,869	\$ 3,229	\$ 2,892
New business value	1,666	1,387	1,329	1,037

Assets under Management²

Asia’s assets under management were US\$122.0 billion as at December 31, 2021, an increase of US\$13.4 billion or 16% compared with December 31, 2020, driven by higher total invested assets and segregated funds net assets due to net customer inflows of US\$13.1 billion.

Assets under Management

As at December 31, (\$ millions)	Canadian \$		US \$	
	2021	2020	2021	2020
Total invested assets	\$ 129,207	\$ 115,430	\$ 101,893	\$ 90,639
Segregated funds net assets	25,505	22,948	20,112	18,016
Total assets under management	\$ 154,712	\$ 138,378	\$ 122,005	\$ 108,655

¹ For more information on this metric, see “Non-GAAP and Other Financial Measures” below.

² This item is a non-GAAP financial measure. See “Non-GAAP and Other Financial Measures” below.

Revenue

Total revenue of US\$23.6 billion in 2021 increased US\$2.4 billion compared with 2020. Revenue before net realized and unrealized investment gains and losses increased US\$3.8 billion compared with 2020 due to an increase in net premium income. The net premium income increase was primarily driven by the growth of in-force business and new business sales.

Revenue

For the years ended December 31, (\$ millions)	Canadian \$		US \$	
	2021	2020	2021	2020
Gross premiums	\$ 24,013	\$ 21,592	\$ 19,152	\$ 16,129
Premiums ceded to reinsurers	(1,027)	(1,113)	(819)	(834)
Net premium income	22,986	20,479	18,333	15,295
Investment income	3,207	2,874	2,557	2,145
Other revenue	1,696	1,346	1,353	1,004
Revenue before net realized and unrealized investment gains and losses	27,889	24,699	22,243	18,444
Net realized and unrealized investment gains and losses ⁽¹⁾	1,682	3,756	1,391	2,783
Total revenue	\$ 29,571	\$ 28,455	\$ 23,634	\$ 21,227

⁽¹⁾ See "Financial Performance – Impact of Fair Value Accounting" above.

Strategic Highlights

Asia continues to be a core driver of growth for Manulife, supported by a clear strategy, a focus on execution, a strong team, and a diversified footprint in 11 markets. Our growth is underpinned by powerful economic secular trends including middle-class emergence, low insurance penetration and an estimated mortality protection gap of more than US\$100 trillion by 2030 driving continued demand for financial solutions.

We continued to accelerate growth by expanding and digitizing distribution. In 2021 we:

- Completed the acquisition of Aviva Vietnam Life Insurance Company Limited ("Aviva Vietnam") and commenced a 16-year bancassurance partnership with VietinBank, which together provides a full suite of insurance, wealth and retirement solutions to VietinBank customers;
- Increased the number of contracted agents to over 117,000 and our number of Million Dollar Round Table agents grew by 64% compared with 2020;
- Continued to expand the reach of our agency force in China with the opening of our newest branch in Shaanxi province. We now operate in 52 cities across 15 provinces, providing access to over 60% of China's population and which represents over 70% of GDP; and
- Grew our customer base to approximately 13 million customers and achieved the highest rNPS score in Asia segment's history.

We continued to enhance our digital capabilities and rolled out numerous key initiatives to advance our strategy to become a digital, customer leader. In 2021:

- ePOS, our digital onboarding app, is enabling our agents in Asia with faster, error-free submissions with 82% of applications digitally submitted, representing a 22% year-over-year increase. 79% of submitted cases are auto-underwritten;
- Our enhanced digital claims experience is now live in six markets across Asia. This experience has resulted in faster claims adjudication, automated payments, and significantly decreased turn-around times. 71% of customer claims are submitted digitally and 31% are auto adjudicated;
- We continued to strengthen our health engagement and behavioural insurance platform, ManulifeMOVE. As of December 31, 2021, we had more than 1.5 million MOVE eligible customers, up 24% compared with 2020; and
- Asia received two honourable mentions at the 2021 Design Management Institute Design Value Awards for:
 - the redesigned customer websites (the Philippines, Hong Kong and Vietnam); and
 - development of a centralized repository for all digital design assets that has improved the consistency and quality of Manulife's digital experiences.

3. Canada

Our Canada segment is a leading financial services provider, offering insurance products, insurance-based wealth accumulation products and banking services, has an in-force variable annuity business, and leverages the asset management expertise and products managed by our Global Wealth and Asset Management segment. The comprehensive solutions we offer target a broad range of customer needs and foster holistic long-lasting relationships.

We offer financial protection solutions to individuals, families and business owners through a combination of competitive products, professional advice and quality customer service. We provide group life, health and disability insurance solutions to Canadian employers, with approximately 25,000 Canadian businesses and organizations entrusting their employee benefit programs to Manulife's Group Insurance. We also provide life, health, disability and specialty products, such as mortgage creditor and travel insurance, through advisors, sponsor groups and associations, as well as direct-to-customer. We continue to increase the proportion of products with behavioural insurance features.

Manulife Bank offers flexible debt and cash flow management solutions as part of a customer's overall financial plan. Products include savings and chequing accounts, guaranteed interest certificates, lines of credit, investment loans, mortgages and other specialized lending programs, offered through financial advisors supported by a broad distribution network.

In 2021, Canada contributed 18% of the Company's core earnings from operating segments and, as at December 31, 2021, accounted for 11% of the Company's assets under management and administration.

Profitability

Canada's full year 2021 net income attributed to shareholders was \$1,354 million compared with \$195 million in 2020. Net income attributed to shareholders is comprised of core earnings, which was \$1,179 million in 2021 compared with \$1,174 million in 2020, and items excluded from core earnings, which amounted to a net gain of \$175 million for 2021 compared with a net charge of \$979 million in 2020. Items excluded from core earnings are outlined in the table below.

The \$5 million increase in core earnings was driven by higher in-force earnings across all businesses, non-recurrence of unfavourable travel related policyholder experience in 2020 and higher retail insurance product sales. These items were partially offset by less favourable policyholder experience in retail and group insurance. Canada was also impacted by lower investment income on allocated capital, which decreased by \$95 million compared with 2020.

The table below presents net income attributed to shareholders for Canada for 2021 and 2020 consisting of core earnings and items excluded from core earnings.

For the years ended December 31,
(\$ millions)

	2021	2020
Core earnings	\$ 1,179	\$ 1,174
Items excluded from core earnings:⁽¹⁾		
Investment-related experience related to fixed income trading, market value increases in excess of expected alternative assets investment returns, asset mix changes and credit experience	329	(260)
Direct impact of equity markets and interest rates and variable annuity guarantee liabilities ⁽²⁾	(89)	(817)
Change in actuarial methods and assumptions	(65)	77
Reinsurance transactions, tax-related items and other	-	21
Total items excluded from core earnings	175	(979)
Net income attributed to shareholders	\$ 1,354	\$ 195

⁽¹⁾ For explanations of items excluded from core earnings, see "Items excluded from core earnings" table in the total Company "Profitability" section above.

⁽²⁾ The direct impact of markets in 2021 was a charge of \$89 million and included a charge of \$69 million related to fixed income reinvestment rates and a charge of \$321 million related to changes to the URR, partially offset by a gain of \$301 million related to the direct impact of equity markets and variable annuity guarantee liabilities. The charge in 2020 related to fixed income reinvestment rates and the direct impact of equity markets and variable annuity guarantee liabilities.

Business Performance

APE sales were \$1,227 million in 2021, an increase of \$79 million or 7% compared with 2020. Individual insurance APE sales in 2021 of \$425 million increased \$16 million or 4% compared with 2020, driven by higher participating product sales, partially offset by higher large-case Affinity markets sales in 2020. Group insurance APE sales of \$442 million in 2021 decreased \$51 million or 10% compared with 2020 due to variability in the large-case group insurance market. Annuities APE sales in 2021 of \$360 million increased \$114 million or 46% compared with 2020 due to increased customer demand for our lower risk segregated funds. We are focused on growth in lower risk segregated fund products, which accounted for 88% of Annuities APE sales in 2021.

Sales

For the years ended December 31,
(\$ millions)

	2021	2020
APE sales	\$ 1,227	\$ 1,148

Manulife Bank average net lending assets¹ were \$23.1 billion in 2021, up \$0.6 billion or 3% compared with 2020, driven by growth in residential mortgages and bank loans.

Assets under Management

Assets under management of \$162.0 billion as at December 31, 2021 increased by \$2.7 billion or 2% from \$159.3 billion at December 31, 2020, due to higher segregated funds net assets, driven by growth in equity markets, partially offset by lower total invested assets, primarily reflecting the unfavourable impact of higher interest rates.

Assets under Management

As at December 31,
(\$ millions)

	2021	2020
Total invested assets	\$ 119,872	\$ 121,657
Segregated funds net assets	42,124	37,650
Total assets under management	\$ 161,996	\$ 159,307

Revenue

Total revenue of \$12.4 billion in 2021 decreased \$6.3 billion from \$18.6 billion in 2020 primarily driven by year-to-date net realized and unrealized investment losses in 2021 compared with gains in the prior year. Revenue before net realized and unrealized investment gains and losses of \$15.4 billion in 2021 increased \$1.5 billion from \$13.9 billion in 2020 due to investment income and growth in premiums.

Revenue

For the years ended December 31,
(\$ millions)

	2021	2020
Gross premiums	\$ 11,251	\$ 10,756
Premiums ceded to reinsurers	(1,690)	(1,589)
Net premium income	9,561	9,167
Investment income	4,495	3,711
Other revenue	1,336	1,013
Revenue before net realized and unrealized investment gains and losses	15,392	13,891
Net realized and unrealized investment gains and losses ⁽¹⁾	(3,026)	4,747
Total revenue	\$ 12,366	\$ 18,638

⁽¹⁾ See "Financial Performance – Impact of Fair Value Accounting" above.

¹ This item is a non-GAAP financial measure. See "Non-GAAP and Other Financial Measures" below for more information.

Strategic Highlights

In 2021, we added innovative customer-centric enhancements across our product shelf to help Canadians focus on improving their health and wellness. We also advanced our digital capabilities across our businesses to stay connected with our clients and strengthen their experience with us. We further executed on our expense reduction strategy to strengthen financial results and improve the risk-return profile. Our Canada segment remains focused on building and fostering holistic long-lasting relationships with our clients by expanding and integrating our insurance, insurance-based wealth accumulation and certain related banking solutions to meet customers' needs and by leveraging the strength of our group franchise.

We further advanced digital solutions across our businesses. In 2021, we:

- Became the first Canadian company to use artificial intelligence ("AI") in underwriting mortgage creditor insurance in our individual insurance business. Since its introduction, one-third of our applications have been approved using AI, resulting in auto adjudication of more than \$1 billion of face amount in 2021;
- Added new features to our website including live-chat and health & dental comparison tools for our prospective affinity clients to better support them in finding the right plan for their needs; and
- Launched a new online advisor portal across our businesses to improve advisors' experiences with us.

We continued to offer a differentiated customer experience through our products. In 2021, we:

- Introduced Personalized Medicine, which provides access to advanced pharmacogenetics to help group benefit members and their health team find the most effective medication for their condition;
- Expanded our Manulife *Vitality* program to reward customers who received their COVID-19 vaccine; and
- Launched the Manulife *Vitality* HealthyMind reward program to help our individual insurance customers improve their mental and emotional wellbeing.

4. U.S.

Our U.S. segment provides a range of life insurance products, insurance-based wealth accumulation products, and has an in-force long-term care insurance business and an in-force annuity business.

The insurance products we offer are designed to provide estate, business and income-protection solutions for high net worth, emerging affluent markets and the middle market, and to leverage the asset management expertise and products managed by our Global Wealth and Asset Management business. Behavioural insurance features are standard on all our new insurance product offerings. The primary distribution channel is licensed financial advisors. We aim to establish lifelong customer relationships that benefit from our holistic protection and wealth product offerings in the future.

Our in-force long-term care insurance policies provide coverage for the cost of long-term services and support.

Our in-force annuity business includes fixed deferred, variable deferred, and payout products.

In 2021, U.S. contributed 29% of the Company's core earnings from operating segments and, as at December 31, 2021, accounted for 17% of the Company's assets under management and administration.

Profitability

U.S. reported net income attributed to shareholders of \$2,080 million in 2021 compared with \$1,269 million in 2020. Net income attributed to shareholders is comprised of core earnings, which was \$1,936 million in 2021 compared with \$1,995 million in 2020, and items excluded from core earnings, which amounted to a net gain of \$144 million in 2021 compared with a net charge of \$726 million in 2020. The changes in net income attributed to shareholders and core earnings expressed in Canadian dollars were due to the factors described below and, in addition, the change in core earnings reflected a \$136 million unfavourable impact from the weakening of the U.S. dollar compared with the Canadian dollar.

Expressed in U.S. dollars, the functional currency of the segment, 2021 net income attributed to shareholders was US\$1,667 million compared with US\$987 million in 2020 and core earnings were US\$1,544 million in 2021 compared with US\$1,485 million in 2020. Items excluded from core earnings are outlined in the table below and amounted to a net gain of US\$123 million in 2021 compared with a net charge of US\$498 million in 2020.

The US\$59 million increase in core earnings was driven by higher new business gains as a result of higher sales and improved margins, lower effective tax rates, and higher Insurance in-force earnings. These items were partially offset by a US\$119 million decrease in investment income on allocated capital (see Corporate and Other Segment) and unfavourable policyholder experience. Compared with 2020, unfavourable life insurance policyholder experience was partially offset by favourable annuities policyholder experience and favourable long-term care policyholder experience.

The table below presents net income attributed to shareholders for the U.S. for 2021 and 2020 consisting of core earnings and items excluded from core earnings.

For the years ended December 31, (\$ millions)	Canadian \$		US \$	
	2021	2020	2021	2020
Core earnings	\$ 1,936	\$ 1,995	\$ 1,544	\$ 1,485
Items excluded from core earnings:⁽¹⁾				
Investment-related experience related to fixed income trading, market value increases in excess of expected alternative assets investment returns, asset mix changes and credit experience	1,341	(717)	1,074	(515)
Direct impact of equity markets and interest rates and variable annuity guarantee liabilities ⁽²⁾	(727)	30	(578)	46
Change in actuarial methods and assumptions	(314)	(301)	(249)	(226)
Reinsurance transactions, tax-related items and other	(156)	262	(124)	197
Total items excluded from core earnings	144	(726)	123	(498)
Net income (loss) attributed to shareholders	\$ 2,080	\$ 1,269	\$ 1,667	\$ 987

⁽¹⁾ For explanations of items excluded from core earnings, see "Items excluded from core earnings" table in the total Company "Profitability" section above.

⁽²⁾ The direct impact of markets in 2021 was a charge of US\$578 million and included a charge of US\$493 million related to fixed income reinvestment rates and a charge of US\$85 million related to the direct impact of equity markets and variable annuity guarantee liabilities. The direct impact of markets in 2020 was a gain of US\$46 million and included a gain of US\$113 million related to fixed income reinvestment rates, partially offset by a charge of US\$67 million related to the direct impact of equity markets and variable annuity guarantee liabilities.

Business Performance

U.S. APE sales in 2021 of US\$628 million increased 38% compared with 2020 across almost all product lines. The increase was due to strong international sales and our differentiated domestic product offerings which include the John Hancock Vitality feature and higher customer demand for insurance protection in the current COVID-19 environment of greater consumer interest in improving baseline health. APE sales of products with the John Hancock Vitality PLUS feature in 2021 were a record-setting US\$295 million, an increase of 34% compared with 2020.

Sales

For the years ended December 31, (\$ millions)	Canadian \$		US \$	
	2021	2020	2021	2020
APE sales	\$ 788	\$ 609	\$ 628	\$ 455

Assets under Management

U.S. assets under management of US\$192.8 billion as at December 31, 2021 increased 2% from December 31, 2020. The increase in total invested assets and segregated funds net assets was due to the net favourable impact of markets, partially offset by the continued run-off of the annuity business.

Assets under Management

As at December 31, (\$ millions)	Canadian \$		US \$	
	2021	2020	2021	2020
Total invested assets	\$ 164,830	\$ 162,508	\$ 130,013	\$ 127,638
Segregated funds net assets	79,620	77,053	62,801	60,519
Total assets under management	\$ 244,450	\$ 239,561	\$ 192,814	\$ 188,157

Revenue

Total revenue in 2021 of US\$10.7 billion decreased US\$6.6 billion compared with 2020. Revenue before net realized and unrealized investment gains and losses was US\$12.7 billion, an increase of US\$3.1 billion compared with 2020, primarily due to the non-recurrence of the reinsurance of a block of our legacy U.S. BOLI business in 2020 and higher investment income.

Revenue

For the years ended December 31, (\$ millions)	Canadian \$		US \$	
	2021	2020	2021	2020
Gross premium income	\$ 8,965	\$ 8,952	\$ 7,151	\$ 6,678
Premiums ceded to reinsurers	(2,594)	(5,821)	(2,069)	(4,355)
Net premium income	6,371	3,131	5,082	2,323
Investment income	7,771	7,029	6,197	5,254
Other revenue	1,824	2,711	1,456	2,025
Revenue before net realized and unrealized investment gains and losses	15,966	12,871	12,735	9,602
Net realized and unrealized investment gains and losses ⁽¹⁾	(2,710)	10,490	(2,010)	7,701
Total revenue	\$ 13,256	\$ 23,361	\$ 10,725	\$ 17,303

⁽¹⁾ See "Financial Performance – Impact of Fair Value Accounting" above.

Strategic Highlights

At John Hancock, we are focused on building holistic and long-lasting customer relationships by offering innovative products and solutions and making it easier for customers to do business with us. We are focused on growing our insurance business by expanding our product offerings, modernizing the delivery process, and enhancing customer experience. In 2021, we:

- Experienced sales momentum with sales ahead of the prior year in almost every major category and reported record sales in our international business. We achieved record full year sales of US\$295 million, an increase of 34% compared with 2020, from products with the John Hancock Vitality PLUS feature. We believe John Hancock's Vitality feature is proving to be the right solution for these times as there is a heightened awareness around wellbeing highlighted by COVID-19;
- Launched a preferred partnership with Allstate, which provides insurance to approximately 15 million customers, to be one of three carrier partners for its more than 11,000 agents and 1,000 life specialists. In time we expect this relationship, enabled by our digital submission capabilities, will drive significant life insurance sales¹; and

¹ See "Caution regarding forward-looking statements" above.

- Expanded John Hancock's Vitality Program to reward program members for: 1) receiving a COVID-19 vaccine, and 2) achieving safe driver status through Allstate's safe driving program Drivewise®. These rewards provide customers with meaningful and engaging experiences while also helping them understand how their daily choices support their overall well-being and longevity.

We continued to enhance our digital capabilities and are seeing positive results. In 2021, we:

- Completed the iPipeline integration with the JH brokerage eApp. This integration provides 66% of our regular distribution partners with access to next-generation sales tools and decreases the overall cycle time for applications submitted via this preferred channel by 49% compared with 2020. It also enabled access to over 250 firms, including a new partnership with Allstate and its more than 11,000 agents;
- Advanced 10 spots to 8th place on J.D. Power's 2021 U.S. Life Insurance Study for overall customer satisfaction and were highlighted with "most improved website";
- Leveraged data analytics to execute a series of pilots to detect fraud in our LTC business; and
- Continued to achieve operational efficiencies through implementation of enhanced digital capabilities, including:
 - Rationalized our websites to improve our customer and producer experience and optimize for search engines, resulting in a 100% increase in weekly traffic to JohnHancock.com;
 - Provided annuities customers with access to chatbots 24/7, with 96% of chats resulting in successful outcomes and only 4% of customers seamlessly being passed to a customer service representative;
 - Updated the Vitality login experience which reduced call volumes this year by 40%; and
 - Drove customer adoption of digital claims submissions to an increase of 41% compared with 2020.

We continued to make significant progress to optimize our portfolio through both organic and inorganic initiatives and create tangible shareholder value through various in-force management actions. In 2021, we:

- Completed legacy optimization initiatives that contributed over \$2.3 billion of cumulative capital benefits through December 31, 2021;
- Concluded our Annuity Guaranteed Minimum Withdrawal Benefit offer program which released approximately \$225 million of capital in 2021 and \$425 million since the start of the program in the fourth quarter of 2019; and
- Entered into an agreement to reinsure over 75% of the legacy variable annuity block, consisting primarily of policies with guaranteed minimum withdrawal benefits riders. Upon closing, the transaction is estimated to release approximately \$2.0 billion of additional capital¹, reflecting approximately \$1.3 billion of net LICAT required capital², and a one-time after-tax gain of approximately \$750 million to net income attributed to shareholders.³ The transaction closed on February 1, 2022 (see note 6 of the Consolidated Financial Statements).

¹ Projected capital release based on September 30, 2021.

² 100% of the Life Insurance Capital Adequacy Test capital requirement multiplied by the OSFI scalar for the Base Solvency Buffer of 1.05 and grossed up based by an operating range.

³ See "Caution regarding forward-looking statements" above.

5. Global Wealth and Asset Management

Our Global Wealth and Asset Management segment, branded as Manulife Investment Management (“MIM”), provides investment advice and innovative solutions to retirement, retail, and institutional clients. Our leading capabilities in public and private markets are strengthened by an investment footprint that spans 18 geographies¹, including 10 in Asia with 120 years of on-the-ground experience.

In retirement, we provide financial guidance, advice, investment solutions and recordkeeping services to over 8 million plan participants and rollover individuals in North America and Asia while they are in the accumulation phase with their employer, and increasingly as they prepare for their retirement outside their employer’s plan. In North America, our Canadian retirement business focuses on providing retirement solutions through defined contribution plans, and also to group plan members when they retire or leave their plan; and in the United States, we provide employer sponsored retirement plans as well as personal retirement accounts when individuals leave their plan. In Asia, we provide retirement offerings to employers and individuals, including Mandatory Provident Fund (“MPF”) schemes and administration in Hong Kong. Additionally, we provide retirement solutions in several emerging retirement markets in Asia including Indonesia and Malaysia.

We distribute investment funds to retail clients through our own proprietary advice channels in Canada and Asia as well as through intermediaries and banks in North America, Europe and Asia, and offer investment strategies across the world, through affiliated and select unaffiliated asset managers. In Canada, we also provide holistic personal advice to individual clients and investment management, private banking and wealth and estate solutions to high-net-worth clients. Our institutional asset management business provides comprehensive asset management solutions for pension plans, foundations, endowments, financial institutions and other institutional investors worldwide. Our solutions span all major asset classes including equities, fixed income, alternative assets (including real estate, timberland, farmland, private equity/debt, infrastructure, and liquid alternatives). In addition, we offer multi-asset investment solutions covering a broad range of clients’ investment needs.

We are committed to investing responsibly across our businesses. We continue to enhance and develop innovative global frameworks for sustainable investing, and maintain a high standard of stewardship where we own and operate assets.

In 2021, Global WAM contributed 21% of the Company’s core earnings from operating segments and, as at December 31, 2021, represented 60% of the Company’s total assets under management and administration.

Profitability

Global WAM’s 2021 net income attributed to shareholders was \$1,406 million compared with \$1,100 million in 2020, and core earnings were \$1,406 million in 2021 compared with \$1,100 million in 2020. Items excluded from core earnings are outlined in the table below and amounted to nil in both 2021 and 2020.

Core earnings increased \$306 million or 33% on a constant exchange rate basis reflecting growth in net fee income driven by higher average AUMA, from the favourable impact of markets and net inflows. This increase was partially offset by higher general expenses, mainly from growth in business volumes and other variable expenses. Net income attributed to shareholders increased \$306 million in 2021 compared with 2020 driven by the same factors noted above for core earnings.

The table below presents net income attributed to shareholders for the Global WAM segment for 2021 and 2020 consisting of core earnings and items excluded from core earnings.

For the years ended December 31, (\$ millions)	2021	2020
Core earnings		
Retirement	\$ 819	\$ 641
Retail	551	435
Institutional	36	24
Core earnings	1,406	1,100
Items excluded from core earnings:		
Reinsurance transactions, tax-related items and other	-	-
Net income attributed to shareholders	\$ 1,406	\$ 1,100

¹ United States, Canada, Japan, Hong Kong, Singapore, Taiwan, Indonesia, Vietnam, Malaysia, India, the Philippines, England, Ireland, Switzerland, and mainland China. In addition, we have timberland/farmland operations in Australia, New Zealand, and Chile.

In 2021, core EBITDA¹ for Global WAM was \$2,062 million, \$656 million higher than core earnings. In 2020, core EBITDA was \$1,676 million, \$576 million higher than core earnings. The increase in core EBITDA of \$386 million or 28% on a constant exchange rate basis was driven by higher net fee income partially offset by higher general expenses as mentioned above. Core EBITDA margin² was 31.5% in 2021 compared with 29.2% in 2020. The 230 basis points increase was driven by a combination of higher net fee income, operational benefits from increased scale, and disciplined expense management. Income before income taxes for Global WAM was \$1,641 million in 2021, an increase of \$369 million compared with 2020, driven by similar factors as noted above for core EBITDA.

Core EBITDA

For the years ended December 31,
(\$ millions)

	2021	2020
Core earnings	\$ 1,406	\$ 1,100
Amortization of deferred acquisition costs and other depreciation	323	319
Amortization of deferred sales commissions	99	85
Core income tax expense (recovery)	234	172
Core EBITDA	\$ 2,062	\$ 1,676
Core EBITDA margin	31.5%	29.2%
Income before income taxes	\$ 1,641	\$ 1,272

Business Performance

Gross Flows and Net Flows

Gross Flows were \$144.7 billion in 2021, an increase of 16% compared with 2020. By business line, the results were:

- Retirement gross flows in 2021 were \$50.6 billion, an increase of 8% compared with 2020, with positive contributions from all geographies. The increase in gross flows was driven by growth in member contributions, partially offset by the non-recurrence of a large-case plan sale in 2020.
- Retail gross flows in 2021 were \$78.3 billion, an increase of 41% compared with 2020, reflecting double-digit growth in gross flows across all geographies amid increased investor demand. In the U.S., the increase was driven by strong intermediary sales and higher institutional model allocations. In Asia, the increase was driven by higher gross flows in Japan, China, and Indonesia. In Canada, the increase was driven by higher gross flows in equity and balanced fund products.
- Institutional Asset Management gross flows in 2021 were \$15.7 billion, a decrease of 27% compared with 2020, driven by the non-recurrence of a \$6.9 billion sale in Canada in 2020, partially offset by higher sales of infrastructure, timberland and real estate mandates.

Net Inflows were \$27.9 billion in 2021, compared with net inflows of \$8.9 billion in 2020. By business line, the results were:

- Retirement net inflows were \$1.1 billion in 2021 compared with net inflows of \$1.6 billion in 2020, reflecting the non-recurrence of a large-case plan sale in 2020 and higher member redemptions, partially offset by growth in member contributions.
- Retail net inflows were \$29.2 billion in 2021 compared with net inflows of \$3.5 billion in 2020, driven by double-digit growth in gross flows across all geographies amid increased investor demand and lower mutual fund redemption rates.
- Institutional Asset Management net outflows were \$2.4 billion in 2021 compared with net inflows of \$3.8 billion in 2020, driven by a \$9.4 billion redemption in Asia in 1Q21, and the non-recurrence of a \$6.9 billion sale in Canada in 2020. This was partially offset by the non-recurrence of a \$5.0 billion redemption in Europe in 2020, lower redemptions in Asia and the U.S., and higher sales of infrastructure, timberland, and real estate mandates.

Gross Flows and Net Flows

For the years ended December 31,
(\$ millions)

	2021	2020
Gross flows	\$ 144,681	\$ 130,212
Net flows	27,893	8,919

¹ This item is a non-GAAP financial measure. See "Non-GAAP and Other Financial Measures" below.

² This item is a non-GAAP ratio. See "Non-GAAP and Other Financial Measures" below for more information.

Assets under Management and Administration

In 2021, AUMA for our wealth and asset management businesses were \$855.9 billion, 14% higher compared with December 31, 2020 on a constant exchange rate basis driven by the favourable impact of markets, 2021 net inflows of \$27.9 billion, and assets acquired of \$1.6 billion. As of December 31, 2021, Global WAM also managed \$246.8 billion in assets for the Company's non-WAM reporting segments. Including those assets, AUMA managed by Global WAM¹ was \$1,102.7 billion compared with \$984.4 billion² as at December 31, 2020.

Segregated funds net assets were \$252.6 billion for December 31, 2021, 10% higher compared with December 30, 2020 on an actual exchange rate basis, driven also by the favourable impact of markets, partially offset by year-to-date segregated fund net outflows. Total invested assets in our general fund form a small portion of Global WAM AUMA.

Changes in Assets under Management and Administration

For the years ended December 31,
(\$ billions)

	2021	2020
Balance January 1,	\$ 754	\$ 681
Acquisitions/Dispositions	2	1
Net flows	28	9
Impact of markets and other	72	63
Balance December 31,	\$ 856	\$ 754
Average assets under management and administration	\$ 798	\$ 698

Assets under Management and Administration

As at December 31,
(\$ billions)

	2021	2020
Total invested assets	\$ 4	\$ 5
Segregated funds net assets ⁽¹⁾	253	230
Mutual funds, institutional asset management and other ^{(1),(2)}	411	356
Total assets under management	668	591
Other assets under administration	188	163
Total assets under management and administration	\$ 856	\$ 754

⁽¹⁾ Segregated funds net assets are comprised of Retirement AUM, consisting primarily of fee-based products with little or no guarantees.

⁽²⁾ Other funds represent pension funds, pooled funds, endowment funds and other institutional funds managed by the Company on behalf of others.

Revenue

Total revenue in 2021 of \$6.5 billion increased 19% compared with 2020, driven by growth in fee income from higher average AUMA.

Revenue

As at December 31,
(\$ millions)

	2021	2020
Fee income	\$6,513	\$5,710
Investment income	28	39
Total revenue	\$6,541	\$5,749

Strategic Highlights

Leveraging our integrated business model and global scale; we have a clear strategy to pursue high-growth opportunities in the most attractive markets globally through our three business lines: Retirement, Retail and Institutional Asset Management. Our strategy includes being a global retirement leader by supporting financial wellness; expanding our presence in retail distribution platforms across the globe; leveraging a multi-manager model; and providing differentiated institutional active asset management capabilities across high performing equity and fixed income strategies, outcome-oriented solutions and alternative assets.

¹ This item is a non-GAAP financial measure. See "Non-GAAP and Other Financial Measures" below.

² Effective January 1, 2021, Manulife's AUMA managed by Global WAM includes certain private equity, private credit and infrastructure asset classes. Total AUMA managed by Global WAM as at December 31, 2020 has been restated for comparability.

We executed on a number of initiatives to accelerate growth in our franchise. In 2021, we:

- Achieved assets under management and administration of more than \$1 trillion, reflecting our track record of positive net flows and strong investment performance¹, as well as growth in assets managed on behalf of the Company's other segments;
- Expanded our sustainable investing products with the launch of investment strategies in Sustainable Asia Bond, Global Climate, and ESG Asian Multi-Asset Income. Additionally, Manulife Investment Management was accepted as a signatory to the UK Stewardship Code, which is recognized globally as a best practice benchmark in investment stewardship. Nearly 200 asset managers, pension funds and others applied but only 123 were accepted after a rigorous review by the Financial Reporting Council²;
- Secured an Alternative Investment Fund Managers ("AIFM") license to offer European Union ("EU") private market funds in our key European markets, positioning us to drive the expansion and offering of our private market investment capabilities within the EU;
- Broadened our Global Retirement financial wellness offering through increased access to managed accounts in the U.S., expansion of our PlanRight advice platform in Canada, and enhancement of our Hong Kong Worksite Marketing program to allow individual members to register for public virtual education sessions;
- Continued to build out our Private Markets business with the successful fundraising of the Manulife Infrastructure Fund II, L.P. of approximately \$6 billion, and our second private equity co-investment fund, Manulife Co-Investment Partners II, L.P., of nearly \$1 billion with commitments from both third-party investors and Manulife's general account; and
- Expanded our retail product line-up beyond traditional mutual funds with new actively managed Exchange Traded Funds in both Canada and the U.S. and furthered Separately Managed Accounts offerings in the U.S., with each category generating over \$1 billion in net inflows in 2021.

We continue to make progress on our digital customer leader strategy.

- Cogent Syndicated Study recognized our U.S. Retirement defined contribution plan participant website for earning a 77% customer satisfaction rating for online capabilities – the second-highest rating among 24 plan provider sites;
- In U.S. Retirement, we launched a mobile app to encourage participants to sign up for plans, view account details, make changes, access financial tools and receive personal financial guidance. Since the launch in July, we have surpassed 150,000 unique users;
- In Asia Retail, our online investment platform, Manulife iFUNDS, continues to show strong momentum in 2021 compared with 2020, with a 39% increase in sales and a 29% increase in new accounts opened, and a 198% increase in monthly investment plans;
- In U.S. Retirement, 88% of plan enrollees adopted our new digital express enrollment capability, that delivers a simple, fast, and seamless way to enroll in their plan and benefit from access to personalized guidance. This resulted in an 11% increase in participation and six times the managed accounts conversion rate when compared to the previous enrollment process; and
- We launched a new customized, digital dashboard globally for institutional clients and prospects. These enhancements represent a leap forward in creating a better user experience.

¹ Investment performance for the 3- and 5-year period ending December 31, 2021 reflects 74% and 78%, respectively, of assets outperforming their peers or their respective index, and is based on assets under management of \$629 billion. The \$629 billion represents Global WAM managed AUMA excluding 3rd party products, liability-driven invested assets, Private Markets strategies, and passive strategies, as well as certain assets managed on behalf of the Company's other segments and select Retirement assets in Canada.

² The Financial Reporting Council regulates auditors, accountants and actuaries, and sets the UK's Corporate Governance and Stewardship Code. It promotes transparency and integrity in business.

6. Corporate and Other

Corporate and Other is comprised of investment performance on assets backing capital, net of amounts allocated to the operating segments; financing costs; costs incurred by the corporate office related to shareholder activities (not allocated to the operating segments); our P&C Reinsurance business; as well as our run-off reinsurance operation, including variable annuities and accident and health.

For segment reporting purposes, settlement costs for macro equity hedges and other non-operating items are included in Corporate and Other earnings. This segment is also where we reclassify favourable investment-related experience to core earnings from items excluded from core earnings, subject to certain limits (see “Non-GAAP and Other Financial Measures” below). In each of the operating segments, we report all investment-related experience in items excluded from core earnings.

Profitability

Corporate and Other reported a net loss attributed to shareholders of \$792 million in 2021 compared with net income attributed to shareholders of \$1,545 million in 2020. Net income (loss) attributed to shareholders was comprised of core loss and items excluded from core loss. Core loss was \$161 million in 2021 compared with a core loss of \$863 million in 2020. Items excluded from core loss amounted to a net loss of \$631 million in 2021 compared with a net gain of \$2,408 million in 2020.

The favourable variance in the year-to-date core loss of \$702 million was primarily attributable to \$400 million of core investment gains in 2021 compared with nil in the same period of 2020, lower interest on allocated capital to operating segments of \$309 million in 2021, higher net gains from AFS equities and seed money investments in 2021 compared with prior year and lower interest on external debt. These gains were partially offset by P&C Reinsurance provisions and lower yields on fixed income investments.

Items excluded from the year-to-date core loss were a net loss of \$631 million in 2021 compared with a net gain of \$2,408 million in 2020. The unfavourable variance was primarily driven by large gains on the sale of AFS bonds in 2020 compared with losses in 2021.

The items excluded from core earnings are outlined below.

The table below presents net income (loss) attributed to shareholders for Corporate and Other for 2021 and 2020 consisting of core loss and items excluded from core loss.

For the years ended December 31,
(\$ millions)

	2021	2020
Core loss excluding core investment gains	\$ (561)	\$ (863)
Core investment gains	400	–
Total core loss	(161)	(863)
Items excluded from core loss: ⁽¹⁾		
Direct impact of equity markets and interest rates ⁽²⁾	(170)	2,302
Changes in actuarial methods and assumptions	(5)	67
Investment-related experience related to mark-to-market items ⁽³⁾	59	(33)
Reclassification to core investment gains above	(400)	–
Restructuring charge ⁽⁴⁾	(115)	–
Reinsurance transactions, tax-related items and other ⁽⁵⁾	–	72
Total items excluded from core loss	(631)	2,408
Net income (loss) attributed to shareholders	\$ (792)	\$ 1,545

⁽¹⁾ For explanations of items excluded from core earnings, see “Items excluded from core earnings” table in the total Company “Profitability” section above.

⁽²⁾ The direct impact of markets in 2021 included losses of \$228 million related to the sale of AFS bonds and losses on derivatives, partially offset by gains in fixed income investments supporting a portion of the capital in Asia that are classified as fair value through profit and loss. The direct impact of markets in 2020 included gains of \$2,175 million related to the sale of AFS bonds. Other gains of \$127 million in 2020 were mostly from fixed income investments supporting a portion of the capital in Asia that are classified as fair value through profit and loss.

⁽³⁾ Investment-related experience includes mark-to-market gains or losses on ALDA other than gains on AFS equities and seed money investments in new segregated or mutual funds.

⁽⁴⁾ Please see “Manulife Financial Corporation – Profitability” above for explanation of the restructuring charge.

⁽⁵⁾ In 2020, we reported tax benefits from the U.S. CARES Act, as a result of carrying back net operating losses to prior years, which had higher tax rates.

Revenue

Revenue of \$87 million in 2021 decreased \$2,618 million compared with \$2,705 million in 2020 largely due to realized losses on AFS bonds and losses on derivative positions in 2021 compared with gains in the same period of 2020, and lower yield on fixed income investments, partially offset by higher net gains from AFS equities and seed money investments in 2021 compared to prior year and lower interest on allocated capital.

Revenue

For the years ended December 31,
(\$ millions)

	2021	2020
Net premium income	\$ 147	\$ 140
Investment income (loss)	113	2,830
Other revenue ⁽¹⁾	(237)	(189)
Revenue before net realized and unrealized investment gains and losses and on the macro hedge program	23	2,781
Net realized and unrealized investment gains and losses ⁽²⁾ and on the macro hedge program	64	(76)
Total revenue	\$ 87	\$ 2,705

⁽¹⁾ Includes a consolidation adjustment related to asset management fees earned by Manulife Investment Management from affiliated business (the offset to the consolidation adjustment is investment expense).

⁽²⁾ See "Manulife Financial Corporation – Impact of Fair Value Accounting" above.

Strategic Highlights

Our P&C Reinsurance business provides substantial retrocessional capacity for a very select clientele in the property and casualty reinsurance market. The business is largely non-correlated to Manulife's other businesses and helps diversify our overall business mix. We manage the risk exposure of this business in relation to the total Company balance sheet risk and volatility as well as the prevailing market pricing conditions. The business is renewable annually, and we currently estimate our exposure limit in 2022 for a single event to be approximately US\$300 million (net of reinstatement premiums) and for multiple events to be approximately US\$600 million (net of all premiums).¹

¹ See "Caution regarding forward-looking statements" above.

7. Investments

Our investment philosophy for the General Fund is to invest in an asset mix that optimizes our risk adjusted returns and matches the characteristics of our underlying liabilities. We follow a bottom-up approach which combines our strong asset management skills with an in-depth understanding of the characteristics of each investment. We invest in a diversified mix of assets, including a variety of alternative long-duration asset classes. Our diversification strategy has historically produced superior risk adjusted returns while reducing overall risk. We use a disciplined approach across all asset classes, and we do not chase yield in the riskier end of the fixed income or alternative asset market. Our risk management strategy is outlined in the “Risk Management and Risk Factors” section below.

General Fund Assets

As at December 31, 2021, our General Fund invested assets totaled \$427.1 billion compared with \$411.0 billion at the end of 2020. The following table shows the asset class composition as at December 31, 2021 and December 31, 2020.

As at December 31, (\$ billions)	2021			2020		
	Carrying value	% of total	Fair value	Carrying value	% of total	Fair value
Cash and short-term securities	\$ 22.6	5	\$ 22.6	\$ 26.2	6	\$ 26.2
Debt Securities and Private Placement Debt						
Government bonds	79.7	19	79.7	80.8	20	80.8
Corporate bonds	141.6	33	141.6	134.8	33	134.8
Securitized/asset-backed securities	2.9	1	2.9	3.1	1	3.1
Private placement debt	42.8	10	47.3	40.8	10	47.9
Mortgages	52.0	12	54.1	50.2	12	54.2
Policy loans and loans to bank clients	8.9	2	8.9	8.4	2	8.4
Public equities ⁽¹⁾	28.1	7	28.1	23.7	6	23.7
Alternative Long-Duration Assets (“ALDA”)						
Real Estate	13.2	3	14.4	12.8	3	14.0
Infrastructure	9.8	2	10.0	9.1	2	9.4
Timberland and Farmland	5.3	1	5.7	4.8	1	5.4
Private Equity	11.6	3	11.6	8.0	2	8.0
Oil & Gas	1.9	0	1.9	2.3	1	2.3
Other ALDA	2.6	1	2.6	2.0	0	2.0
Leveraged Leases and Other	4.1	1	4.1	4.0	1	4.0
Total general fund invested assets	\$ 427.1	100	\$ 435.5	\$ 411.0	100	\$ 424.2

⁽¹⁾ Includes \$5 million of public equities as of December 31, 2021 that are managed in conjunction with our alternative long-duration asset strategy.

The carrying values for invested assets are generally equal to their fair values, however, mortgages and private placement debt are carried at amortized cost; loans to bank clients are carried at unpaid principal balances less allowance for credit losses; real estate held for own use is carried at cost less accumulated depreciation and any accumulated impairment losses; and private equity investments, including power and infrastructure, oil and gas, and timber, are accounted for as associates using the equity method, or at fair value. Certain government and corporate bonds and public equities are classified as AFS, with the remaining classified as “fair value through profit or loss”.

As at December 31, 2021, the carrying value of renewable energy assets, including energy efficiency projects, was \$13.1 billion (2020 – \$13.7 billion).

Shareholders’ accumulated other comprehensive pre-tax income (loss) at December 31, 2021 consisted of a \$873 million gain for bonds (2020 – gain of \$2,056 million) and a \$288 million gain for public equities (2020 – gain of \$255 million). Included in the \$873 million gain for bonds was a \$293 million loss related to the fair value hedge basis adjustments on AFS bonds (2020 – loss of \$317 million).

Debt Securities and Private Placement Debt

We manage our high-quality fixed income portfolio to optimize yield and quality while ensuring that asset portfolios remain diversified by sector, industry, issuer, and geography. As at December 31, 2021, our fixed income portfolio of \$267.0 billion (2020 – \$259.5 billion) was 97% investment grade (rated BBB or better) and 72% was rated A or higher (2020 – 97% and 73%, respectively). Our private placement debt holdings provide diversification benefits (issuer, industry, and geography) and, because they often have stronger protective covenants and collateral than debt securities, they typically provide better credit protection and potentially higher recoveries in the event of default. Geographically, 23% is invested in Canada (2020 – 25%), 49% is invested in the U.S. (2020 – 47%), 4% is invested in Europe (2020 – 4%) and the remaining 24% is invested in Asia and other geographic areas (2020 – 24%).

Debt Securities and Private Placement Debt – by Credit Quality⁽¹⁾

As at December 31, (\$ billions)	2021				2020			
	Debt securities	Private placement debt	Total	% of Total	Debt securities	Private placement debt	Total	% of Total
AAA	\$ 40.1	\$ 1.0	\$ 41.1	15	\$ 40.7	\$ 1.1	\$ 41.8	16
AA	39.6	5.7	45.3	17	37.1	4.8	41.9	16
A	90.0	16.2	106.2	40	89.4	15.6	105.0	41
BBB	49.4	16.2	65.6	25	47.2	15.8	63.0	24
BB	3.7	1.1	4.8	2	3.0	1.2	4.2	2
B & lower, and unrated	1.4	2.6	4.0	1	1.3	2.3	3.6	1
Total carrying value	\$ 224.2	\$ 42.8	\$ 267.0	100	\$ 218.7	\$ 40.8	\$259.5	100

⁽¹⁾ Reflects credit quality ratings as assigned by Nationally Recognized Statistical Rating Organizations (“NRSRO”) using the following priority sequence order: S&P Global Ratings (“S&P”), Moody’s Investors Services (“Moody’s”), DBRS Limited and its affiliated entities (“DBRS Morningstar”), Fitch Ratings Inc. (“Fitch”), Rating and Investment information, and Japan Credit Rating. For those assets where ratings by NRSRO are not available, disclosures are based upon internal ratings as described in the “Risk Management and Risk Factors” section below.

Debt Securities and Private Placement Debt – by Sector

As at December 31, (Per cent of carrying value, unless otherwise stated)	2021			2020		
	Debt securities	Private placement debt	Total	Debt securities	Private placement debt	Total
Government and agency	35	11	32	37	12	33
Utilities	14	38	18	15	39	18
Financial	15	10	15	15	8	14
Industrial	9	12	9	8	12	9
Consumer (non-cyclical)	8	14	9	7	14	8
Energy – Oil & Gas	8	5	7	8	5	8
Energy – Other	0	1	0	0	1	0
Consumer (cyclical)	3	6	3	3	6	3
Securitized (MBS/ABS)	1	1	1	1	1	1
Telecommunications	2	0	2	2	0	2
Basic materials	2	2	2	2	2	2
Technology	2	0	1	1	0	1
Media and internet and other	1	0	1	1	0	1
Total per cent	100	100	100	100	100	100
Total carrying value (\$ billions)	\$ 224.2	\$ 42.8	\$ 267.0	\$ 218.7	\$ 40.8	\$ 259.5

As at December 31, 2021, gross unrealized losses on our fixed income holdings were \$1.6 billion or 0.6% of the amortized cost of these holdings (2020 – \$0.6 billion or 0.3%). Of this amount, \$11 million (2020 – \$16 million) related to debt securities trading below 80% of amortized cost for more than 6 months. Securitized assets represented \$2 million of the gross unrealized losses and none of the amounts trade below amortized cost for more than 6 months (2020 – \$10 million and none, respectively). After adjusting for debt securities supporting participating policyholder and pass-through products and the provisions for credit included in the insurance and investment contract liabilities, the potential impact to shareholders’ pre-tax earnings for debt securities trading at less than 80% of amortized cost for greater than 6 months was approximately \$7 million as at December 31, 2021 (2020 – \$14 million).

Mortgages

As at December 31, 2021, our mortgage portfolio of \$52.0 billion represented 12% of invested assets (2020 – \$50.2 billion and 12%, respectively). Geographically, 66% of the portfolio is invested in Canada (2020 – 65%) and 34% is invested in the U.S. (2020 – 35%). The overall portfolio is also diversified by geographic region, property type, and borrower. Of the total mortgage portfolio, 14% is insured (2020 – 14%), primarily by the Canada Mortgage and Housing Corporation (“CMHC”) – Canada’s AAA rated government-backed national housing agency, with 35% of residential mortgages insured (2020 – 31%) and 2% of commercial mortgages insured (2020 – 2%).

As at December 31, (\$ billions)	2021		2020	
	Carrying value	% of total	Carrying value	% of total
Commercial				
Retail	\$ 8.8	17	\$ 8.6	17
Office	8.7	17	8.7	17
Multi-family residential	7.0	13	5.8	11
Industrial	3.6	7	2.9	6
Other commercial	3.0	6	3.5	7
	31.1	60	29.5	58
Other mortgages				
Manulife Bank single-family residential	20.5	39	20.4	41
Agricultural	0.4	1	0.3	1
Total mortgages	\$ 52.0	100	\$ 50.2	100

Our commercial mortgage loans are originated with a hold-for-investment philosophy. They have low loan-to-value ratios, high debt-service coverage ratios, and as at December 31, 2021 there were no loans in arrears. Geographically, of the total commercial mortgage loans, 44% are in Canada and 56% are in the U.S. (2020 – 42% and 58%, respectively). We are diversified by property type and largely avoid risky market segments such as hotels, construction loans, and second liens.

Non-CMHC Insured Commercial Mortgages⁽¹⁾

As at December 31,	2021		2020	
	Canada	U.S.	Canada	U.S.
Loan-to-Value ratio ⁽²⁾	61%	57%	62%	58%
Debt-Service Coverage ratio ⁽²⁾	1.56x	1.87x	1.46x	1.83x
Average duration (years)	4.6	6.8	4.9	6.8
Average loan size (\$ millions)	\$ 19.4	\$ 19.0	\$ 17.9	\$ 18.9
Loans in arrears ⁽³⁾	0.00%	0.00%	0.00%	0.00%

⁽¹⁾ Excludes Manulife Bank commercial mortgage loans of \$393 million (2020 – \$407 million).

⁽²⁾ Loan-to-Value and Debt-Service Coverage are based on re-underwritten cash flows.

⁽³⁾ Arrears defined as over 90 days past due in Canada and over 60 days past due in the U.S.

Public Equities

As at December 31, 2021, public equity holdings of \$28.1 billion represented 7% (2020 – \$23.7 billion and 6%) of invested assets and, when excluding assets supporting participating policyholder and pass-through products, represented 1% (2020 – 1%) of invested assets. The portfolio is diversified by industry sector and issuer. Geographically, 28% (2020 – 27%) is held in Canada; 37% (2020 – 36%) is held in the U.S.; and the remaining 35% (2020 – 37%) is held in Asia, Europe, and other geographic areas.

Public Equities – classified by type of product-line supported

As at December 31, (\$ billions)	2021		2020	
	Carrying value	% of total	Carrying value	% of total
Participating Policyholders	\$ 14.7	52	\$ 12.3	52
Non-participating products and pass-through products	9.6	34	8.2	34
Corporate and Other segment ⁽¹⁾	3.8	14	3.2	14
Total public equities⁽²⁾	\$ 28.1	100	\$ 23.7	100

⁽¹⁾ Includes \$2.5 billion of AFS equities and \$1.4 billion of seed money investments in new segregated and mutual funds.

⁽²⁾ Includes \$5 million of public equities that are managed in conjunction with our alternative long-duration asset strategy.

Alternative Long-Duration Assets (“ALDA”)

Our ALDA portfolio is comprised of a diverse range of asset classes with varying degrees of correlations. The portfolio typically consists of private assets representing investments in varied sectors of the economy which act as a natural hedge against future inflation and serve as an alternative source of asset supply to long-term corporate bonds. In addition to being a suitable match for our long-duration liabilities, these assets provide enhanced long-term yields and diversification relative to traditional fixed income markets. The vast majority of our ALDA are managed in-house.

As at December 31, 2021, carrying value of ALDA of \$44.4 billion represented 10% (2020 – \$39.0 billion and 9%) of invested assets. The fair value of total ALDA was \$46.3 billion at December 31, 2021 (2020 – \$41.0 billion). The carrying value and corresponding fair value by sector and/or asset type are outlined above (see table in the section “General Fund Assets”).

Real Estate

Our real estate portfolio is diversified by geographic region; of the total fair value of this portfolio, 42% is located in the U.S., 42% in Canada, and 16% in Asia as at December 31, 2021 (2020 – 40%, 43%, and 17%, respectively). This high-quality portfolio has virtually no leverage and is primarily invested in premium urban office towers, concentrated in cities with stable growth, and highly diverse economies, in North America and Asia. The portfolio is well positioned with an average occupancy rate of 90% (2020 – 92%) and an average lease term of 5.5 years (2020 – 6.2 years). During 2021, we executed 2 acquisitions representing \$0.03 billion market value of commercial real estate assets (2020 – 5 acquisitions and \$0.3 billion, respectively). As part of ongoing portfolio management initiatives, 4 commercial real estate assets totaling \$0.4 billion were sold during 2021.

The composition of our real estate portfolio based on fair value is as follows:

As at December 31, (\$ billions)	2021		2020	
	Fair value	% of total	Fair value	% of total
Company Own-Use	\$ 3.0	21	\$ 3.0	21
Office – Downtown	4.8	33	5.3	38
Office – Suburban	1.4	10	1.5	11
Industrial	2.2	15	1.6	11
Residential	1.9	13	1.9	14
Retail	0.4	3	0.4	3
Other	0.7	5	0.3	2
Total real estate⁽¹⁾	\$ 14.4	100	\$ 14.0	100

⁽¹⁾ These figures represent the fair value of the real estate portfolio. The carrying value of the portfolio was \$13.2 billion and \$12.8 billion at December 31, 2021 and December 31, 2020, respectively.

Infrastructure

We invest both directly and through funds in a variety of industry specific asset classes, listed below. The portfolio is well-diversified with over 500 portfolio companies. The portfolio is predominately invested in the U.S. and Canada, but also in the United Kingdom, Western Europe, Latin America, and Australia. Our power and infrastructure holdings are as follows:

As at December 31, (\$ billions)	2021		2020	
	Carrying value	% of total	Carrying value	% of total
Power generation	\$ 3.9	40	\$ 4.1	45
Transportation (including roads, ports)	2.7	27	2.5	27
Electric and gas regulated utilities	0.4	5	0.4	5
Electricity transmission	0.1	1	0.1	1
Water distribution	0.2	2	0.1	1
Midstream gas infrastructure	0.7	7	0.6	7
Maintenance service, efficiency and social infrastructure	0.2	2	0.2	2
Telecommunications/Tower	1.5	15	1.0	11
Other infrastructure	0.1	1	0.1	1
Total infrastructure	\$ 9.8	100	\$ 9.1	100

Timberland & Farmland

Our timberland and farmland assets are managed by a proprietary entity, Manulife Investment Management Timberland and Agriculture (“MIM Timberland and Agriculture”). In addition to being the world’s largest timberland investment manager for institutional investors¹, with timberland properties in the U.S., New Zealand, Australia, Chile, Brazil, and Canada, MIM Timberland and Agriculture also manages farmland properties in the U.S., Australia, Chile and Canada. The General Fund’s timberland portfolio comprised 22% of MIM Timberland and Agriculture’s total timberland assets under management (“AUM”) (2020 – 23%). The farmland portfolio includes annual (row) crops, fruit crops, wine grapes, and nut crops. The General Fund’s holdings comprised 41% of MIM Timberland and Agriculture’s total farmland AUM (2020 – 42%).

Private Equities

Our private equity portfolio of \$11.6 billion (2020 – \$8.0 billion) includes both directly held private equity and private equity funds. Both are diversified across vintage years and industry sectors.

¹ Based on the global timber investment management organization ranking in the *RISI International Timberland Ownership and Investment Database*.

Oil & Gas

This category is comprised of \$1.9 billion (2020 – \$2.3 billion) in various oil and gas private equity interests which are a combination of both producing and mid-streaming assets. The \$2.3 billion in 2020 included \$0.6 billion in NAL Resources, a subsidiary, which was sold on January 4, 2021.

Investment Income

For the years ended December 31,
(\$ millions, unless otherwise stated)

	2021	2020
Interest income	\$ 11,517	\$ 11,813
Dividend, rental and other income ⁽¹⁾	4,180	2,458
(Impairments)/Recoveries	15	(703)
Other, including gains and losses on sale of AFS debt securities	(85)	2,865
Investment income before realized and unrealized gains on assets supporting insurance and investment contract liabilities and on macro equity hedges	15,627	16,433
Realized and unrealized gains and losses on assets supporting insurance and investment contract liabilities and on macro equity hedges		
Debt securities	(5,585)	10,748
Public equities	3,220	1,917
Mortgages and private placements	403	39
Alternative long-duration assets and other investments	3,772	(214)
Derivatives, including macro equity hedging program	(5,813)	6,477
	(4,003)	18,967
Total investment income	\$ 11,624	\$ 35,400

⁽¹⁾ Rental income from investment properties is net of direct operating expenses.

In 2021, the \$11.6 billion of investment income (2020 – \$35.4 billion) consisted of:

- \$15.6 billion of investment income before net realized and unrealized gains on assets supporting insurance and investment contract liabilities and on macro equity hedges (2020 – \$16.4 billion); and
- \$4.0 billion of net realized and unrealized losses on assets supporting insurance and investment contract liabilities and on macro equity hedges (2020 – gains of \$19.0 billion).

The \$0.8 billion decrease in net investment income before unrealized and realized losses was due to losses of \$0.1 billion, mainly from the sale of AFS bonds (compared with \$2.9 billion gains in 2020); partially offset by an increase of \$2.0 billion in other investments mainly due to higher income in private equities.

In 2021, net realized and unrealized losses on assets supporting insurance and investment contract liabilities and on the macro hedge program were \$4.0 billion compared with gains of \$19.0 billion for 2020. The 2021 losses were primarily due to the impact of interest rate increases partially offset by fair value gains in ALDA and higher equity markets. The 2020 gains were primarily due to the impact of interest rate declines and higher equity markets.

Fair value accounting policies affect the measurement of both our assets and our liabilities. Refer to “Financial Performance” above.

8. Fourth Quarter Financial Highlights

Profitability

As at and for the quarters ended December 31,
(\$ millions, unless otherwise stated)

	2021	2020
Profitability:		
Net income attributed to shareholders	\$ 2,084	\$ 1,780
Core earnings ⁽¹⁾	\$ 1,708	\$ 1,474
Diluted earnings per common share (\$)	\$ 1.03	\$ 0.89
Diluted core earnings per common share (\$)	\$ 0.84	\$ 0.74
Return on common shareholders' equity ("ROE")	15.6%	14.1%
Core ROE	12.7%	11.6%

⁽¹⁾ Impact of currency movement on the fourth quarter of 2021 ("4Q21") core earnings compared with the fourth quarter of 2020 ("4Q20") was a \$53 million unfavourable variance.

Manulife's 4Q21 net income attributed to shareholders was \$2,084 million compared with \$1,780 million in 4Q20. Net income attributed to shareholders is comprised of core earnings (consisting of items we believe reflect the underlying earnings capacity of the business), which amounted to \$1,708 million in 4Q21 compared with \$1,474 million in 4Q20, and items excluded from core earnings, which amounted to a net gain of \$376 million in 4Q21 compared with a net gain of \$306 million in 4Q20. Net income attributed to shareholders in 4Q21 increased compared with 4Q20 driven by growth in core earnings and gains from fixed income reinvestment rates assumed in the valuation of policy liabilities, a component of the direct impact of markets, compared with losses in 4Q20. Fixed income reinvestment rate gains were driven by the flattening of the yield curve in Canada and the U.S. and, to a lesser extent, widening corporate spreads in the U.S. These items were partially offset by lower investment-related experience gains in 4Q21. Investment-related experience in 4Q21 reflected higher-than-expected returns (including fair value changes) on ALDA primarily driven by gains on private equity and infrastructure as well as strong credit experience, partially offset by the unfavourable impact of the acquisition of treasuries, which is a component of fixed income reinvestment activities.

The \$234 million or 20% increase in core earnings compared with 4Q20 was driven by the recognition of core investment gains in 2021 (compared with nil core investment gains in 4Q20), higher net fee income from higher average AUMA in Global WAM, which benefitted from the favourable impact of markets and net inflows, higher new business gains in the U.S. and Canada, and a decrease in Corporate and Other core losses which benefitted from a lower cost of debt and higher investment income partially offset by lower net gains on seed money investments in new segregated and mutual funds, and in-force business growth in Asia and Canada. These items were partially offset by unfavourable policyholder experience. 4Q21 core earnings included a net charge of \$97 million (\$120 million pre-tax) related to policyholder insurance and annuity experience compared with a net charge of \$27 million (\$40 million pre-tax) in 4Q20.¹

Core earnings by segment is presented in the table below for the periods presented.

For the quarters ended December 31,
(\$ millions)

	2021	2020
Core earnings		
Asia	\$ 547	\$ 571
Canada	286	316
U.S.	467	479
Global Wealth and Asset Management	387	304
Corporate and Other (excluding core investment gains)	(79)	(196)
Core investment gains	100	–
Core earnings	\$ 1,708	\$ 1,474

In Asia, core earnings were \$547 million in 4Q21 compared with \$571 million in 4Q20, in line with 4Q20 after adjusting for the impact of changes in foreign currency exchange rates. The increase in core earnings driven by in-force business growth was offset by unfavourable policyholder experience, which included modest COVID-19 related claims losses, and lower new business gains. An increase in Hong Kong new business gains was more than offset by lower gains in Japan and Asia Other². In Hong Kong, the increase was driven by higher sales and favourable product mix. Lower new business gains in Japan were driven by the impact of lower COLI sales. In Asia Other, we experienced a combination of unfavourable product mix and lower volumes in several emerging markets that were impacted by COVID-19 containment measures. Asia was also impacted by lower investment income on allocated capital, which decreased by US\$6 million compared with 4Q20 (see Corporate and Other segment).

¹ Policyholder experience includes gains of \$5 million in 2021 from customers who have opted to change their existing medical coverage to the VHIS products in Hong Kong (4Q20 – gains of \$13 million). These gains did not have a material impact on core earnings as they were offset by new business strain.

² Asia Other excludes Hong Kong and Japan.

In Canada, core earnings were \$286 million in 4Q21 compared with \$316 million in 4Q20. The 9% decrease primarily reflected less favourable policyholder experience in group insurance, lower investment income on allocated capital of \$24 million and the non-recurrence of a release of provision in 4Q20 for an uncertain tax position of a prior year. These items were partially offset by higher expected earnings across all businesses and higher individual insurance sales.

In the U.S., core earnings were \$467 million in 4Q21 compared with \$479 million in 4Q20. The 1% increase on a constant exchange rate basis was primarily driven by higher new business gains from higher sales and improved margins, and other experience gains partially offset by less favourable long-term care policyholder experience and lower tax benefits. U.S. was also impacted by lower investment income on allocated capital, which decreased by US\$30 million compared with 4Q20 (see Corporate and Other segment).

Global WAM core earnings were \$387 million in 4Q21 compared with \$304 million in 4Q20. The 30% increase reflected growth in net fee income driven by higher average AUMA, from the favourable impact of markets and net inflows, and favourable business mix, and higher tax benefits. This increase was partially offset by higher general expenses, mainly from growth in business volumes and other variable expenses.

Corporate and Other core loss excluding core investment gains was \$79 million in 4Q21 compared with \$196 million in 4Q20. The \$117 million decrease in core loss was primarily driven by \$74 million of lower interest on allocated capital to operating segments in 4Q21, nonrecurrence of impairment of capitalized IT assets in prior year, lower interest on external debt, higher investment income and higher gains on sale of AFS equities. These gains were partially offset by the unfavourable impact of markets on seed money investments in new segregated funds and mutual funds in 4Q21 compared with gains in the prior year.

The table below presents net income attributed to shareholders for the periods presented consisting of core earnings and the items excluded from core earnings.

For the quarters ended December 31,
(\$ millions)

	2021	2020
Core earnings	\$ 1,708	\$ 1,474
Items excluded from core earnings:		
Investment-related experience outside of core earnings ⁽¹⁾	126	585
Direct impact of equity markets and interest rates and variable annuity guarantee liabilities (see table below)	398	(323)
<i>Direct impact of equity markets and variable annuity guarantee liabilities⁽²⁾</i>	<i>124</i>	<i>351</i>
<i>Fixed income reinvestment rates assumed in the valuation of policy liabilities⁽³⁾</i>	<i>454</i>	<i>(846)</i>
<i>Sale of AFS bonds and derivative positions in the Corporate and Other segment</i>	<i>(180)</i>	<i>172</i>
Reinsurance transactions, tax-related items and other ⁽⁴⁾	(148)	44
Total items excluded from core earnings	376	306
Net income (loss) attributed to shareholders	\$ 2,084	\$ 1,780

⁽¹⁾ Total investment-related experience in 4Q21 was a net gain of \$226 million, compared with a net gain of \$585 million in 4Q20, and in accordance with our definition of core earnings, we included \$100 million in investment-related experience gains in core earnings and a \$126 million gain in items excluded from core earnings in 4Q21 (no core investment gains and \$585 million, respectively, in 4Q20). Investment-related experience gains in 4Q21 reflected higher-than-expected returns (including fair value changes) on ALDA primarily driven by gains on private equity and infrastructure as well as strong credit experience, partially offset by the unfavourable impact of fixed income reinvestment activities primarily driven by the acquisition of US Treasury bills. Investment-related experience gains in 4Q20 reflected the favourable impact of fixed income reinvestment activities, higher-than-expected returns (including fair value changes) on ALDA primarily driven by fair value gains on private equity and the estimated impact of the sale of NAL and strong credit experience, partially offset by lower-than-expected returns on real estate.

⁽²⁾ In 4Q21, the net gain related to equity markets of \$124 million included a gain of \$207 million from gross equity exposure, partially offset by a loss of \$82 million from dynamic hedge experience and a modest charge of \$1 million from macro hedging experience. In 4Q20, the net gains related to equity markets of \$351 million included a gain of \$1,613 million from gross equity exposure partially offset by a charge of \$1,253 million from dynamic hedging experience and a modest charge of \$9 million from macro hedge experience.

⁽³⁾ The \$454 million gain in 4Q21 was driven by flattening of the yield curve in Canada and the U.S. and, to a lesser extent, widening corporate spreads in the U.S. The \$846 million charge in 4Q20 was driven by narrowing corporate spreads, primarily in the U.S.

⁽⁴⁾ Consisting of a \$119 million charge related to updating the impact of the 2017 U.S. Tax Cuts and Jobs Act and a \$37 million charge from a reinsurance transaction in the U.S., partially offset by Asia reinsurance transaction gains of \$8 million in 4Q21. In 4Q20, reinsurance transactions in Asia and Canada contributed gains of \$29 million and \$15 million, respectively.

Net income attributed to shareholders by segment is presented in the following table.

For the quarters ended December 31,
(\$ millions)

	2021	2020
Net income attributed to shareholders by segment		
Asia	\$ 645	\$ 639
Canada	616	628
U.S.	494	106
Global Wealth and Asset Management	387	304
Corporate and Other	(58)	103
Total net income attributed to shareholders	\$ 2,084	\$ 1,780

Business Performance

As at and for the quarters ended December 31,
(\$ millions, unless otherwise stated)

	2021	2020
Asia APE sales	\$ 890	\$ 996
Canada APE sales	295	245
U.S. APE sales	244	178
Total APE sales	1,429	1,419
Asia new business value	391	368
Canada new business value	82	65
U.S. new business value	82	56
Total new business value	555	489
Global Wealth and Asset Management gross flows (\$ billions)	36.0	31.5
Global Wealth and Asset Management net flows (\$ billions)	8.1	2.8
Global Wealth and Asset Management assets under management and administration (\$ billions)	855.9	753.6
Global Wealth and Asset Management total invested assets (\$ billions)	4.5	4.8
Global Wealth and Asset Management segregated funds net assets (\$ billions)	252.6	229.8
Total assets under management and administration (\$ billions)	1,425.8	1,297.4
Total invested assets (\$ billions)	427.1	411.0
Total net segregated funds net assets (\$ billions)	399.8	365.5

Sales

APE sales were \$1.4 billion in 4Q21, an increase of 5% compared with 4Q20. In Asia, APE sales decreased 6% compared with 4Q20 as growth in Hong Kong was more than offset by lower COLI product sales in Japan. In Hong Kong, APE sales increased 11% compared with 4Q20 despite the dampening effect of COVID-19 containment measures constraining cross-border travel between Hong Kong and mainland China, reflecting strong growth in our bank channel, and demand from mainland Chinese visitors through our Macau branch. Asia Other APE sales were in-line with 4Q20, as higher sales in bancassurance were offset by lower agency sales, which were adversely impacted by COVID-19 containment measures in markets such as Vietnam and the Philippines. In Japan, APE sales declined 44% compared with 4Q20, primarily due to a decrease in COLI product sales. In Canada, APE sales increased 20% compared with 4Q20, primarily driven by increased customer demand for our lower risk segregated fund products and higher individual insurance sales. In the U.S., APE sales increased 41% compared with 4Q20, due to strong international sales, which is reported as a part of the U.S. segment results, and our differentiated domestic product offerings which include the John Hancock Vitality feature and higher customer demand for insurance protection in the current COVID-19 environment of greater consumer interest in improving baseline health.

New Business Value was \$555 million in 4Q21, an increase of 17% compared with 4Q20. In Asia, NBV increased 11% to \$391 million compared with 4Q20, reflecting higher sales volumes, favourable interest rates and expense management in Hong Kong, and favourable product mix in Asia Other, partially offset by lower sales in Japan and lower Critical Illness sales in mainland China. In Canada, NBV of \$82 million was up 26% compared with 4Q20, primarily due to higher margins in annuities and higher volumes in individual insurance. In the U.S., NBV of \$82 million was up 51% compared with 4Q20, primarily driven by higher sales volumes and favourable product mix, notably due to higher international sales.

Global Wealth and Asset Management net inflows were \$8.1 billion in 4Q21 compared with net inflows of \$2.8 billion in 4Q20. Net inflows in Retail were \$7.5 billion in 4Q21 compared with net inflows of \$3.6 billion in 4Q20, reflecting higher gross flows driven by strong intermediary sales and higher institutional model allocations in the U.S., as well as higher gross flows in Japan and China. Net inflows in Institutional Asset Management were \$1.6 billion in 4Q21 compared with net inflows of \$1.0 billion in 4Q20, driven by lower redemptions in timberland and real estate mandates, partially offset by lower gross flows in fixed income mandates. Net outflows in Retirement were \$1.0 billion in 4Q21 compared with net outflows of \$1.8 billion in 4Q20. The reduction in net outflows was driven by higher gross flows across all geographies, reflecting higher growth in new plan sales and member contributions, partially offset by higher plan redemptions.

Global Wealth and Asset Management gross flows were \$36.0 billion in 4Q21 compared with \$31.5 billion in 4Q20. Retirement gross flows in 4Q21 were \$12.5 billion, an increase of 15% compared with 4Q20, with positive contributions from all geographies, reflecting growth in new plan sales and member contributions. Retail gross flows in 4Q21 were \$19.3 billion, an increase of 25% compared with 4Q20, driven by strong intermediary sales and higher institutional model allocations in the U.S., as well as higher gross flows in Japan and China. In Canada, gross flows were in line with the prior year. Institutional Asset Management gross flows in 4Q21 were \$4.2 billion, a decrease of 2% compared with 4Q20, primarily driven by lower sales in fixed income mandates.

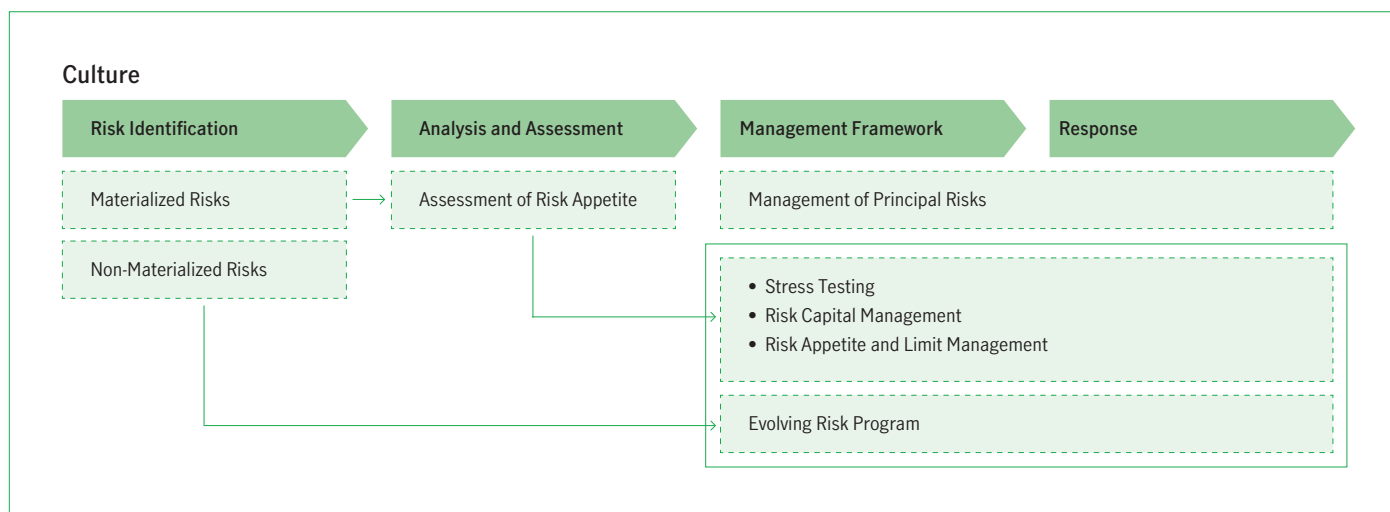
9. Risk Management and Risk Factors

This section provides an overview of our overall risk management approach along with detailed description of specific risks which may affect our results of operations or financial condition and the strategies used to manage those risks.

Enterprise Risk Management Framework

Delivering on our mission “Decisions made easier. Lives made better”, our ambition is to transform into the most digital, customer-centric global company in our industry, while delighting our customers, engaging our employees, and delivering superior returns for our shareholders. The activities required to achieve these results involve elements of risk taking.

Our approach to risk management is governed by our Enterprise Risk Management (“ERM”) Framework.



Our ERM Framework provides a structured approach to risk taking and risk management activities across the enterprise, supporting our long-term revenue, earnings, and capital growth strategy. It is communicated through risk policies and standards, which are intended to enable consistent design and execution of strategies across the organization. We have a common approach to managing all risks to which we are exposed, and to evaluating potential directly comparable risk-adjusted returns on contemplated business activities. Our risk policies and standards cover:

- **Risk roles and authorities** – Assignment of accountability and delegation of authority for risk oversight and risk management at various levels within the Company, as well as accountability principles;
- **Governance and strategy** – The types and levels of risk the Company seeks given its strategic plan, the internal and external environment, and risk appetite which drives risk limits and policies;
- **Execution** – Risk identification, measurement, assessment, and mitigation which enable those accountable for risks to manage and monitor their risk profile; and
- **Evaluation** – Validation, back testing and independent oversight to confirm that the Company generated the risk profile it intended, root cause analysis of any notable variation, and any action required to re-establish desired levels when exposures materially increase such that risk appetite is neared or exceeded.

Our risk management practices are influenced and impacted by external and internal factors (such as economic conditions, political environments, technology and risk culture), which can significantly impact the levels and types of risks we might face in pursuit of strategically optimized risk taking and risk management. Our ERM Framework incorporates relevant impacts and mitigating actions as appropriate.

Three Lines of Defense Model

A strong risk culture and a common approach to risk management are integral to Manulife’s risk management practices. Management is responsible for managing risk within risk appetite and has established risk management strategies and monitoring practices. Our approach to risk management includes a “three lines of defense” governance model that segregates duties among risk taking activities, risk monitoring and risk oversight, and establishes appropriate accountability for those who assume risk versus those who oversee risk.

Our first line of defense includes the Chief Executive Officer (“CEO”), Segment and Business Unit General Managers and Global Function Heads. In our matrix reporting model, the Segment General Managers are ultimately accountable for their business results, the risks they assume to achieve those results, and for the day-to-day management of the risks and related controls, and the Global Function Heads are accountable for the management of the risks and related controls for their function.

The second line of defense is comprised of the Company's Chief Risk Officer ("CRO"), the Global Risk Management ("GRM") function, the Company's Chief Compliance Officer and the Global Compliance Office, and other global oversight functions. Collectively, this group provides independent oversight of risk taking and risk management activities across the enterprise. Risk oversight committees, through broad-based membership, also provide oversight of risk taking and risk management activities.

The third line of defense is Audit Services, which provides independent, objective assurance that controls are effective and appropriate relative to the risk inherent in the business and that risk mitigation programs and risk oversight functions are effective in managing risks.

Culture

To enable the achievement of our mission and strategic priorities, we are committed to a set of shared values, which reflect our culture, inform our behaviours, and help define how we work together:

- Obsess about customers – Predict their needs and do everything in our power to satisfy them.
- Do the right thing – Act with integrity and do what we say.
- Think big – Anything is possible. We can always find a better way.
- Get it done together – We're surrounded by an amazing team. Do it better by working together.
- Own it – Feel empowered to make decisions and take action to deliver our mission.
- Share your humanity – Build a supportive, diverse and thriving workplace.

Risk Culture Vision – Within this context, we strive for a risk aware culture, where individuals and groups are encouraged, feel comfortable and are proactive in making transparent, balanced risk-return decisions that are in the long-term interests of the Company.

Risk Culture Framework – We have set a framework of desired behaviours to foster a strong risk aware culture. The framework is assessed against a set of qualitative and quantitative indicators and regularly reported to MFC's board of directors (the "Board") and executive leadership, with the intent to continuously identify opportunities to increase risk awareness across all geographies, businesses and layers of management and staff.

We believe that risk culture is strengthened once desired organizational behaviours and attitudes are reinforced through effective application of our corporate values. As such, we communicate key elements of our values through a risk lens to build a strong risk aware culture, including:

- **Transparency** – Encourage an environment where we can get it done together by openly discussing the strengths, weaknesses and potential range of outcomes of an issue, proposal or initiative and making informed decisions. Escalate issues before they become significant problems.
- **Risk appetite** – Once we have identified a risk or situation, we establish a risk appetite and own that decision.
- **Learn** – Use mistakes and failures as learning moments and share what was learned; think big by sharing beyond teams and business units. Seek out lessons learned from throughout the organization in order to continuously improve and grow our business the right way.
- **Incentives** – Align personal incentives with our goals and how we want to execute our plan. When things go wrong, share our humanity by maintaining a supportive environment to ensure appropriate incentives for continued transparency and lessons learned.

Risk Governance

The Board oversees our culture of integrity and ethics, strategic planning, risk management, and corporate governance, among other things. The Board carries out its responsibilities directly and through its four standing committees:

- **Risk Committee** – Oversees the management of our principal risks, and our programs, policies and procedures to manage those risks.
- **Audit Committee** – Oversees internal control over financial reporting and our finance, actuarial, internal audit and global compliance functions, serves as the conduct review committee, reviews our compliance with legal and regulatory requirements and oversees the performance, qualifications and independence of our external auditors.
- **Management Resources and Compensation Committee** – Oversees our global human resources strategy, policies, programs, management succession, executive compensation, and pension plan governance.
- **Corporate Governance and Nominating Committee** – Develops our governance policies and procedures, including environmental, social and governance related matters, among other activities.

The CEO is directly accountable to the Board for our results and operations and all risk taking activities and risk management practices required to achieve those results. The CEO is supported by the CRO as well as by the Executive Risk Committee ("ERC"). Together, they shape and promote our risk culture, guide risk taking throughout our global operations and strategically manage our overall risk profile. The ERC, along with other executive-level risk oversight committees, establishes risk policies, guides risk taking activity, monitors significant risk exposures and sponsors strategic risk management priorities throughout the organization.

Global Risk Management, under the direction of the CRO, establishes and maintains our ERM Framework and oversees the execution of individual risk management programs across the enterprise. Global Risk Management seeks to ensure a consistent enterprise-wide assessment of risk, risk based capital and risk-adjusted returns across all operations.

The ERC approves and oversees the execution of the Company's enterprise risk management program. It establishes and presents for approval to the Board the Company's risk appetite and enterprise-wide risk limits and monitors our overall risk profile, including key and emerging risks and risk management activities. As part of these activities, the ERC monitors material risk exposures, endorses and reviews strategic risk management priorities, and reviews and assesses the impact of business strategies, opportunities and initiatives on our overall risk position. The ERC is supported by a number of oversight sub-committees including:

- **Credit Committee** – Establishes credit risk policies and risk management standards of practice and oversees the credit risk management program. Also monitors the Company's overall credit risk profile and approves large individual credits and investments.
- **Product Oversight Committee** – Oversees insurance risk and reviews risks in new product and new business reinsurance initiatives. Also monitors product design, new product pricing, and insurance risk exposures and trends.
- **Global Asset Liability Committee** – Oversees market and liquidity risk for insurance products, hedging, and asset liability management programs and strategies. Also monitors market risk profile, risk exposures, risk mitigation activities and compliance with related policies.
- **Operational Risk Committee** – Oversees operational risk appetite, exposures and associated governance, risk processes, risk management activities and compliance with related policies.

We also have segment risk committees, each with mandates similar to the ERC except with a focus at the segment as applicable.

Risk Appetite

The Company's strategic direction drives overall risk appetite. All risk taking activities are managed within the Company's overall risk appetite, which defines the amount and types of risks the Company is willing to assume in pursuit of its objectives. It is comprised of three components: overall risk taking philosophy, risk appetite statements, and risk limits and tolerances.

Risk Philosophy – Manulife is a global financial institution offering insurance, wealth and asset management products and other financial services. The activities required to achieve our mission of "Decisions made easier. Lives made better" are guided by our values and involve elements of risk taking. As such, when making decisions about risk taking and risk management, the Company places a priority on the following risk management objectives:

- To safeguard the commitments and expectations established with our customers, creditors, shareholders and employees;
- To support the successful design and delivery of customer solutions;
- To prudently and effectively deploy the capital invested in the Company by shareholders with appropriate risk/return profiles;
- To invest wealth and asset management's customer assets consistent with their objectives;
- To achieve and maintain a high level of operational resilience;
- To safeguard the well-being of our employees, and promote a diverse, equitable and inclusive business environment;
- To protect and/or enhance the Company's reputation and brand; and
- To maintain the Company's targeted financial strength rating.

While we only pursue risks, we can appropriately analyze and monitor, we also manage risks which arise outside of our direct influence. We recognize that risk exposures change over time. If exposures materially increase, we will activate management actions designed to bring exposures back to desired levels. As an integrated component of our business model, risk management assists the Company in achieving our objectives and in reaching higher levels of operational excellence, while encouraging transparency and organizational learning.

Risk Appetite Statements – At least annually, we establish and/or reaffirm that our risk appetite and the Company's strategy are aligned. The risk appetite statements provide 'guideposts' on our appetite for identified risks, any conditions placed on associated risk taking and direction for where quantitative risk limits should be established. The Company's risk appetite statements are as follows:

- Manulife accepts a total level of risk that provides a very high level of confidence to meeting customer obligations while targeting an appropriate overall return to shareholders over time;
- Manulife targets a credit rating aligned with our growth aspirations and our objective of honoring all commitments to policyholders and other stakeholders with a high degree of confidence;
- Manulife values innovation and encourages initiatives intended to advance the Company's ambition to be a digital, customer-centric market leader;
- Capital market risks are acceptable when they are managed within specific risk limits and tolerances;
- Manulife believes a diversified investment portfolio reduces overall risk and enhances returns; therefore, it accepts credit and alternative long-duration asset related risks;
- Manulife pursues product risks that add customer and shareholder value where there is competence to assess and monitor them, and for which appropriate compensation is received;
- Manulife accepts that operational risks are an inherent part of the business when managed within thresholds and tolerances of key risk indicators and will protect its business and customers' assets through cost-effective operational risk mitigation; and
- Manulife expects its officers and employees to act in accordance with the Company's values, ethics and standards; and to protect its brand and reputation.

Risk Limits and Tolerances – Risk limits and tolerances are established for risks within our risk classification framework that are inherent in our strategies in order to define the types and amount of risk the Company will assume. Risk tolerance levels are set for risks deemed to be most significant to the Company and are established in relation to economic capital, earnings-at-risk and regulatory capital required. The purpose of risk limits is to cascade the total Company risk appetite to a level that can be effectively managed. Manulife establishes standalone risk limits for risk categories to avoid excessive concentration in any individual risk category and to manage the overall risk profile of the organization.

Risk Identification, Measurement and Assessment

We have a common approach and process to identify, measure, and assess the risks that we assume. We evaluate all potential new business initiatives, acquisitions, product offerings, reinsurance arrangements, and investment and financing transactions on a comparable risk-adjusted basis. Segments and functional groups are responsible for identifying and assessing key and emerging risks on an ongoing basis. A standard inventory of risks is used in all aspects of risk identification, measurement and assessment, and monitoring and reporting.

Risk exposures are evaluated using a variety of measures focused on both short-term net income attributed to shareholders and long-term economic value, with certain measures used across all risk categories, while others are applied only to some risks or a single risk type. Measures include stress tests such as sensitivity tests, scenario impact analyses and stochastic scenario modeling. In addition, qualitative risk assessments are performed, including for those risk types that cannot be reliably quantified.

We perform a variety of stress tests on earnings, regulatory capital ratios, economic capital, earnings-at-risk and liquidity that consider significant, but plausible events. We also perform other integrated, complex scenario tests to assess key risks and the interaction of these risks.

Economic capital and earnings-at-risk provide measures of enterprise-wide risk that can be aggregated and compared across business activities and risk types. Economic capital measures the amount of capital required to meet obligations with a high and pre-defined confidence level. Our earnings-at-risk metric measures the potential variance from quarterly expected earnings at a particular confidence level. Economic capital and earnings-at-risk are both determined using internal models.

Risk Monitoring and Reporting

Under the direction of the CRO, GRM oversees a formal process for monitoring and reporting on all significant risks at the Company-wide level. Risk exposures are also discussed at various risk oversight committees, along with any exceptions or proposed remedial actions, as required.

On at least a quarterly basis, the ERC and the Board's Risk Committee reviews risk reports that present an overview of our overall risk profile and exposures across our principal risks. The reports incorporate both quantitative risk exposure measures and sensitivities, and qualitative assessments. The reports also highlight key risk management activities and facilitate monitoring compliance with key risk policy limits.

The results of the Financial Condition Test (FCT) and Own Risk and Solvency Assessment (ORSA) are presented to the Board annually by our Chief Actuary and Chief Risk Officer, respectively. Our Chief Auditor reports the results of internal audits of risk controls and risk management programs to the Audit Committee and the Board's Risk Committee annually. Management reviews the implementation of key risk management strategies, and their effectiveness, with the Board's Risk Committee annually.

Risk Control and Mitigation

Risk control activities in place throughout the Company are designed to mitigate risks within established risk limits. We believe our controls, which include policies, procedures, systems and processes, are appropriate and commensurate with the key risks faced at all levels across the Company. Such controls are an integral part of day-to-day activity, business management and decision making.

GRM establishes and oversees formal review and approval processes for product offerings, insurance underwriting, reinsurance, investment activities and other material business activities, based on the nature, size and complexity of the risk taking activity involved. Authorities for assuming risk at the transaction level are delegated to specific individuals based on their skill, knowledge and experience.

Principal Risk Categories

Our insurance, wealth and asset management and other financial services businesses subject Manulife to a broad range of risks. Management has identified the following risks and uncertainties to which our businesses, operations and financial condition are subject grouped under five principal risk categories: strategic risk, market risk, credit risk, product risk and operational risk. The following sections also describe the risk management strategies for each of these risk categories.

The risks and uncertainties described below are not the only ones facing us. Additional risks not presently known to us or that are currently immaterial could also impair our businesses, operations and financial condition. If any of such risks should occur, the trading price of our securities, including common shares, preferred shares and debt securities, could decline, and investors may lose all or part of their investment.

Strategic Risk

Strategic risk is the risk of loss resulting from the inability to adequately plan or implement an appropriate business strategy that allows us to effectively compete in the markets in which we operate, or to adapt to change in the external business, political or regulatory environment.

We operate in highly competitive markets and compete for customers with both insurance and non-insurance financial services companies. Customer loyalty and retention, and access to distributors, are important to the Company's success and are influenced by many factors, including our distribution practices and regulations, product features, service levels including digital capabilities, prices, investment performance, and our financial strength ratings and reputation. Our ability to effectively compete is highly dependent upon being quick to react and adapt to changes from the external environment while continuing to proactively drive internal innovation.

The following section describes strategies to manage strategic risk, as well as details on strategic risk factors:

Strategic Risk Management Strategy

The CEO and Executive Leadership Team establish and oversee execution of business strategies and have accountability to identify and manage the risks embedded in these strategies. They are supported by a number of processes:

- Strategic business, risk and capital planning that is reviewed with the Board, Executive Leadership Team, and the ERC;
- Performance and risk reviews of all key businesses with the CEO and annual reviews with the Board;
- Risk based capital attribution and allocation designed to encourage a consistent decision-making framework across the organization; and
- Review and approval of significant acquisitions and divestitures by the CEO and, where appropriate, the Board.

Reputation risk is the risk that the Company's corporate image may be eroded by adverse publicity, about real or perceived issues, as a result of business practices of Manulife or its representatives potentially causing long-term or even irreparable damage to the Company's franchise value. Reputation risk arises from both internal and external environmental factors, and cannot be managed in isolation from other risks, but only as an integral part of the Company's integrated risk management approach.

The Company's Reputation Risk Policy requires that internal processes and controls, management decisions, and business decisions, include considerations for how the Company's reputation and brand could be impacted. Any incident with the potential to harm our reputation is of high priority and senior management is to be alerted. An essential component of the Reputation Risk Policy requires that all employees should conduct themselves in accordance with our values, as well as the Company's Code of Conduct and Business Ethics.

Environmental, Social and Governance Risks

Environmental, social and governance ("ESG") risks may impact our investments, underwriting, or operations, and may create financial, operational, legal, reputational, or brand value risks for Manulife.

Please refer to our annual "Sustainability Report and Public Accountability Statement", published in the second quarter of the following year, for information on our ESG priorities and performance.

Climate Risks

Matters related to climate change are a key component of the Environmental pillar of Manulife's ESG framework. Manulife supports the recommendations of the Financial Stability Board's Taskforce on Climate-Related Financial Disclosures ("TCFD"). The application of these recommendations is articulated below and is expected to be further refined over the coming years.

- **Governance** – The Board's Corporate Governance and Nominating Committee ("CGNC") oversees matters related to climate change as part of its oversight of Manulife's ESG framework. On a quarterly basis, CGNC monitors the progress against the goals and targets set out in Manulife's Climate Action Plan articulated in the Strategy section below. The Board's Risk Committee also considers climate-related risks and opportunities through the ongoing monitoring and reporting of emerging risks.

Manulife's Executive Sustainability Council, which consists of the Chief Sustainability Officer and members of the Executive Leadership Team including the Chief Executive Officer, is responsible for the climate strategy and disclosures. It meets monthly and is supported by the Manulife Climate Change Taskforce, a cross-functional team, that guides and monitors the implementation of the Climate Action Plan, assesses climate-related risks and opportunities, and manages climate-related performance and disclosures.

- **Risk Management** – Consistent with TCFD, Manulife defines climate-related risk as the potential negative impacts of climate change, which may be experienced directly (e.g., through financial loss) or indirectly (e.g., through reputational damage), as a result of the physical impacts of climate change or the transition to a low-carbon economy.

We view climate-related risks as transverse risks, since the broad range of actual or potential risks can impact any of our key risks, such as market, credit, product, operational, legal, or reputational risk, through the manifestation of the two dimensions of climate-related risks articulated by the TCFD – physical and transitional.

We continue to enhance the integration of climate-related risks into our enterprise risk management framework to ensure that they are managed in a manner consistent with our common approach to risk management (refer to "Risk Identification, Measurement and Assessment" above).

We have also incorporated climate-related risks into our risk taxonomy and risk appetite framework. Refer to “Risk Appetite” above.

We identify climate-related risks using our Environmental Risk Policy, and business-specific guidelines. These include the ESG Guidelines for general account assets backing in-force liabilities and the ESG Engagement Policy of our third-party asset management arm MIM. We continue to develop our risk management practices for assessing the relative significance, size and scope, and materiality of the climate-related risks that we identify. For example:

- Our life and health insurance team is developing a framework to assess the impact of climate-related risks on mortality and morbidity at a country level, and on the products we offer giving consideration to specific weather events and the ability of healthcare infrastructure to cope and adapt amongst other things.
- Our property and casualty retrocession team performs short-term horizon assessments of climate-related risks during annual renewal that are based on the reinsurance clients’ in-house and third-party catastrophe risk models.
- Our general account investment team conducts a climate scenario analysis, evaluates the total fund’s carbon emission profile, and is developing decarbonization plans for certain high-carbon emitting sectors in which we invest, and developing processes to consider climate-related risks in our due diligence and investee engagement.
- The MIM team deploys scenario analyses of how 1.5, 2, 3, and 4 degree Celsius temperature increases may impact certain asset classes, and complements these analyses with qualitative assessments and the inclusion of carbon pricing into analytical models. MIM Public Markets’ team uses a variety of tools for these assessments, such as external and internal rating systems, proxy voting strategies, and metrics such as portfolio temperature alignment, climate value at risk, carbon footprints, and exposure to green investments. To improve information availability for investment decision-making, MIM’s public markets team directly engages some of the world’s largest emitters on climate-related risks and opportunities relevant to our business, as well as through the collaborative industry program Climate Action 100+.

We monitor and influence existing and emerging climate regulation and policy affecting our business through working groups in industry associations, such as the Canadian Life and Health Insurance Association’s Climate Change and Sustainability Working Group.

- **Strategy** – Manulife is a long-term oriented underwriter and investor. Therefore, climate-related risks and opportunities, including changes in the physical environment and policy and technological changes associated with the transition to a low-carbon economy, are strategically relevant and, in some cases, may become material to our business over time.

In 2021, we continued to consider climate-related risk and opportunities within our business strategy over a short (1-5 year), medium (5-15 year), and long (beyond 15 years) time horizons. The interim outcomes of this assessment are described below:

- **Life and Health Insurance:** starting in 2020, our product and insurance risk management teams laid the foundational framework for research and analysis of the physical impacts of climate change on our business. This research and analysis considers the impact of climate change on vector-borne diseases (for example: malaria), extreme weather events, and increased temperatures, on morbidity and/or mortality. The research along with experience data will help to inform decisions related to underwriting assumptions over the long-term.
- **Property and Casualty Retrocession:** we primarily reinsure property catastrophe risks from natural perils, including hurricanes, typhoons, floods, and wildfires that may be influenced by climate change. Therefore, we may experience business risks associated with the increased frequency and severity of catastrophic weather events over time. This business forms a small part of our global underwriting portfolio and is reviewed on an annual basis.
- **General Account:** we performed climate change stress tests to gain insight into the impact of climate-related risks on our investment portfolios and to inform capital management. In 2020, this included the Prudential Regulation Authority Scenario A climate stress test of the immediate and sudden impact of disorderly economic transition to constrain the rise in temperature to less than +2°Celsius. Even when applying market value shocks ranging from +15% to -65% for certain industrial sub-sectors over a five-year time horizon, the stress test showed our capital levels remained well above the minimum regulatory capital requirements. In addition, over the course of 2021, Manulife acted as a founding participant in the climate risk project of the Bank of Canada / Office of the Superintendent of Financial Institutions. The pilot project used climate-change scenarios to understand the risks to the financial system that stem from the transition to a low-carbon economy and has informed OSFI’s approach and tools for stress-testing Canadian financial institutions.
- **Manulife Investment Management:** MIM sees an opportunity to be a leader in helping clients mitigate climate-related risks and invest in decarbonization opportunities. For example, MIM has launched investment products that offer exposure to low-carbon investments and nature-based solutions, such as timberland and agricultural activities that prioritize carbon sequestration.

In May 2021, Manulife released its Climate Action Plan. The plan outlines our objectives across three pillars, our operations, our general account investments, and the products and services we offer to clients. It includes our commitment to achieve net zero financed emissions by 2050, and an operational (Scope 1 & 2) emission reduction target articulated in the Metrics and Targets section below. We continue growing the general account’s portfolio of green investments, and developing investment products and solutions for climate change mitigation and resilience.

We are taking a sector-based approach to establish near term emissions reduction targets of our financed emissions, focusing first on the heavy emitting industries, such as power generation. We have committed to the Science-Based Targets Initiative, the global standard for setting carbon emission reduction targets consistent with global decarbonization efforts.

• Metrics and Targets

◦ Scope 1 and 2 Operational Emissions

In May 2021, Manulife committed to a 35% reduction in all absolute Scope 1 & 2 emissions of our operations by 2035, relative to a 2019 baseline. This target will apply to the real estate, timberland, and agriculture businesses within our operational control.

Manulife's operational emissions are calculated according to the Greenhouse Gas Protocol, have a third-party limited assurance, and are reported on an annual basis in our Annual Sustainability Report and CDP ("Carbon Disclosure Project" – a global database of corporate carbon emissions).

◦ Scope 3 Emissions from Investments

Manulife is committed to a net zero investment portfolio by 2050. Over the course of 2020-2021, Manulife established the carbon emission profile of the majority (86%) of the 2019 general account holdings¹. In 2020, we also worked with a third-party provider, Trucost, to understand the carbon profile of our public bond, public equity, and sovereign bond portfolios, using carbon data for 2019 and 2018². The weighted average carbon intensity³ was 2,120 tons of carbon dioxide equivalent per million Canadian dollars revenue (tCO₂/\$) for our holdings in the utilities sector, 930 tCO₂/\$ for the materials sector, and 430 tCO₂/\$ for the oil & gas sector. In 2021, we conducted carbon emission estimations based on the PCAF standard⁴ for the private portfolio holdings and the public holdings without investees' disclosure of carbon emissions.

The total fund's emission profile informed our decision to focus first on facilitating emission reductions in the most carbon intensive portion of the portfolio – the public bonds holdings of power utilities, oil & gas, and materials. We are currently developing interim carbon emission reduction targets and metrics that reflect our portfolio decarbonization approach.

◦ Exposure to High-Carbon Assets

Total exposure to the oil & gas sector across all asset classes held in the general account, public and private placement debt (including pipelines), and public and private equities, was \$23.4 billion, or 5.7% of the total portfolio as of December 31, 2020. As part of the target setting process for the power, oil & gas, and materials sectors, we are assessing the emissions reduction commitments of our holdings in utilities and miners involved in coal-fired generation or production mix.

◦ Green Investments

To minimize exposure to high-carbon assets, we continue to grow the general account's portfolio of green investments, and to develop investment products and solutions focused on climate change mitigation and resilience. General account's assets that advance the low-carbon economic transition stood at \$39.8 billion⁵, or 9.7% of the total portfolio as of December 31, 2020.

Strategic Risk Factors

We may not be successful in executing our business strategies or these strategies may not achieve our objectives.

The global macro-economic environment has a significant impact on our financial plans and ability to implement our business strategy. The macro-economic environment can be significantly impacted by the actions of both the government sector (including central banks) and the private sector. The macro-economic environment may also be affected by natural and human-made catastrophes.

Our business strategy and associated financial plans are developed by considering forecasts of economic growth, both globally and in the specific countries in which we operate. Actual economic growth can be significantly impacted by the macro-economic environment and can deviate significantly from forecasts, thus impacting our financial results and the ability to implement our business strategy.

Changes in the macro-economic environment can also have a significant impact on financial markets, including movements in interest rates, spreads on fixed income assets, and returns on public equity and ALDA assets. Our financial plan, including income projections, capital projections, and valuation of liabilities are based on certain assumptions with respect to future movements in interest rates and spreads on fixed income assets, and expected future returns from our public equity and ALDA investments. Actual experience is highly variable and can deviate significantly from our assumptions, thus impacting our financial results. In addition, actual experience that is significantly different from our assumptions and/or changes in the macro-economic environment may result in changes to the assumptions themselves which would also impact our financial results.

¹ Asset classes excluded from the first carbon profile of the total \$378.7 billion general fund as of December 31, 2019 were: cash (5% of holdings), residential mortgages (5%), policy loans (2%), loans to bank clients (1%), asset backed securities (1%), other ALDA (1%).

² Time lag due to emission data availability and the 2019 baseline year considerations for target setting purposes.

³ Direct and 1st tier indirect emission boundary, per Trucost's recommended approach to emission measurement, which is roughly equivalent to the Scope 1, 2 and upstream (suppliers) Scope 3 emission boundary. Public bond portfolio coverage by Trucost was 74%.

⁴ Partnership for Carbon Accounting Financials (PCAF), *The Global GHG Accounting and Reporting Standard for the Financial Industry*, 2020.

⁵ Primarily private debt and equity investments, except for several publicly traded labelled green bonds. Asset classes include green real estate and commercial mortgages (with certifications Leadership in Energy and Environmental Design (LEED), Buildings Owners and Managers Association (BOMA Best), or Energy Star); renewable energy (solar/wind/geothermal/waste biomass/hydro energy), energy efficiency, sustainably-managed timberland (certified to Forest Stewardship Council (FSC) or Programme for the Endorsement of Forest Certification (PEFC) standards), agriculture (Leading Harvest Standard), and water resources (recycling and purification), clean transportation (electrified transport and mass public transit), and labelled green bonds.

Specific changes in the macro-economic environment can have very different impacts across different parts of the business. For example, a rise in interest rates is generally beneficial to us in the long-term but can adversely affect valuations of some ALDA assets, especially those that have returns dependent on contractual cash flows, such as real estate.

The spending and savings patterns of our customers could be significantly influenced by the macro-economic environment and could have an impact on the products and services we offer to our customers.

Customer behaviour and emergence of claims on our liabilities can be significantly impacted by the macro-economic environment. For example, a prolonged period of economic weakness could impact the health and well-being of our customers and that could result in increased claims for certain insurance risks.

Adverse publicity, litigation or regulatory action resulting from our business practices or actions by our employees, representatives and/or business partners, could erode our corporate image and damage our franchise value and/or create losses.

- Manulife's reputation is one of its most valuable assets. Harm to a company's reputation is often a consequence of risk control failure, whether associated with complex financial transactions or relatively routine operational activities. Manulife's reputation could also be harmed by the actions of third parties with whom we do business. Our representatives include affiliated broker-dealers, agents, wholesalers and independent distributors, such as broker-dealers and banks, whose services and representations our customers rely on. Business partners include, among others, joint venture partners and third parties to whom we outsource certain functions and that we rely on to fulfill various obligations.
- If any of these representatives or business partners fail to adequately perform their responsibilities, or monitor their own risks, these failures could affect our business reputation and operations. While we seek to maintain adequate internal risk management policies and procedures and protect against performance failures, events may occur involving our representatives or our business partners that could cause us to lose customers or cause us or our representatives or business partners to become subject to legal, regulatory, economic or trade sanctions, which could have a material adverse effect on our reputation, our business, and our results of operations. For further discussion of government regulation and legal proceedings refer to "Government Regulation" in MFC's Annual Information Form dated February 9, 2022 and note 18 of the Consolidated Financial Statements.

Our businesses are heavily regulated, and changes in regulation or laws, or in the interpretation or enforcement of regulation and laws, may reduce our profitability and limit our growth.

- Our operations are subject to a wide variety of insurance and other laws and regulations including with respect to financial crimes (which include, but are not limited to, money laundering, bribery and economic or trade sanctions), privacy, market conduct, consumer protection, business conduct, prudential and other generally applicable non-financial requirements. Insurance and securities regulators in Canada, the United States, Asia and other jurisdictions regularly re-examine existing laws and regulations applicable to insurance companies, investment advisors, brokers-dealers and their products. Compliance with applicable laws and regulations is time consuming and personnel-intensive, and changes in these laws and regulations or in the interpretation or enforcement thereof, may materially increase our direct and indirect compliance costs and other expenses of doing business, thus having a material adverse effect on our results of operations and financial condition.
- Regulators review their capital requirements and implement changes aimed at strengthening risk management and capitalization of financial institutions. Future regulatory capital, actuarial and accounting changes, including changes with a retroactive impact, could have a material adverse effect on the Company's consolidated financial condition, results of operations and regulatory capital both on transition and going forward. In addition, such changes could have a material adverse effect on the Company's position relative to that of other Canadian and international financial institutions with which Manulife competes for business and capital.
- In Canada, MFC and its principal operating subsidiary, MLI, are governed by the Insurance Companies Act (Canada) ("ICA"). The ICA is administered, and the activities of the Company are supervised, by the Office of the Superintendent of Financial Institutions ("OSFI"). MLI is also subject to regulation and supervision under the insurance laws of each of the provinces and territories of Canada. Regulatory oversight is vested in various governmental agencies having broad administrative power with respect to, among other things, dividend payments, capital adequacy and risk based capital requirements, asset and reserve valuation requirements, permitted investments and the sale and marketing of insurance contracts. These regulations are intended to protect policyholders and beneficiaries rather than investors and may adversely impact shareholder value.
- Some recent examples of regulatory and professional standard developments, in addition to the developments outlined in the "Risk Management and Risk Factors – Strategic Risk" section, which could impact our net income attributed to shareholders and/or capital position are provided below.
 - The International Association of Insurance Supervisors ("IAIS") is still developing elements of its global frameworks for supervision of internationally active insurance groups ("IAIGs") and mitigation of systemic risk in the insurance sector. The elements under further development include:
 - A risk-based global Insurance Capital Standard ("ICS") which is undergoing a five-year monitoring period through 2025 to inform its development. While broadly supportive of the goals of ICS, OSFI stated that they did not support the ICS design adopted by the IAIS in 2019 for use in the monitoring period, citing that it was 'not fit for purpose for the Canadian market'. The adoption of the international rules in specific markets or on a group-based basis will depend on the decision of each applicable regulator.
 - The Holistic Framework for the assessment and mitigation of systemic risk in the insurance sector, which includes reviewing activities of insurers, went into effect January 2020 but with many details remaining to be finalized between its effective date and November

2022. Concurrently, the Financial Standards Board (“FSB”) announced it has suspended designations of any IAIGs as Globally Systemically Important Insurers (“G-SIIs”) until at least November 2022 when it will re-assess whether designations are necessary.

Manulife is an IAIG but has never been designated as a G-SII. Despite COVID-19 related delays during the ICS monitoring period and during the development of details for the Holistic Framework, the IAIS timeline to complete ICS development remains 2025 and for the FSB to assess the development of the Holistic Framework remains 2022. The impact of the frameworks on capital and other regulatory requirements and Manulife’s competitive position remains unknown and is being monitored.

- The National Association of Insurance Commissioners (“NAIC”) has been reviewing reserving and capital methodologies as well as the overall risk management framework. These reviews will affect U.S. life insurers, including John Hancock, and could lead to increased reserving and/or capital requirements for our business in the U.S. In addition, in December 2020 the NAIC adopted a group capital calculation (“GCC”) and amendments to the NAIC Insurance Holding Company System Regulatory Act which exempt certain insurance holding groups, including John Hancock and Manulife, from the requirements relating to the GCC. States with U.S. Insurance groups operating in the EU or UK have been strongly encouraged to adopt the NAIC model law by November 2022 in order to ensure compliance with covered agreements with the UK and EU. In order to maintain accreditation, all other states are required to come into compliance with the GCC by 2026. Additionally, in 2021, the NAIC exposed the draft process to be followed by those seeking exemptions from GCC for comment, and Manulife continues to monitor progress.
- The Canadian Actuarial Standards Board (“ASB”) promulgates certain assumptions referenced in the CIA Standards of Practice for the valuation of insurance contract liabilities. These promulgations are updated periodically and, in the event that new promulgations are published, they will apply to the determination of actuarial liabilities and may lead to an increase in actuarial liabilities and a reduction in net income attributed to shareholders.
- In the United States, state insurance laws regulate most aspects of our business, and our U.S. insurance subsidiaries are regulated by the insurance departments of the states in which they are domiciled and the states in which they are licensed. State laws grant insurance regulatory authorities broad administrative powers with respect to, among other things: licensing companies and agents to transact business; calculating the value of assets to determine compliance with statutory requirements; mandating certain insurance benefits; regulating certain premium rates; reviewing and approving policy forms; regulating unfair trade and claims practices, including through the imposition of restrictions on marketing and sales practices, distribution arrangements and payment of inducements; regulating advertising; protecting privacy; establishing statutory capital and reserve requirements and solvency standards; fixing maximum interest rates on insurance policy loans and minimum rates for guaranteed crediting rates on life insurance policies and annuity contracts; approving changes in control of insurance companies; restricting the payment of dividends and other transactions between affiliates; and regulating the types, amounts and valuation of investments. Changes in any such laws and regulations, or in the interpretation or enforcement thereof by regulators, could significantly affect our business, results of operations and financial condition.
- Currently, the U.S. federal government does not directly regulate the business of insurance. However, federal legislation and administrative policies in several areas can significantly and adversely affect state regulated insurance companies. These areas include financial services regulation, securities regulation, pension regulation, privacy, tort reform legislation, and taxation. In addition, under the Dodd-Frank Wall Street Reform and Consumer Protection Act (“Dodd-Frank”), the U.S. Board of Governors of the Federal Reserve has supervisory powers over non-bank financial companies that are determined to be systemically important.
- Insurance guaranty associations in Canada and the United States have the right to assess insurance companies doing business in their jurisdiction for funds to help pay the obligations of insolvent insurance companies to policyholders and claimants. Typically, an insurer is assessed an amount related to its proportionate share of the line of business written by all insurers in the relevant jurisdiction. Because the amount and timing of an assessment is beyond our control, the liabilities that we have currently established for these potential liabilities may not be adequate, particularly if there is an increase in the number of insolvent insurers or if the insolvent insurers operated in the same lines of business and in the same jurisdictions in which we operate.
- While many of the laws and regulations to which we are subject are intended to protect policyholders, beneficiaries, depositors and investors in our products and services, others also set standards and requirements for the governance of our operations. Failure to comply with applicable laws or regulations could result in financial penalties or sanctions, and damage our reputation.
- All aspects of Manulife’s Global WAM businesses are subject to various laws and regulations around the world. These laws and regulations are primarily intended to protect investment advisory clients, investors in registered and unregistered funds, and clients of Manulife’s global retirement businesses. Agencies that regulate investment advisors, investment funds and retirement plan products and services have broad administrative powers, including the power to limit, restrict or prohibit the regulated entity or person from carrying on business if it fails to comply with such laws and regulations. Possible sanctions for significant compliance failures include the suspension of individual employees, limitations on engaging in certain lines of business for specified periods of time, revocation of investment advisor and other registrations and censures and fines both for individuals and Manulife, along with the resulting damage to our reputation.
- From time to time, regulators raise issues during examinations or audits of Manulife that could have a material adverse impact on us. We cannot predict whether or when regulatory actions may be taken that could adversely affect our operations. Our failure to comply with existing and evolving regulatory requirements could also result in regulatory sanctions and could affect our relationships with regulatory authorities and our ability to execute our business strategies and plans. For further discussion of government regulation and legal proceedings refer to “Government Regulation” in MFC’s Annual Information Form dated February 9, 2022 and note 18 of the 2021

Annual Consolidated Financial Statements. Refer to the risk factor “Our operations face political, legal, operational and other risks that could negatively affect those operations or our results of operations and financial condition” for further discussion on the impact to our operations.

Changes to International Financial Reporting Standards could have a material impact on our financial results.

- New standards or modifications to existing standards could have a material adverse impact on our financial results and regulatory capital position (the regulatory capital framework in Canada uses IFRS as a base). Additionally, any mismatch between the underlying economics of our business and new accounting standards could have significant unintended negative consequences on our business model; and potentially affect our customers, shareholders and our access to capital markets. Please refer to “Emerging Risks – IFRS 17 and IFRS 9” below.

Changes in tax laws, tax regulations, or interpretations of such laws or regulations could make some of our products less attractive to consumers, could increase our corporate taxes or cause us to change the value of our deferred tax assets and liabilities as well as our tax assumptions included in the valuation of our policy liabilities. This could have a material adverse effect on our business, results of operations and financial condition.

- Many of the products that the Company sells benefit from one or more forms of preferred tax treatment under current income tax regimes. For example, the Company sells life insurance policies that benefit from the deferral or elimination of taxation on earnings accrued under the policy, as well as permanent exclusion of certain death benefits that may be paid to policyholders’ beneficiaries. We also sell annuity contracts that allow the policyholders to defer the recognition of taxable income earned within the contract. Other products that the Company sells, such as certain employer-paid health and dental plans, also enjoy similar, as well as other, types of tax advantages. The Company also benefits from certain tax benefits, including tax-exempt interest, dividends-received deductions, tax credits (such as foreign tax credits), and favourable tax rates and/or income measurement rules for tax purposes.
- There is risk that tax legislation could be enacted that would lessen or eliminate some or all of the tax advantages currently benefiting the Company or its policyholders or its other clients. This could occur in the context of deficit reduction or other tax reforms. The effects of any such changes could result in materially lower product sales, lapses of policies currently held, and/or our incurrence of materially higher corporate taxes, any of which could have a material adverse effect on our business, results of operations and financial condition.
- Additionally, the Company may be required to change its provision for income taxes or carrying amount of deferred tax assets or liabilities if the characterization of certain items is successfully challenged by taxing authorities or if future transactions or events, which could include changes in tax laws, tax regulations or interpretations of such laws or regulations, occur. Any such changes could significantly affect the amounts reported in the Consolidated Financial Statements in the year these changes occur.
- On October 8, 2021, 136 of the 140 members of the Organization for Economic Co-Operation and Development (“OECD”) / G20 Inclusive Framework agreed on a two-pillar solution to address tax challenges from the digital economy, and to close the gaps in international tax systems. The two pillars include a new approach to allocating certain profits of multinational entities amongst countries and a global minimum income tax rate of 15%. Model rules for the global minimum tax were released in December 2021, with commentary and implementation guidelines to follow in 2022. These rules are expected to be effective in 2023, pending enactment of domestic tax laws and amendment of bilateral tax treaties in 2022. The Company is closely monitoring developments and potential impacts and, in particular, for issues unique to the insurance industry.
- The U.S. government enacted the Tax Cuts and Jobs Act effective January 1, 2018 (“U.S. Tax Reform”). The legislation makes broad and complex changes to the U.S. tax code including reducing individual and corporate tax rates and permitting expensing of many capital expenditures, increasing and extending the amortization period on policy acquisition costs, and further limiting the deductibility of policy reserves for U.S. federal income tax purposes. Regulations and further guidance from the Internal Revenue Service and other bodies continue to be developed and released, implementing and/or clarifying the legislation. Any further changes or amendments to the law or its interpretation could result in material changes to our tax balances.
- In the long run, U.S. Tax Reform, all else being equal, could lead to a reduction in corporate borrowings and lower borrowings could lead to tighter spreads.

Access to capital may be negatively impacted by market conditions.

- Disruptions, uncertainty or volatility in the financial markets may limit our access to the capital markets to raise capital required to operate our business. Such market conditions may limit our ability to access the capital necessary to satisfy regulatory capital requirements to grow our business and meet our refinancing requirements. Under extreme conditions, we may be forced, among other things, to delay raising capital, issue different types of capital than we would otherwise under normal conditions, less effectively deploy such capital, issue shorter term securities than we prefer, or issue securities that bear an unattractive cost of capital which could decrease our financial flexibility, profitability, and/or dilute our existing shareholders.

As a holding company, MFC depends on the ability of its subsidiaries to transfer funds to it to meet MFC’s obligations and pay dividends. Subsidiaries’ remittance of capital depends on subsidiaries’ earnings, regulatory requirements and restrictions, macroeconomic, and market conditions.

- MFC is a holding company and relies on dividends and interest payments from our insurance and other subsidiaries as the principal source of cash flow to meet MFC’s obligations and pay dividends. As a result, MFC’s cash flows and ability to service its obligations are dependent upon the earnings of its subsidiaries and the distribution of those earnings and other funds by its subsidiaries to MFC. Substantially all of MFC’s business is currently conducted through its subsidiaries.

- The ability of our holding company to fund its cash requirements depends upon it receiving dividends, distributions and other payments from our operating subsidiaries. The ability of MFC's insurance subsidiaries to pay dividends to MFC in the future will depend on their earnings, macroeconomic and market conditions, and their respective local regulatory requirements and restrictions, including capital adequacy and requirements, exchange controls and economic or trade sanctions.
- MFC's insurance subsidiaries are subject to a variety of insurance and other laws and regulations that vary by jurisdiction and are intended to protect policyholders and beneficiaries in that jurisdiction first and foremost, rather than investors. These subsidiaries are generally required to maintain solvency and capital standards as set by their local regulators and may also be subject to other regulatory restrictions, all of which may limit the ability of subsidiary companies to pay dividends or make distributions to MFC.
- Potential changes to regulatory capital and actuarial and accounting standards could also limit the ability of the insurance subsidiaries to pay dividends or make distributions and could have a material adverse effect on internal capital mobility. We may be required to raise additional capital, which could be dilutive to existing shareholders, or to limit the new business we write, or to pursue actions that would support capital needs but adversely impact our subsequent earnings potential. In addition, the timing and outcome of these initiatives could have a significantly adverse impact on our competitive position relative to that of other Canadian and international financial institutions with which we compete for business and capital. Please also refer to "Emerging Risks – IFRS 17 and IFRS 9" below.
- The Company seeks to maintain capital in its regulated subsidiaries in excess of the minimum required in all jurisdictions in which the Company does business. The minimum requirements in each jurisdiction may increase due to regulatory changes and we may decide to maintain additional capital in our operating subsidiaries for competitive reasons, to fund expected growth of the business or to deal with changes in the risk profile of such subsidiaries. Any such increases in the level of capital may reduce the ability of the operating companies to pay dividends.
- The payment of dividends to MFC by MLI is subject to restrictions set out in the ICA. The ICA prohibits the declaration or payment of any dividend on shares of an insurance company if there are reasonable grounds for believing: (i) the company does not have adequate capital and adequate and appropriate forms of liquidity; or (ii) the declaration or the payment of the dividend would cause the company to be in contravention of any regulation made under the ICA respecting the maintenance of adequate capital and adequate and appropriate forms of liquidity, or of any order made to the company by the Superintendent. All of our U.S. and Asian operating life insurance companies are subsidiaries of MLI. Accordingly, a restriction on dividends from MLI would restrict MFC's ability to obtain dividends from its U.S. and Asian businesses.
- Certain of MFC's U.S. insurance subsidiaries also are subject to insurance laws in Michigan, New York and Massachusetts, the jurisdictions in which these subsidiaries are domiciled, which impose general limitations on the payment of dividends and other upstream distributions by these subsidiaries to MLI.
- Our Asian insurance subsidiaries are also subject to restrictions in the jurisdictions in which these subsidiaries are domiciled which could affect their ability to pay dividends to MLI in certain circumstances.

We may experience future downgrades in our financial strength or credit ratings, which may materially adversely impact our financial condition and results of operations.

- Credit rating agencies publish financial strength ratings on life insurance companies that are indicators of an insurance company's ability to meet contract holder and policyholder obligations. Credit rating agencies also assign credit ratings, which are indicators of an issuer's ability to meet the terms of its obligations in a timely manner and are important factors in a company's overall funding profile and ability to access external capital. Ratings reflect the views held by each credit agency, which are subject to change based on various factors that may be within or beyond a company's control.
- Ratings are important factors in establishing the competitive position of insurance companies, maintaining public confidence in products being offered, and determining the cost of capital. A ratings downgrade, or the potential for such a downgrade could adversely affect our operations and financial condition. A downgrade could, among other things, increase our cost of capital and limit our access to the capital and loan markets; cause some of our existing liabilities to be subject to acceleration, additional collateral support, changes in terms, or additional financial obligations; result in the termination of our relationships with broker-dealers, banks, agents, wholesalers and other distributors of our products and services; increase our cost of hedging; unfavourably impact our ability to execute on our hedging strategies; materially increase the number of surrenders, for all or a portion of the net cash values, by the owners of policies and contracts we have issued, impact our ability to obtain reinsurance at reasonable prices or at all, and materially increase the number of withdrawals by policyholders of cash values from their policies; and reduce new sales.

Competitive factors may adversely affect our market share and profitability.

- The insurance, wealth and asset management industries are highly competitive. Our competitors include other insurers, securities firms, investment advisors, mutual funds, banks and other financial institutions. The rapid advancement of new technologies, such as blockchain, artificial intelligence and advanced analytics, may enable other non-traditional firms to compete directly in the industry space, or offer services to our traditional competitors to enhance their value propositions. The impact from technological disruption may result in our competitors improving their customer experience, product offerings and business costs. Our competitors compete with us for customers, access to distribution channels such as brokers and independent agents, and for employees. In some cases, competitors may be subject to less onerous regulatory requirements, have lower operating costs or have the ability to absorb greater risk while maintaining their financial strength ratings, thereby allowing them to price their products more competitively or offer features that make their products more attractive. These competitive pressures could result in lower new business volumes and increased pricing pressures on a number of our products and services that may harm our ability to maintain or increase our profitability. Due to

the highly competitive nature of the financial services industry, there can be no assurance that we will continue to effectively compete with our traditional and non-traditional industry rivals, and competitive pressure may have a material adverse effect on our business, results of operations and financial condition.

We may experience difficulty in marketing and distributing products through our current and future distribution channels.

- We distribute our insurance and wealth management products through a variety of distribution channels, including brokers, independent agents, broker-dealers, banks, wholesalers, affinity partners, other third-party organizations and our own sales force in Asia. We generate a significant portion of our business through individual third-party arrangements. We periodically negotiate provisions and renewals of these relationships, and there can be no assurance that such terms will remain acceptable to us or relevant third parties. An interruption in our continuing relationship with certain of these third parties could significantly affect our ability to market our products and could have a material adverse effect on our business, results of operations and financial condition.

Industry trends could adversely affect the profitability of our businesses.

- Our business segments continue to be influenced by a variety of trends that affect our business and the financial services industry in general. The impact of the volatility and instability of the financial markets on our business is difficult to predict and the results of operations and our financial condition may be significantly impacted by general business and economic trends in the geographies in which we operate. These conditions include, but are not limited to, market factors, such as public equity, foreign currency, interest rate and other market risks, demographic shifts, consumer behaviours (e.g. spending habits and debt levels), and governmental policies (e.g. fiscal, monetary, and global trade). The Company's business plans, results of operations, and financial condition have been negatively impacted in the recent past and may also be negatively affected in the future.

We may face unforeseen liabilities or asset impairments arising from possible acquisitions and dispositions of businesses or difficulties integrating acquired businesses.

- We have engaged in acquisitions and dispositions of businesses in the past and expect to continue to do so in the future as we may deem appropriate. There could be unforeseen liabilities or asset impairments, including goodwill impairments that arise in connection with the businesses that we may sell, have acquired, or may acquire in the future. In addition, there may be liabilities or asset impairments that we fail, or are unable, to discover in the course of performing due diligence investigations on acquisition targets. Furthermore, the use of our own funds as consideration in any acquisition would consume capital resources that would no longer be available for other corporate purposes.
- Our ability to achieve some or all of the benefits we anticipate from any acquisitions of businesses will depend in large part upon our ability to successfully integrate the businesses in an efficient and effective manner. We may not be able to integrate the businesses smoothly or successfully, and the process may take longer than expected. The integration of operations may require the dedication of significant management resources, which may distract management's attention from our day-to-day business. Acquisitions of operations outside of North America, especially any acquisition in a jurisdiction in which we do not currently operate, may be particularly challenging or costly to integrate. If we are unable to successfully integrate the operations of any acquired businesses, we may be unable to realize the benefits we expect to achieve as a result of the acquisitions and the results of operations may be less than expected.

If our businesses do not perform well, or if the outlook for our businesses is significantly lower than historical trends, we may be required to recognize an impairment of goodwill or intangible assets or to establish a valuation allowance against our deferred tax assets, which could have a material adverse effect on our results of operations and financial condition.

- Goodwill represents the excess of the amounts we paid to acquire subsidiaries and other businesses over the fair value of their net identifiable assets at the date of acquisition. Intangible assets represent assets that are separately identifiable at the time of an acquisition and provide future benefits such as the John Hancock brand.
- As outlined below under "Critical Actuarial and Accounting Policies – Goodwill and Intangible Assets", goodwill and intangible assets with indefinite lives are tested at least annually for impairment at the cash generating unit ("CGU") or group of CGUs level, representing the smallest group of assets that is capable of generating largely independent cash flows. Going forward, as a result of the impact of economic conditions and changes in product mix and the granular level of goodwill testing under IFRS, additional impairment charges could occur in the future. Any impairment in goodwill would not affect LICAT capital.
- If market conditions deteriorate in the future and, in particular, if MFC's common share price is low relative to book value per share, if the Company's actions to limit risk associated with its products or investments cause a significant change in any one CGU's recoverable amount, or if the outlook for a CGU's results deteriorate, the Company may need to reassess the value of goodwill and/or intangible assets which could result in impairments during 2022 or subsequent periods. Such impairments could have a material adverse effect on our results of operations and financial condition.
- Deferred income tax balances represent the expected future tax effects of the differences between the book and tax basis of assets and liabilities, loss carry forwards and tax credits. Deferred tax assets are recorded when the Company expects to claim deductions on tax returns in the future for expenses that have already been recorded in the financial statements.
- The availability of those deductions is dependent on future taxable income against which the deductions can be made. Deferred tax assets are assessed periodically by management to determine if they are realizable. Factors in management's determination include the performance of the business including the ability to generate gains from a variety of sources and tax planning strategies. If based on information available at the time of the assessment, it is determined that the deferred tax asset will not be realized, then the deferred tax asset is reduced to the extent that it is no longer probable that the tax benefit will be realized.

We may not be able to protect our intellectual property and may be subject to infringement claims.

- We rely on a combination of registrations, contractual rights and copyright, trademark, patent and trade secret laws to establish and protect our intellectual property. In particular, we have invested considerable resources in promoting and protecting the brand names “Manulife” and “John Hancock” and expect to continue to do so. Although we use a broad range of measures to protect our intellectual property rights, third parties may infringe or misappropriate our intellectual property. As the occurrence of potential infringements or misappropriations against our intellectual property increases, we may have to litigate more often to enforce and protect our copyrights, trademarks, patents, trade secrets and know-how or to determine their scope, validity or enforceability, which represents a diversion of resources that may be significant in amount and may not prove successful. The loss of intellectual property protection or the inability to secure or enforce the protection of our intellectual property assets could have a material adverse effect on our business and our ability to compete.
- We also may be subject to costly litigation in the event that another party alleges our operations or activities infringe upon its intellectual property rights. Third parties may have, or may eventually be issued, patents that could be infringed by our products, methods, processes or services. Any party that holds such a patent could make a claim of infringement against us. We may also be subject to claims by third parties for breach of copyright, trademark, trade secret or license usage rights. Any such claims and any resulting litigation could result in significant liability for damages. If we were found to have infringed a third-party patent or other intellectual property rights, we could incur substantial liability, and in some circumstances could be enjoined from providing certain products or services to our customers or utilizing and benefiting from certain methods, processes, copyrights, trademarks, trade secrets or licenses, or alternatively could be required to enter into costly licensing arrangements with third parties, all of which could have a material adverse effect on our business, results of operations and financial condition.

Applicable laws may discourage takeovers and business combinations that common shareholders of MFC might consider in their best interests.

- The ICA contains restrictions on the purchase or other acquisition, issue, transfer and voting of the shares of an insurance company. In addition, under applicable U.S. insurance laws and regulations in states where certain of our insurance company subsidiaries are domiciled, no person may acquire control of MFC without obtaining prior approval of those states’ insurance regulatory authorities. These restrictions may delay, defer, prevent, or render more difficult a takeover attempt that common shareholders of MFC might consider in their best interests. For instance, they may prevent shareholders of MFC from receiving the benefit from any premium to the market price of MFC’s common shares offered by a bidder in a takeover context. Even in the absence of a takeover attempt, the existence of these provisions may adversely affect the prevailing market price of MFC’s common shares if they are viewed as discouraging takeover attempts in the future.

Entities within the MFC group are interconnected which may make separation difficult.

- MFC operates in local markets through subsidiaries and branches of subsidiaries. These local operations are financially and operationally interconnected to lessen expenses, share and reduce risk, and efficiently utilize financial resources. In general, external capital required for companies in the Manulife group has been raised at the MFC level in recent years and then transferred to other entities primarily as equity or debt capital as appropriate. Other linkages include policyholder and other creditor guarantees and other forms of internal support between various entities, loans, capital maintenance agreements, derivatives, shared services and affiliate reinsurance treaties. Accordingly, the risks undertaken by a subsidiary may be transferred to or shared by affiliates through financial and operational linkages. Some of the consequences of this are:
 - Financial difficulties at a subsidiary may not be isolated and could cause material adverse effects on affiliates and the group as a whole.
 - Linkages may make it difficult to dispose of or separate a subsidiary or business within the group by way of a spin-off or similar transaction and the disposition or separation of a subsidiary or business may not fully eliminate the liability of the Company and its remaining subsidiaries for shared risks. Issues raised by such a transaction could include: (i) the Company cannot terminate, without policyholder consent and in certain jurisdictions regulator consent, parental guarantees on in-force policies and therefore would continue to have residual risk under any such non-terminated guarantees; (ii) internal capital mobility and efficiency could be limited; (iii) significant potential tax consequences; (iv) uncertainty about the accounting and regulatory outcomes of such a transaction; (v) obtaining any other required approvals; (vi) there may be a requirement for significant capital injections; and (vii) the transaction may result in increased sensitivity of net income attributed to shareholders and capital of MFC and its remaining subsidiaries to market declines.

We may not be able to meet or achieve our sustainability priorities and our priorities may not meet the expectations of stakeholders or regulators.

- We have adopted the sustainability-related priorities discussed above under “Environmental, Social and Governance Risks” as well as other sustainability priorities that we communicate from time to time. Some of our stakeholders, including shareholders, customers and employees, will evaluate our business based on our progress towards these priorities. In addition, stakeholders may also evaluate our business by their own ESG criteria which may be broader than, and not consistent with, our priorities or with the ESG criteria of other stakeholders. Finally, some regulators have adopted ESG-related disclosure requirements and other regulators may do so in the future.
- We may be unable to achieve our sustainability priorities or meet the expectations of our stakeholders and regulators. In addition, the policies and processes we adopt to evaluate and manage our ESG priorities, in coordination with our other business priorities, may not

satisfy stakeholders or regulators. As a result, we may face adverse regulatory, investor, media, or public scrutiny which may negatively impact our financial results and reputation.

Market Risk

Market risk is the risk of loss resulting from market price volatility, interest rate change, credit and swap spread changes, and adverse foreign exchange rate movements. Market price volatility primarily relates to changes in prices of publicly traded equities and alternative long-duration assets. The profitability of our insurance and annuity products, as well as the fees we earn in our investment management business, are subject to market risk.

Please read below for details on factors that could impact our level of market risk and the strategies used to manage this risk:

IFRS 7 Disclosures

Text and tables in this and the following section (“Market Risk Sensitivities and Market Risk Exposure Measures”) include disclosures on market and liquidity risk in accordance with IFRS 7, “Financial Instruments – Disclosures”, and discussions on how we measure risk and our objectives, policies and methodologies for managing them. Disclosures in accordance with IFRS 7 are identified by a vertical line in the left margin of each page. The identified text and tables represent an integral part of our audited annual Consolidated Financial Statements for the years ended December 31, 2021 and December 31, 2020. The fact that certain text and tables are considered an integral part of the Consolidated Financial Statements does not imply that the disclosures are of any greater importance than the sections not part of the disclosure. Accordingly, the “Risk Management and Risk Factors” disclosure should be read in its entirety.

Market Risk Management Strategy

Market risk management strategy is governed by the Global Asset Liability Committee which oversees the overall market and liquidity risk program. Our overall strategy to manage our market risks incorporates several component strategies, each targeted to manage one or more of the market risks arising from our businesses. At an enterprise level, these strategies are designed to manage our aggregate exposures to market risks against limits associated with earnings and capital volatility.

The following table outlines our key market risks and identifies the risk management strategies which contribute to managing these risks.

Risk Management Strategy	Key Market Risk				
	Public Equity Risk	Interest Rate and Spread Risk	ALDA Risk	Foreign Exchange Risk	Liquidity Risk
Product design and pricing	✓	✓	✓	✓	✓
Variable annuity guarantee dynamic hedging	✓	✓		✓	✓
Macro equity risk hedging	✓			✓	✓
Asset liability management	✓	✓	✓	✓	✓
Foreign exchange management				✓	✓
Liquidity risk management					✓

Public Equity Risk – To manage public equity risk from our insurance and annuity businesses, we primarily use a variable annuity guarantee dynamic hedging strategy which is complemented by a general macro equity risk hedging strategy, in addition to asset liability management strategies. Our strategies employed for variable annuity guarantee dynamic hedging and macro equity risk hedging expose the Company to additional risks. See “Risk Factors” below.

Interest Rate and Spread Risk – To manage interest rate and spread risk, we primarily employ asset liability management strategies to manage the duration of our fixed income investments and execute interest rate hedges in our insurance segments and our Corporate and Other segments.

ALDA Risk – We seek to limit concentration risk associated with ALDA performance by investing in a diversified basket of assets including commercial real estate, timber, farmland, private equities, infrastructure, and oil and gas assets. We further diversify risk by managing investments against established investment and risk limits.

Foreign Exchange Risk – Our policy is to generally match the currency of our assets with the currency of the liabilities they support. Where assets and liabilities are not currency matched, we seek to hedge this exposure where appropriate to stabilize our capital positions and remain within our enterprise foreign exchange risk limits.

Liquidity Risk – We are exposed to liquidity risk, which is the risk of not having access to sufficient funds or liquid assets to meet both expected and unexpected cash outflows and collateral demands in our operating and holding companies. In the operating companies, cash and collateral demands arise day-to-day to fund policyholder benefits, withdrawals of customer deposit balances, reinsurance settlements, derivative instrument settlements/collateral pledging, expenses, and investment and hedging activities. Under stressed conditions, additional cash and collateral demands could arise primarily from changes to policyholder termination or policy renewal rates, withdrawals of customer deposit balances, borrowers renewing or extending their loans when they mature, derivative settlements or collateral demands, and reinsurance settlements.

Our liquidity risk management framework is designed to provide adequate liquidity to cover cash and collateral obligations as they come due, and to sustain and grow operations in both normal and stressed conditions. Refer to “Liquidity Risk Management Strategy” below for more information.

Product Design and Pricing Strategy

Our policies, standards, and guidelines with respect to product design and pricing are designed with the objective of aligning our product offerings with our risk-taking philosophy and risk appetite, and in particular, ensuring that incremental risk generated from new sales aligns with our strategic risk objectives and risk limits. The specific design features of our product offerings, including level of benefit guarantees, policyholder options, fund offerings and availability restrictions as well as our associated investment strategies, help to mitigate the level of underlying risk. We regularly review and modify key features within our product offerings, including premiums and fee charges with a goal of meeting profit targets and staying within risk limits. Certain of our general fund adjustable benefit products have minimum rate guarantees. The rate guarantees for any particular policy are set at the time the policy is issued and governed by insurance regulation in each jurisdiction where the products are sold. The contractual provisions allow crediting rates to be re-set at pre-established intervals subject to the established minimum crediting rate guarantees. The Company may partially mitigate the interest rate exposure by setting new rates on new business and by adjusting rates on in-force business where permitted. In addition, the Company partially mitigates this interest rate risk through its asset liability management process, product design elements, and crediting rate strategies. New product initiatives, new reinsurance arrangements and material insurance underwriting initiatives must be reviewed and approved by the CRO or key individuals within risk management functions.

Hedging Strategies for Variable Annuity and Other Equity Risks

The Company's exposure to movement in public equity market values primarily arises from insurance liabilities related to variable annuity guarantees and general account public equity investments.

Dynamic hedging is the primary hedging strategy for variable annuity market risks. Dynamic hedging is employed for new variable annuity guarantees business when written or as soon as practical thereafter.

We seek to manage public equity risk arising from unhedged exposures in our insurance liabilities through our macro equity risk hedging strategy. We seek to manage interest rate risk arising from variable annuity business not dynamically hedged through our asset liability management strategy.

Variable Annuity Dynamic Hedging Strategy

The variable annuity dynamic hedging strategy is designed to hedge the sensitivity of variable annuity guarantee policy liabilities to fund performance (both public equity and bond funds) and interest rate movements. The objective of the variable annuity dynamic hedging strategy is to offset, as closely as possible, the change in the economic value of guarantees with the profit and loss from our hedge asset portfolio. The economic value of guarantees moves in close tandem, but not exactly, with our variable annuity guarantee policy liabilities, as it reflects best estimate liabilities and does not include any liability provisions for adverse deviations.

Our variable annuity hedging program uses a variety of exchange-traded and over-the-counter ("OTC") derivative contracts to offset the change in value of variable annuity guarantees. The main derivative instruments used are equity index futures, government bond futures, currency futures, interest rate swaps, total return swaps, equity options and interest rate swaptions. The hedge instruments' positions against policy liabilities are continuously monitored as market conditions change. As necessary, the hedge asset positions will be dynamically rebalanced in order to stay within established limits. We may also utilize other derivatives with the objective to improve hedge effectiveness opportunistically.

Our variable annuity guarantee dynamic hedging strategy is not designed to completely offset the sensitivity of policy liabilities to all risks associated with the guarantees embedded in these products. The profit (loss) on the hedge instruments will not completely offset the underlying losses (gains) related to the guarantee liabilities hedged because:

- Policyholder behaviour and mortality experience are not hedged;
- Provisions for adverse deviation in the policy liabilities are not hedged;
- A portion of interest rate risk is not hedged;
- Credit spreads may widen and actions might not be taken to adjust accordingly;
- Fund performance on a small portion of the underlying funds is not hedged due to lack of availability of effective exchange-traded hedge instruments;
- Performance of the underlying funds hedged may differ from the performance of the corresponding hedge instruments;
- Correlations between interest rates and equity markets could lead to unfavourable material impacts;
- Unfavourable hedge rebalancing costs can be incurred during periods of high volatility from equity markets, bond markets and/or interest rates. The impact is magnified when these impacts occur concurrently; and
- Not all other risks are hedged.

Macro Equity Risk Hedging Strategy

The objective of the macro equity risk hedging program is to maintain our overall earnings sensitivity to public equity market movements within our Board approved risk appetite limits. The macro equity risk hedging program is designed to hedge earnings sensitivity due to movements in public equity markets arising from all sources (outside of dynamically hedged exposures). Sources of equity market sensitivity addressed by the macro equity risk hedging program include:

- Residual equity and currency exposure from variable annuity guarantees not dynamically hedged;
- General fund equity holdings backing guaranteed, adjustable liabilities and variable universal life; and
- Unhedged provisions for adverse deviation related to variable annuity guarantees dynamically hedged.

Asset Liability Management Strategy

Our asset liability management strategy is designed to help ensure that the market risks embedded in our assets and liabilities held in the Company's general fund are effectively managed and that risk exposures arising from these assets and liabilities are maintained within risk limits. The embedded market risks include risks related to the level and movement of interest rates and credit and swap spreads, public equity market performance, ALDA performance and foreign exchange rate movements.

General fund product liabilities are categorized into groups with similar characteristics in order to support them with a specific asset strategy. We seek to align the asset strategy for each group to the premium and benefit patterns, policyholder options and guarantees, and crediting rate strategies of the products they support. The strategies are set using portfolio analysis techniques intended to optimize returns, subject to considerations related to regulatory and economic capital requirements, and risk tolerances. They are designed to achieve broad diversification across asset classes and individual investment risks while being suitably aligned with the liabilities they support. The strategies encompass asset mix, quality rating, term profile, liquidity, currency and industry concentration targets.

Products which feature guaranteed liability cash flows (i.e. where the projected net flows are not materially dependent upon economic scenarios) are managed to a target return investment strategy. The products backed by this asset group include:

- Accumulation annuities (other than annuities with pass-through features), which are primarily short-to-medium-term obligations and offer interest rate guarantees for specified terms on single premiums. Withdrawals may or may not have market value adjustments;
- Payout annuities, which have no surrender options and include predictable and very long-dated obligations; and
- Insurance products, with recurring premiums extending many years in the future, and which also include a significant component of very long-dated obligations.

We seek to manage the assets backing these long-dated benefits to achieve a target return sufficient to support the obligations over their lifetime, subject to established risk tolerances and the impact of regulatory and economic capital requirements. Fixed income assets are managed to a benchmark developed to minimize interest rate risk against the liability cash flows. Utilizing ALDA and public equity investments provides a suitable match for long-duration liabilities that also enhances long-term investment returns and reduces aggregate risk through diversification.

For insurance and annuity products where significant pass-through features exist, a total return strategy approach is used, generally combining fixed income with ALDA plus public equity investments. ALDA and public equity may be included to enhance long-term investment returns and reduce aggregate risk through diversification. Target investment strategies are established using portfolio analysis techniques that seek to optimize long-term investment returns while considering the risks related to embedded product guarantees and policyholder withdrawal options, the impact of regulatory and economic capital requirements and considering management tolerances with respect to short-term income volatility and long-term tail risk exposure. For these pass-through products such as participating insurance and universal life insurance, the investment performance of assets supporting the liabilities will be largely passed through to policyholders as changes in the amounts of dividends declared or rates of interest credited, subject to embedded minimum guarantees. Shorter duration liabilities such as fixed deferred annuities do not incorporate ALDA plus public equity investments into their target asset mixes. Authority to manage our investment portfolios is delegated to investment professionals who manage to benchmarks derived from the target investment strategies established for each group, including interest rate risk tolerances.

Our asset liability management strategy incorporates a wide variety of risk measurement, risk mitigation and risk management, and hedging processes. The liabilities and risks to which the Company is exposed, however, cannot be completely matched or hedged due to both limitations on instruments available in investment markets and uncertainty of impact on liability cash flows from policyholder experience/behaviour.

Foreign Exchange Risk Management Strategy

Our policy is to generally match the currency of our assets with the currency of the liabilities they support. Where assets and liabilities are not currency matched, we seek to hedge this exposure where appropriate to stabilize our capital positions and remain within our enterprise foreign exchange risk limits.

Risk from small balance sheet mismatches is accepted if managed within set risk limits. Risk exposures are measured in terms of potential changes in capital ratios, due to foreign exchange rate movements, determined to represent a specified likelihood of occurrence based on internal models.

Liquidity Risk Management Strategy

Global liquidity management policies and procedures are designed to provide adequate liquidity to cover cash and collateral obligations as they come due, and to sustain and grow operations in both normal and stressed conditions. They reflect legal, regulatory, tax, operational or economic impediments to inter-entity funding. The asset mix of our balance sheet takes into account the need to hold adequate unencumbered and appropriate liquid assets to satisfy the requirements arising under stressed scenarios and to allow our liquidity ratios to remain strong. We manage liquidity centrally and closely monitor the liquidity positions of our principal subsidiaries.

We seek to mitigate liquidity risk by diversifying our business across different products, markets, geographical regions and policyholders. We design insurance products to encourage policyholders to maintain their policies in-force, to help generate a diversified and stable flow of recurring premium income. We design the policyholder termination features of our wealth management products and related investment strategies with the goal of mitigating the financial exposure and liquidity risk related to unexpected policyholder terminations. We establish and implement investment strategies intended to match the term profile of the assets to the liabilities they support, taking into account the potential for unexpected policyholder terminations and resulting liquidity needs. Liquid assets represent a large portion of our total assets. We aim to reduce liquidity risk in our businesses by diversifying our funding sources and appropriately managing the term structure of our funding. We forecast and monitor daily operating liquidity and cash movements in various individual entities and operations as well as centrally, aiming to ensure liquidity is available and cash is employed optimally.

We also maintain centralized cash pools and access to other sources of liquidity and contingent liquidity such as repurchase funding agreements. Our centralized cash pool consists of cash or near-cash, high quality short-term investments that are continually monitored for their credit quality and market liquidity.

As at December 31, 2021, the Company held \$268.4 billion in cash and cash equivalents, comprised of cash on deposit, Canadian and U.S. Treasury Bills and high quality short-term investments, and marketable assets comprised of investment grade government and agency bonds, investment grade corporate bonds, investment grade securitized instruments, publicly traded common stocks and preferred shares, compared with \$262.9 billion as at December 31, 2020 as noted in the table below.

As at December 31,
(\$ millions, unless otherwise stated)

	2021	2020
Cash and cash equivalents	\$ 22,594	\$ 26,167
Marketable assets		
Government bonds (investment grade)	77,743	79,511
Corporate bonds (investment grade)	138,479	131,930
Securitized — ABS, CMBS, RMBS (investment grade)	2,892	2,989
Public equities	26,706	22,294
Total marketable assets	245,820	236,724
Total cash and cash equivalents and marketable assets⁽¹⁾	\$ 268,414	\$ 262,891

⁽¹⁾ Including \$6.6 billion encumbered cash and cash equivalents and marketable assets as at December 31, 2021 (2020 – \$6.8 billion).

We have established a variety of contingent liquidity sources. These include a \$500 million committed unsecured revolving credit facility with certain Canadian chartered banks available for MFC, and a US\$500 million committed unsecured revolving credit facility with certain U.S. banks available for MFC and certain of its U.S. subsidiaries. There were no outstanding borrowings under these facilities as of December 31, 2021 (2020 – nil). In addition, John Hancock Life Insurance Company (U.S.A.) (“JHUSA”) is a member of the Federal Home Loan Bank of Indianapolis (“FHLBI”), which enables the company to obtain loans from FHLBI as an alternative source of liquidity that is collateralizable by qualifying mortgage loans, mortgage-backed securities and U.S. Treasury and Agency securities. As of December 31, 2021, JHUSA had an estimated maximum borrowing capacity of US\$4.4 billion (2020 – US\$4.8 billion) based on regulatory limitations with an outstanding balance of US\$500 million (2020 – US\$500 million), under the FHLBI facility.

The following table outlines the maturity of the Company's significant financial liabilities.

Maturity of financial liabilities⁽¹⁾

As at December 31, 2021 (\$ millions)	Less than 1 year	1 to 3 years	3 to 5 years	Over 5 years	Total
Long-term debt	\$ –	\$ –	\$ 1,605	\$ 3,277	\$ 4,882
Capital instruments	–	579	–	6,401	6,980
Derivatives	294	387	379	8,978	10,038
Deposits from bank clients ⁽²⁾	16,091	2,593	2,036	–	20,720
Lease liabilities	89	116	50	70	325

⁽¹⁾ The amounts shown above are net of the related unamortized deferred issue costs.

⁽²⁾ Carrying value and fair value of deposits from Bank clients as at December 31, 2021 was \$20,720 million and \$20,746 million, respectively (2020 – \$20,889 million and \$21,085 million, respectively). Fair value is determined by discounting contractual cash flows, using market interest rates currently offered for deposits with similar terms and conditions. All deposits from Bank clients were categorized in Level 2 of the fair value hierarchy (2020 – Level 2).

Through the normal course of business, pledging of assets is required to comply with jurisdictional regulatory and other requirements including collateral pledged to partially mitigate derivative counterparty credit risk, assets pledged to exchanges as initial margin and assets held as collateral for repurchase funding agreements. Total unencumbered assets were \$502.4 billion as at December 31, 2021 (2020 – \$496.8 billion).

Market Risk Sensitivities and Market Risk Exposure Measures

Variable Annuity and Segregated Fund Guarantees Sensitivities and Risk Exposure Measures

Guarantees on variable annuity products and segregated funds may include one or more of death, maturity, income and withdrawal guarantees. Variable annuity and segregated fund guarantees are contingent and only payable upon the occurrence of the relevant event, if fund values at that time are below guaranteed values. Depending on future equity market levels, liabilities on current in-force business would be due primarily in the period from 2022 to 2042.

We seek to mitigate a portion of the risks embedded in our retained (i.e. net of reinsurance) variable annuity and segregated fund guarantee business through the combination of our dynamic and macro hedging strategies (see “Publicly Traded Equity Performance Risk” below).

The table below shows selected information regarding the Company's variable annuity and segregated fund investment-related guarantees gross and net of reinsurance.

Variable annuity and segregated fund guarantees, net of reinsurance⁽¹⁾

As at December 31, (\$ millions)	2021 ⁽²⁾			2020 ⁽²⁾		
	Guarantee value ⁽²⁾	Fund value	Net amount at risk ^{(2),(3),(4)}	Guarantee value ⁽²⁾	Fund value	Net amount at risk ^{(2),(3),(4)}
Guaranteed minimum income benefit	\$ 4,419	\$ 3,603	\$ 918	\$ 4,555	\$ 3,642	\$ 1,064
Guaranteed minimum withdrawal benefit	39,098	41,809	2,233	42,570	44,075	3,128
Guaranteed minimum accumulation benefit	19,820	20,226	12	18,463	18,945	8
Gross living benefits ⁽⁵⁾	63,337	65,638	3,163	65,588	66,662	4,200
Gross death benefits ⁽⁶⁾	11,105	22,920	618	10,652	19,548	710
Total gross of reinsurance	74,442	88,558	3,781	76,240	86,210	4,910
Living benefits reinsured	3,788	3,102	771	3,917	3,157	895
Death benefits reinsured	639	547	253	685	534	282
Total reinsured	4,427	3,649	1,024	4,602	3,691	1,177
Total, net of reinsurance	\$ 70,015	\$ 84,909	\$ 2,757	\$ 71,638	\$ 82,519	\$ 3,733

⁽¹⁾ The table is not adjusted for the announced U.S. variable annuity reinsurance transaction.

⁽²⁾ Guaranteed Value and Net Amount at Risk in respect of guaranteed minimum withdrawal business in Canada and the U.S. have been updated in 2021 to reflect the time value of money of these claims. This methodology change also had a minor impact on the allocation of fund values between living benefits and death benefits. See footnotes 5 and 6. Values at December 31, 2020 have been restated to reflect this revised methodology.

⁽³⁾ Amount at risk (in-the-money amount) is the excess of guarantee values over fund values on all policies where the guarantee value exceeds the fund value. For guaranteed minimum death benefit, the amount at risk is defined as the current guaranteed minimum death benefit in excess of the current account balance and assumes that all claims are immediately payable. In practice, guaranteed death benefits are contingent and only payable upon the eventual death of policyholders if fund values remain below guarantee values. For guaranteed minimum withdrawal benefit, the amount at risk assumes that the benefit is paid as a lifetime annuity commencing at the earliest contractual income start age. These benefits are also contingent and only payable at scheduled maturity/income start dates in the future, if the policyholders are still living and have not terminated their policies and fund values remain below guarantee values. For all guarantees, the amount at risk is floored at zero at the single contract level.

⁽⁴⁾ The amount at risk net of reinsurance at December 31, 2021 was \$2,757 million (2020 – \$3,733 million) of which: US\$1,336 million (2020 – US\$1,839 million) was on our U.S. business, \$886 million (2020 – \$1,159 million) was on our Canadian business, US\$53 million (2020 – US\$71 million) was on our Japan business and US\$87 million (2020 – US\$111 million) was related to Asia (other than Japan) and our run-off reinsurance business.

⁽⁵⁾ Where a policy includes both living and death benefits, the guarantee in excess of the living benefit is included in the death benefit category as outlined in footnote 6.

⁽⁶⁾ Death benefits include standalone guarantees and guarantees in excess of living benefit guarantees where both death and living benefits are provided on a policy.

Investment categories for variable contracts with guarantees

Variable contracts with guarantees, including variable annuities and variable life, are invested, at the policyholder's discretion subject to contract limitations, in various fund types within the segregated fund accounts and other investments. The account balances by investment category are set out below.

As at December 31,

(\$ millions)

Investment category	2021	2020
Equity funds	\$ 52,528	\$ 47,348
Balanced funds	43,783	42,414
Bond funds	10,965	11,944
Money market funds	1,844	2,113
Other fixed interest rate investments	1,917	1,992
Total	\$ 111,037	\$ 105,811

Caution Related to Sensitivities

In the sections that follow, we provide sensitivities and risk exposure measures for certain risks. These include sensitivities due to specific changes in market prices and interest rate levels projected using internal models as at a specific date and are measured relative to a starting level reflecting the Company's assets and liabilities at that date and the actuarial factors, investment activity and investment returns assumed in the determination of policy liabilities. The risk exposures measure the impact of changing one factor at a time and assume that all other factors remain unchanged. 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 actuarial and investment return and future investment activity assumptions; actual experience differing from the assumptions, changes in business mix, effective tax rates and other market factors; and the general limitations of our internal models. For these reasons, the sensitivities should only be viewed as directional estimates of the underlying sensitivities for the respective factors based on the assumptions outlined below. Given the nature of these calculations, we cannot provide assurance that the actual impact on net income attributed to shareholders or on MLI's LICAT ratio will be as indicated. Market movements affect LICAT capital sensitivities both through income and other components of the regulatory capital framework. For example, LICAT is affected by changes to other comprehensive income.

Publicly Traded Equity Performance Risk Sensitivities and Exposure Measures

As outlined above, we have net exposure to equity risk through asset and liability mismatches; our variable annuity guarantee dynamic hedging strategy is not designed to completely offset the sensitivity of policy liabilities to all risks associated with the guarantees embedded in these products. The macro hedging strategy is designed to mitigate public equity risk arising from variable annuity guarantees not dynamically hedged and from other unhedged exposures in our insurance liabilities.

Changes in public equity prices may impact other items including, but not limited to, asset-based fees earned on assets under management and administration or policyholder account value, and estimated profits and amortization of deferred policy acquisition and other costs. These items are not hedged.

The table below shows the potential impact on net income attributed to shareholders resulting from an immediate 10%, 20% and 30% change in market values of publicly traded equities followed by a return to the expected level of growth assumed in the valuation of policy liabilities. If market values were to remain flat for an entire year, the potential impact would be roughly equivalent to an immediate decline in market values equal to the expected level of annual growth assumed in the valuation of policy liabilities. Further, if after market values dropped 10%, 20% or 30%, they continued to decline, remained flat, or grew more slowly than assumed in the valuation the potential impact on net income attributed to shareholders could be considerably more than shown. Refer to "Sensitivity of Earnings to Changes in Assumptions" for more information on the level of growth assumed and on the net income sensitivity to changes in these long-term assumptions. The potential impact is shown after taking into account the impact of the change in markets on the hedge assets. While we cannot reliably estimate the amount of the change in dynamically hedged variable annuity guarantee liabilities that will not be offset by the profit or loss on the dynamic hedge assets, we make certain assumptions for the purposes of estimating the impact on net income attributed to shareholders.

This estimate assumes that the performance of the dynamic hedging program would not completely offset the gain/loss from the dynamically hedged variable annuity guarantee liabilities. It assumes that the hedge assets are based on the actual position at the period end, and that equity hedges in the dynamic program are rebalanced at 5% intervals. In addition, we assume that the macro hedge assets are rebalanced in line with market changes.

It is also important to note that these estimates are illustrative, and that the dynamic and macro hedging programs may underperform these estimates, particularly during periods of high realized volatility and/or periods where both interest rates and equity market movements are unfavourable.

The Standards of Practice for the valuation of insurance contract liabilities and guidance published by the CIA constrain the investment return assumptions for public equities and certain ALDA assets based on historical return benchmarks for public equities. The potential impact on net income attributed to shareholders does not take into account possible changes to investment return assumptions resulting from the impact of declines in public equity market values on these historical return benchmarks.

Potential immediate impact on net income attributed to shareholders arising from changes to public equity returns^{(1),(2),(3)}

As at December 31, 2021 (\$ millions)	-30%	-20%	-10%	+10%	+20%	+30%
Underlying sensitivity to net income attributed to shareholders⁽⁴⁾						
Variable annuity guarantees	\$ (2,560)	\$ (1,480)	\$ (630)	\$ 440	\$ 750	\$ 960
General fund equity investments ⁽⁵⁾	(1,430)	(890)	(440)	450	880	1,320
Total underlying sensitivity before hedging	(3,990)	(2,370)	(1,070)	890	1,630	2,280
Impact of macro and dynamic hedge assets ⁽⁶⁾	2,060	1,190	500	(470)	(820)	(1,110)
Net potential impact on net income attributed to shareholders after impact of hedging	\$ (1,930)	\$ (1,180)	\$ (570)	\$ 420	\$ 810	\$ 1,170
As at December 31, 2020 (\$ millions)	-30%	-20%	-10%	+10%	+20%	+30%
Underlying sensitivity to net income attributed to shareholders⁽⁴⁾						
Variable annuity guarantees	\$ (3,150)	\$ (1,850)	\$ (800)	\$ 600	\$ 1,040	\$ 1,350
General fund equity investments ⁽⁵⁾	(1,350)	(840)	(410)	380	760	1,130
Total underlying sensitivity before hedging	(4,500)	(2,690)	(1,210)	980	1,800	2,480
Impact of macro and dynamic hedge assets ⁽⁶⁾	2,420	1,410	600	(620)	(1,110)	(1,480)
Net potential impact on net income attributed to shareholders after impact of hedging	\$ (2,080)	\$ (1,280)	\$ (610)	\$ 360	\$ 690	\$ 1,000

(1) See "Caution Related to Sensitivities" above.

(2) The tables above show the potential impact on net income attributed to shareholders resulting from an immediate 10%, 20% and 30% change in market values of publicly traded equities followed by a return to the expected level of growth assumed in the valuation of policy liabilities, excluding impacts from asset-based fees earned on assets under management and policyholder account value.

(3) Please refer to "Sensitivity of Earnings to Changes in Assumptions" section below for more information on the level of growth assumed and on the net income sensitivity to changes in these long-term assumptions.

(4) Defined as earnings sensitivity to a change in public equity markets including settlements on reinsurance contracts, but before the offset of hedge assets or other risk mitigants.

(5) This impact for general fund equity investments includes general fund investments supporting our policy liabilities, investment in seed money investments (in segregated and mutual funds made by Corporate and Other segment) and the impact on policy liabilities related to the projected future fee income on variable universal life and other unit linked products. The impact does not include: (i) any potential impact on public equity weightings; (ii) any gains or losses on AFS public equities held in the Corporate and Other segment; or (iii) any gains or losses on public equity investments held in Manulife Bank. The participating policy funds are largely self-supporting and generate no material impact on net income attributed to shareholders as a result of changes in equity markets.

(6) Includes the impact of rebalancing equity hedges in the macro and dynamic hedging program. The impact of dynamic hedge rebalancing represents the impact of rebalancing equity hedges for dynamically hedged variable annuity guarantee best estimate liabilities at 5% intervals but does not include any impact in respect of other sources of hedge ineffectiveness (e.g. fund tracking, realized volatility and equity, interest rate correlations different from expected among other factors).

The following table shows the potential impact to MLI's LICAT ratio resulting from changes in public equity market values.

Potential immediate impact on MLI's LICAT ratio arising from public equity returns different than the expected returns assumed in the valuation of policy liabilities^{(1),(2),(3)}

Percentage points	Impact on MLI's LICAT ratio					
	-30%	-20%	-10%	+10%	+20%	+30%
December 31, 2021	(1)	-	-	-	1	-
December 31, 2020	(3)	(1)	(1)	-	-	(1)

(1) See "Caution Related to Sensitivities" above. In addition, estimates exclude changes to the net actuarial gains/losses with respect to the Company's pension obligations as a result of changes in equity markets, as the impact on the quoted sensitivities is not considered to be material.

(2) The potential impact is shown assuming that the change in value of the hedge assets does not completely offset the change in the dynamically hedged variable annuity guarantee liabilities. The estimated amount that would not be completely offset relates to our practices of not hedging the provisions for adverse deviation and of rebalancing equity hedges for dynamically hedged variable annuity liabilities at 5% intervals.

(3) OSFI rules for segregated fund guarantees reflect full capital impacts of shocks over 20 quarters within a prescribed range. As such, the deterioration in equity markets could lead to further increases in capital requirements after the initial shock.

Interest Rate and Spread Risk Sensitivities and Exposure Measures

At December 31, 2021, we estimated the sensitivity of our net income attributed to shareholders to a 50 basis point parallel decline in interest rates to be a charge of \$200 million, and to a 50 basis point parallel increase in interest rates to be neutral.

The table below shows the potential impact on net income attributed to shareholders from a 50 basis point parallel move in interest rates. This includes a change of 50 basis points in current government, swap and corporate rates for all maturities across all markets with no change in credit spreads between government, swap and corporate rates, and with a floor of zero on government rates where government rates are not currently negative (currently zero floor applies to all countries we operate in except Japan), relative to the rates assumed in the valuation of policy liabilities, including embedded derivatives. For variable annuity guarantee liabilities that are dynamically hedged, it is assumed that interest rate hedges are rebalanced at 20 basis point intervals.

As the sensitivity to a 50 basis point change in interest rates includes any associated change in the applicable reinvestment scenarios, the impact of changes to interest rates for less than, or more than 50 basis points is unlikely to be linear. Furthermore, our sensitivities are not consistent across all regions in which we operate, and the impact of yield curve changes will vary depending upon the geography where the change occurs. Reinvestment assumptions used in the valuation of policy liabilities tend to amplify the negative effects of a decrease in interest rates and dampen the positive effects of interest rate increases. This is because the reinvestment assumptions used in the valuation of our insurance liabilities are based on interest rate scenarios and calibration criteria set by the ASB. Therefore, in any particular quarter, changes to the reinvestment assumptions are not fully aligned to changes in current market interest rates especially when there is a significant change in the shape of the interest rate curve. As a result, the impact from non-parallel movements may be materially different from the estimated impact of parallel movements. For example, if long-term interest rates increase more than short-term interest rates (sometimes referred to as a steepening of the yield curve) in North America, the decrease in the value of our swaps may be greater than the decrease in the value of our insurance liabilities. This could result in a charge to net income attributed to shareholders in the short-term even though the rising and steepening of the yield curve, if sustained, may have a positive long-term economic impact.

The interest rate and spread risk sensitivities are determined in isolation of each other and therefore do not reflect the combined impact of changes in government rates and credit spreads between government, swap and corporate rates occurring simultaneously. As a result, the impact of the summation of each individual sensitivity may be materially different from the impact of sensitivities to simultaneous changes in interest rate and spread risk.

The potential impact on net income attributed to shareholders does not take into account any future potential changes to our URR assumptions or calibration criteria for stochastic risk-free rates. In June 2021, the ASB issued a new promulgation with reductions to the URR and updates to the calibration criteria for stochastic risk-free rates. The updated standard included a reduction of 15 basis points in the URR and a corresponding change to stochastic risk-free rate modeling and was effective October 15, 2021. At December 31, 2021, we estimated the sensitivity of our net income attributed to shareholders to a 10 basis point reduction in the URR in all geographies, and a corresponding change to stochastic risk-free modeling, to be a charge of \$350 million (post-tax); and note that the impact of changes to the URR are not linear. The long-term URR for risk-free rates in Canada is prescribed at 2.9% and we use the same assumption for the U.S. Our assumption for Japan is 1.5%.

The potential impact on net income attributable to shareholders does not take into account other potential impacts of lower interest rate levels, for example, increased strain on the sale of new business or lower interest earned on our surplus assets. The impact on net income attributed to shareholders also does not reflect any unrealized gains or losses on AFS fixed income assets held in our Corporate and Other segment. Changes in the market value of these assets may provide a natural economic offset to the interest rate risk arising from our product liabilities. In order for there to also be an accounting offset, the Company would need to realize a portion of the AFS fixed income asset unrealized gains or losses. It is not certain we would realize any of the unrealized gains or losses available.

The impact does not reflect any potential effect of changing interest rates to the value of our ALDA assets. Rising interest rates could negatively impact the value of our ALDA assets (see “Critical Actuarial and Accounting Policies – Fair Value of Invested Assets”, below). More information on ALDA can be found under the section “Alternative Long-Duration Asset Performance Risk Sensitivities and Exposure Measures”, below.

Under LICAT, changes in unrealized gains or losses in our AFS bond portfolio resulting from interest rate shocks tend to dominate capital sensitivities. As a result, the reduction in interest rates improves LICAT ratios and vice-versa.

The following table shows the potential impact on net income attributed to shareholders as well as the change in the market value of AFS fixed income assets held in our Corporate and Other segment, which could be realized through the sale of these assets.

Potential impact on net income attributed to shareholders and MLI's LICAT ratio of an immediate parallel change in interest rates relative to rates assumed in the valuation of policy liabilities^{(1),(2),(3),(4)}

As at December 31,	2021		2020	
	-50bp	+50bp	-50bp	+50bp
Net income attributed to shareholders (\$ millions)	\$ (200)	\$ nil	\$ nil	\$ (100)
Changes in other comprehensive income from fair value changes in AFS fixed income assets held in the Corporate and Other segment (\$ millions)	2,100	(1,900)	2,100	(1,900)
MLI's LICAT ratio (change in percentage points) ⁽⁵⁾	5	(4)	8	(7)

⁽¹⁾ See “Caution Related to Sensitivities” above. In addition, estimates exclude changes to the net actuarial gains/losses with respect to the Company's pension obligations as a result of changes in interest rates, as the impact on the quoted sensitivities is not considered to be material.

⁽²⁾ Includes guaranteed insurance and annuity products, including variable annuity contracts as well as adjustable benefit products where benefits are generally adjusted as interest rates and investment returns change, a portion of which have minimum credited rate guarantees. For adjustable benefit products subject to minimum rate guarantees, the sensitivities are based on the assumption that credited rates will be floored at the minimum.

⁽³⁾ The amount of gain or loss that can be realized on AFS fixed income assets held in the Corporate and Other segment will depend on the aggregate amount of unrealized gain or loss.

⁽⁴⁾ Sensitivities are based on projected asset and liability cash flows and the impact of realizing fair value changes in AFS fixed income is based on the holdings at the end of the period.

⁽⁵⁾ LICAT impacts include realized and unrealized fair value changes in AFS fixed income assets. LICAT impacts do not reflect the impact of the scenario switch discussed below.

The following tables show the potential impact on net income attributed to shareholders resulting from a change in corporate spreads and swap spreads over government bond rates for all maturities across all markets with a floor of zero on the total interest rate, relative to the spreads assumed in the valuation of policy liabilities.

Potential impact on net income attributed to shareholders and MLI's LICAT ratio arising from changes to corporate spreads and swap spreads relative to spreads assumed in the valuation of policy liabilities^{(1),(2),(3)}

Corporate spreads ^{(4),(5)}	2021		2020	
	-50bp	+50bp	-50bp	+50bp
As at December 31,				
Net income attributed to shareholders (\$ millions) ⁽⁶⁾	\$ (600)	\$ 500	\$ (1,000)	\$ 900
MLI's LICAT ratio (change in percentage points) ⁽⁷⁾	(3)	4	(4)	4

Swap spreads	2021		2020	
	-20bp	+20bp	-20bp	+20bp
As at December 31,				
Net income attributed to shareholders (\$ millions)	\$ nil	\$ nil	\$ nil	\$ nil
MLI's LICAT ratio (change in percentage points) ⁽⁷⁾	nil	nil	nil	nil

⁽¹⁾ See "Caution Related to Sensitivities" above.

⁽²⁾ The impact on net income attributed to shareholders assumes no gains or losses are realized on our AFS fixed income assets held in the Corporate and Other segment and excludes the impact of changes in segregated fund bond values due to changes in credit spreads. The participating policy funds are largely self-supporting and generate no material impact on net income attributed to shareholders as a result of changes in corporate and swap spreads.

⁽³⁾ Sensitivities are based on projected asset and liability cash flows.

⁽⁴⁾ Corporate spreads are assumed to grade to the long-term average over five years.

⁽⁵⁾ As the sensitivity to a 50 basis point decline in corporate spreads includes the impact of a change in deterministic reinvestment scenarios where applicable, the impact of changes to corporate spreads for less than, or more than, the amounts indicated are unlikely to be linear.

⁽⁶⁾ The sensitivity on net income attributed to shareholders due to changes in corporate spreads decreased significantly as at December 31, 2021 compared with December 31, 2020, as the rise in risk-free interest rates reduced projected reinvestments in the actuarial valuation models.

⁽⁷⁾ LICAT impacts include realized and unrealized fair value change in AFS fixed income assets. Under LICAT, spread movements are determined from a selection of investment grade bond indices with BBB and better bonds for each jurisdiction. For LICAT, we use the following indices: FTSE TMX Canada All Corporate Bond Index, Barclays USD Liquid Investment Grade Corporate Index, and Nomura-BPI (Japan). LICAT impacts presented for corporate spreads do not reflect the impact of the scenario switch discussed below.

Swap spreads remain at low levels, and if they were to rise, this could generate material charges to net income attributed to shareholders.

LICAT Scenario Switch

Typically, a reduction in interest rates improves LICAT ratios and vice-versa. However, when interest rates decline past a certain threshold, reflecting the combined movement in risk-free rates and corporate spreads, a different prescribed interest rate stress scenario needs to be taken into account in the LICAT ratio calculation in accordance with OSFI guidelines for LICAT.

The LICAT guideline specifies four stress scenarios for interest rates and prescribes the methodology to determine the most adverse scenario to apply for each LICAT geographic region¹ based on current market inputs and the Company's balance sheet.

We estimate the potential impact of a switch in the scenarios would be approximately a one-time seven percentage point decrease in MLI's LICAT ratio. Should a scenario switch be triggered in a LICAT geographic region, the full impact would be reflected immediately for non-participating products while the impact for participating products would be reflected over six quarters using a rolling average of interest rate risk capital, in line with the smoothing approach prescribed in the OSFI Advisory effective January 1, 2021.

The potential negative impact of a switch in scenarios is not reflected in the stated risk-free rate and corporate spread sensitivities, as it is a one-time impact. After this one-time event, further decreases in risk-free interest rates would continue to improve the LICAT capital position, similar to the sensitivity above.

The level of interest rates and corporate spreads that would trigger a switch in the scenarios is dependent on market conditions and movements in the Company's asset and liability position. The scenario switch, if triggered, could reverse in response to subsequent increases in interest rates and/or corporate spreads.

Alternative Long-Duration Asset Performance Risk Sensitivities and Exposure Measures

The following table shows the potential impact on net income attributed to shareholders resulting from an immediate 10% change in market values of ALDA followed by a return to the expected level of growth assumed in the valuation of policy liabilities. If market values were to remain flat for an entire year, the potential impact would be roughly equivalent to an immediate decline in market values equal to the expected level of annual growth assumed in the valuation of policy liabilities. Further, if after market values dropped 10% they continued to decline, remained flat, or grew more slowly than assumed in the valuation of policy liabilities, the potential impact on net income attributed to shareholders could be considerably more than shown. Refer to "Sensitivity of Earnings to Changes in Assumptions" below, for more information on the level of growth assumed and on the net income sensitivity to changes in these long-term assumptions.

ALDA includes commercial real estate, timber and farmland real estate, infrastructure, and private equities, some of which relate to oil and gas.

¹ LICAT geographic locations include North America, the United Kingdom, Europe, Japan, and Other Region.

Potential impact on net income attributed to shareholders and MLI LICAT ratio arising from changes in ALDA returns relative to returns assumed in the valuation of policy liabilities^{(1),(2),(3),(4),(5),(6)}

As at December 31, (\$ millions)	2021		2020	
	-10%	+10%	-10%	+10%
Net income attributed to shareholders				
Real estate, agriculture and timber assets	\$ (1,400)	\$ 1,400	\$ (1,600)	\$ 1,400
Private equities and other ALDA	(1,900)	1,800	(2,000)	1,900
Total	\$ (3,300)	\$ 3,200	\$ (3,600)	\$ 3,300
MLI's LICAT ratio (change in percentage points)	(4)	3	(5)	4

⁽¹⁾ See "Caution Related to Sensitivities" above.

⁽²⁾ This impact is calculated as at a point-in-time impact and does not include: (i) any potential impact on ALDA weightings or (ii) any gains or losses on ALDA held in the Corporate and Other segment.

⁽³⁾ The participating policy funds are largely self-supporting and generate no material impact on net income attributed to shareholders as a result of changes in ALDA returns. For some classes of ALDA, where there is not an appropriate long-term benchmark available, the return assumptions used in valuation are not permitted by the Standards of Practice and CIA guidance to result in a lower reserve than an assumption based on a historical return benchmark for public equities in the same jurisdiction.

⁽⁴⁾ Net income impact does not consider any impact of the market correction on assumed future return assumptions.

⁽⁵⁾ Please refer to "Sensitivity of Earnings to Changes in Assumptions" section below for more information on the level of growth assumed and on the net income sensitivity to changes in these long-term assumptions.

⁽⁶⁾ The impact of changes to the portfolio asset mix supporting our North American legacy businesses are reflected in the sensitivities when the changes take place.

Foreign Exchange Risk Sensitivities and Exposure Measures

We generally match the currency of our assets with the currency of the insurance and investment contract liabilities they support, with the objective of mitigating risk of loss arising from foreign exchange rate changes. As at December 31, 2021, we did not have a material unmatched currency exposure.

The following table shows the potential impact on core earnings of a 10% change in the value of the Canadian dollar relative to our other key operating currencies.

Potential impact on core earnings of changes in foreign exchange rates^{(1),(2)}

As at December 31, (\$ millions)	2021		2020	
	+10% strengthening	-10% weakening	+10% strengthening	-10% weakening
10% change in the Canadian dollar relative to the U.S. dollar and the Hong Kong dollar	\$ (400)	\$ 400	\$ (390)	\$ 390
10% change in the Canadian dollar relative to the Japanese yen	(40)	40	(40)	40

⁽¹⁾ This item is a non-GAAP financial measure. See "Non-GAAP and Other Measures" below for more information.

⁽²⁾ See "Caution Related to Sensitivities" above.

LICAT regulatory ratios are also sensitive to the fluctuations in the Canadian dollar relative to our other key operating currencies. The direction and materiality of this sensitivity varies across various capital metrics.

Liquidity Risk Exposure Strategy

We manage liquidity levels of the consolidated group and key subsidiaries against established thresholds. These thresholds are based on liquidity stress scenarios over different time horizons.

Increased use of derivatives for hedging purposes has necessitated greater emphasis on measurement and management of contingent liquidity risk related to these instruments, in particular the movement of "over-the-counter" derivatives to central clearing in the U.S. and Japan places an emphasis on cash as the primary source of liquidity as opposed to security holdings. The market value of our derivative portfolio is therefore regularly stress tested to assess the potential collateral and cash settlement requirements under various market conditions.

Manulife Bank (the "Bank") has a standalone liquidity risk management framework. The framework includes stress testing, cash flow modeling, a funding plan and a contingency plan. The Bank has an established securitization infrastructure which enables the Bank to access a range of funding and liquidity sources. The Bank models extreme but plausible stress scenarios that demonstrate that the Bank has a sufficient pool of highly liquid money market securities and holdings of sovereign bonds, near-sovereign bonds and other liquid marketable securities, which when combined with the Bank's capacity to securitize residential mortgage assets provides sufficient liquidity to meet potential requirements under these stress scenarios.

Similarly, Global WAM has a standalone liquidity risk management framework for the business managing assets or manufacturing investment products for third-party clients. We maintain fiduciary standards to ensure that client and regulatory expectations are met in relation to the liquidity risks taken within each investment. Additionally, we regularly monitor and review the liquidity of our investment products as part of our ongoing risk management practices.

Market Risk Factors

Our most significant source of publicly traded equity risk arises from equity-linked products with guarantees, where the guarantees are linked to the performance of the underlying funds.

- Publicly traded equity performance risk arises from a variety of sources, including guarantees associated with equity-linked investments such as variable annuity and segregated fund products, general fund investments in publicly traded equities and mutual funds backing general fund product liabilities.
- Market conditions resulting in reductions in the asset value we manage has an adverse effect on the revenues and profitability of our investment management business, which depends on fees related primarily to the values of assets under management and administration.
- Guaranteed benefits of variable annuity and segregated funds are contingent and payable upon death, maturity, permitted withdrawal or annuitization. If equity markets decline or even if they increase by an amount lower than that assumed in our actuarial valuation, additional liabilities may need to be established to cover the contingent liabilities, resulting in a reduction in net income attributed to shareholders and regulatory capital ratios. Further, if equity markets do not recover to the amount of the guarantees, by the dates the liabilities are due, the accrued liabilities will need to be paid out in cash. In addition, sustained flat or declining public equity markets would likely reduce asset-based fee revenues related to variable annuities and segregated funds with guarantees and related to other wealth and insurance products.
- Where publicly traded equity investments are used to support general fund product liabilities, the policy valuation incorporates projected investment returns on these assets. If actual returns are lower than the expected returns, the investment losses will reduce net income attributed to shareholders.
- For products where the investment strategy applied to future cash flows in the policy valuation includes investing a specified portion of future cash flows in publicly traded equities, a decline in the value of publicly traded equities relative to other assets could require us to change the investment mix assumed for future cash flows, which may increase policy liabilities and reduce net income attributed to shareholders. A reduction in the outlook for expected future returns for publicly traded equities, which could result from a fundamental change in future expected economic growth, would increase policy liabilities and reduce net income attributed to shareholders. Furthermore, to the extent publicly traded equities are held as AFS, other than temporary impairments that arise will reduce income.
- Expected long-term annual market growth assumptions for public equities for key markets are based on long-term historical observed experience. See “Critical Actuarial and Accounting Policies” below for the rates used in the stochastic valuation of our segregated fund guarantee business. The calibration of the economic scenario generators that are used to value segregated fund guarantee business complies with current CIA Standards of Practice for the valuation of these products. Implicit margins, determined through stochastic valuation processes, lower net yields used to establish policy liabilities. Assumptions used for public equities backing liabilities are also developed based on historical experience but are constrained by different CIA Standards of Practice and differ slightly from those used in stochastic valuation. Alternative asset return assumptions vary based on asset class but are largely consistent, after application of valuation margins and differences in taxation, with returns assumed for public equities.

We experience interest rate and spread risk within the general fund primarily due to the uncertainty of future returns on investments.

- Interest rate and spread risk arises from general fund guaranteed benefit products, general fund adjustable benefit products with minimum rate guarantees, general fund products with guaranteed surrender values, segregated fund products with minimum benefit guarantees and from surplus fixed income investments. The risk arises within the general fund primarily due to the uncertainty of future returns on investments to be made as assets mature and as recurring premiums are received and invested or reinvested to support longer dated liabilities. Interest rate risk also arises due to minimum rate guarantees and guaranteed surrender values on products where investment returns are generally passed through to policyholders. A rapid rise in interest rates may also result in losses attributable to early liquidation of fixed income instruments supporting contractual surrender benefits, if customers surrender to take advantage of higher interest rates on offer elsewhere. In contrast, in a lower interest rate environment, borrowers may prepay or redeem fixed income securities, mortgages and loans with greater frequency in order to borrow at lower market rates, potentially reducing the returns on our investment portfolio, if there are no make whole conditions. Substantially all our fixed income securities, mortgages and loans portfolio include make whole conditions.
- The valuation of policy liabilities reflects assumptions for the yield on future investments and the projected cash flows associated with interest rate hedges. A general decline in interest rates, without a change in corporate bond spreads and swap spreads, will reduce the assumed yield on future investments but favourably impact the value of lengthening interest rate hedges. Conversely, a general increase in interest rates, without a change in corporate bond spreads and swap spreads, will increase the assumed yield on future investments, but unfavourably impact the value of lengthening interest rate hedges. The Company’s disclosed estimated impact from interest rate movements reflects a parallel increase and decrease in interest rates of specific amounts. The impact from non-parallel movements may be different from the estimated impact of parallel movements. For further information on interest rate scenarios refer to “Interest Rate and Spread Risk Sensitivities and Exposure Measures”. In addition, decreases in corporate bond spreads or increases in swap spreads should generally result in an increase in policy liabilities and a reduction in net income attributed to shareholders, while an increase in corporate bond spreads or a decrease in swap spreads should generally have the opposite impact. The impact of changes in interest rates and in spreads may be partially offset by changes to credited rates on adjustable products that pass-through investment returns to policyholders.

- For segregated fund and variable annuity products that contain investment guarantees in the form of benefit guarantees, a sustained increase in interest rate volatility or a decline in interest rates would increase the costs of hedging the benefit guarantees provided. The impact of changes in interest rates are managed within the variable annuity dynamic hedging program.

We experience ALDA performance risk when actual returns are lower than expected returns.

- ALDA performance risk arises from general fund investments in directly-owned real estate, timber properties, farmland properties, infrastructure, oil and gas assets, and private equities.
- Where these assets are used to support policy liabilities, the policy valuation incorporates projected investment returns on these assets. ALDA assumptions vary by asset class and generally have a similar impact on policy liabilities as public equities would. If actual returns are lower than the expected returns, there will be a negative impact to the net income attributed to shareholders. A reduction in the outlook for expected future returns for ALDA, which could result from a variety of factors such as a fundamental change in future expected economic growth or declining risk premiums due to increased competition for such assets, would increase policy liabilities and reduce net income attributed to shareholders. Further, if returns on certain external asset benchmarks used to determine permissible assumed returns under the CIA Standards of Practice are lower than expected, expected future returns will be adjusted accordingly and the Company's policy liabilities will increase, reducing net income attributed to shareholders.
- The value of oil and gas assets could be adversely affected by declines in energy prices as well as by a number of other factors including production declines, uncertainties associated with estimating oil and natural gas reserves, difficult economic conditions, changes in consumer preferences to transition to a low-carbon economy, competition from renewable energy providers and geopolitical events. Changes in government regulation of the oil and gas industry, including environmental regulation, carbon taxes and changes in the royalty rates resulting from provincial royalty reviews, could also adversely affect the value of our oil and gas investments.
- Difficult economic conditions could result in higher vacancy, lower rental rates and lower demand for real estate investments, all of which would adversely impact the value of our real estate investments. Difficult economic conditions could also prevent companies in which we have made private equity investments from achieving their business plans and could cause the value of these investments to fall, or even cause the companies to fail. Our commercial real estate investments may be negatively impacted by the trends solidified by COVID-19, including the digitization of work and the transformation of physical retail. Declining valuation multiples in the public equity market would also likely cause values to decline in our private equity portfolio. The timing and amount of investment income from private equity investments is difficult to predict, and investment income from these investments can vary from quarter to quarter.
- Our timberland and farmland holdings are exposed to natural risks, such as prolonged drought, wildfires, insects, windstorms, flooding, and climate change. We are generally not insured for these types of risks but seek to mitigate their impact through portfolio diversification and prudent operating practices.
- More broadly, a rising interest rate environment could result in the value of some of our ALDA investments declining, particularly those with fixed contractual cash flows such as real estate.
- The negative impact of changes in these factors can take time to be fully reflected in the valuations of private investments, including ALDA, especially if the change is large and rapid, as market participants adjust their forecasts and better understand the potential medium to long-term impact of such changes. As a result, valuation changes in any given period may reflect the delayed impact of events that occurred in prior periods.
- We rely on a diversified portfolio of ALDA to generate relatively stable investment returns. Diversification benefits may be reduced at times, especially during a period of economic stress, which would adversely affect portfolio returns.
- The Company determines investment return assumptions for ALDA in accordance with the Standards of Practice for the valuation of insurance contract liabilities and guidance published by the CIA. The guidance requires that the investment return assumption for these assets should not be higher than the historical long-term average returns of an appropriate broad-based index. Where such experience is not available, the investment return assumption for these assets should not result in a lower reserve than an assumption based on a historical-return benchmark for public equities in the same jurisdiction. As a result, the impact of changes in the historical returns for public equity benchmarks may result in an update to our investment return assumptions for ALDA.

Our liabilities are valued based on an assumed asset investment strategy over the long-term.

- We develop an investment strategy for the assets that back our liabilities. The strategy involves making assumptions on the kind of assets in which we will invest and the returns such assets will generate.
- We may not be able to implement our investment strategy as intended due to a lack of assets available at the returns we assume. This may result in a change in investment strategy and/or assumed future returns, thus adversely impacting our financial results.
- From time to time we may decide to adjust our portfolio asset mix which may result in adverse impacts to our financial results for one or more periods.

We experience foreign exchange risk as a substantial portion of our business is transacted in currencies other than Canadian dollars.

- Our financial results are reported in Canadian dollars. A substantial portion of our business is transacted in currencies other than Canadian dollars, mainly U.S. dollars, Hong Kong dollars and Japanese yen. If the Canadian dollar strengthens relative to these currencies, net income attributed to shareholders would decline and our reported shareholders' equity would decline. A weakening of the Canadian dollar against the foreign currencies in which we do business would have the opposite effect and would increase net income attributed to shareholders and shareholders' equity.

The Company's hedging strategies will not fully reduce the market risks related to the product guarantees and fees being hedged, hedging costs may increase and the hedging strategies expose the Company to additional risks.

- Our hedging strategies rely on the execution of derivative transactions in a timely manner. Market conditions can limit availability of hedging instruments, requiring us to post additional collateral, and can further increase the costs of executing derivative transactions. Therefore, hedging costs and the effectiveness of the strategy may be negatively impacted if markets for these instruments become illiquid. The Company is subject to the risk of increased funding and collateral demands which may become significant as equity markets increase.
- The Company is also subject to counterparty risks arising from the derivative instruments and to the risk of increased funding and collateral demands which may become significant as equity markets and interest rates increase. The strategies are highly dependent on complex systems and mathematical models that are subject to error and rely on forward-looking long-term assumptions that may prove inaccurate, and which rely on sophisticated infrastructure and personnel which may fail or be unavailable at critical times. Due to the complexity of the strategies, there may be additional unidentified risks that may negatively impact our business and future financial results. In addition, rising equity markets and interest rates that would otherwise result in profits on variable annuities will be offset by losses from our hedging positions. For further information pertaining to counterparty risks, refer to the risk factor "If a counterparty fails to fulfill its obligations, we may be exposed to risks we had sought to mitigate".
- Under certain market conditions, which include a sustained increase in realized equity and interest rate volatilities, a decline in interest rates, or an increase in the correlation between equity returns and interest rate declines, the costs of hedging the benefit guarantees provided in variable annuities may increase or become uneconomic. In addition, there can be no assurance that our dynamic hedging strategy will fully offset the risks arising from the variable annuities being hedged.
- Policy liabilities for variable annuity guarantees are determined using long-term forward-looking estimates of volatilities. These long-term forward-looking volatilities assumed for policy liabilities meet the CIA calibration standards. To the extent that realized equity or interest rate volatilities in any quarter exceed the assumed long-term volatilities, or correlations between interest rate changes and equity returns are higher, there is a risk that rebalancing will be greater and more frequent, resulting in higher hedging costs.
- The level of guarantee claims returns or other benefits ultimately paid will be impacted by policyholder longevity and policyholder behaviour including the timing and amount of withdrawals, lapses, fund transfers and contributions. The sensitivity of liability values to equity market and interest rate movements that we hedge are based on long-term expectations for longevity and policyholder behaviour since the impact of actual policyholder longevity and policyholder behaviour variances cannot be hedged using capital markets instruments. The efficiency of our market risk hedging is directly affected by accuracy of the assumptions related to policyholder longevity and policyholder behaviour.

Changes in market interest rates may impact our net income attributed to shareholders and capital ratios.

- A prolonged low or negative (nominal or real) interest rate environment may result in charges related to lower fixed income reinvestment assumptions and an increase in new business strain until products are repositioned for the lower rate environment. Other potential consequences of low interest rates include:
 - Low interest rates could negatively impact sales;
 - Lower risk-free rates tend to increase the cost of hedging, and as a result the offering of guarantees could become uneconomic;
 - The reinvestment of cash flows into low yielding bonds could result in lower future earnings due to lower returns on surplus and general account assets supporting in-force liabilities, and due to guarantees embedded in products including minimum guaranteed rates in participating and adjustable products;
 - A lower interest rate environment could be correlated with other macro-economic factors including unfavourable economic growth and lower returns on other asset classes;
 - Lower interest rates could contribute to potential impairments of goodwill;
 - Lower interest rates could lead to lower mean bond parameters used for the stochastic valuation of segregated fund guarantees, resulting in higher policy liabilities;
 - Lower interest rates would also reduce expected earnings on in-force policies;
 - A prolonged low or negative interest rate environment may also result in the ASB lowering the promulgated URR and require us to increase our provisions;
 - Lower interest rates could also trigger a switch to a more adverse prescribed interest stress scenario, increasing LICAT capital. See "LICAT Scenario Switch" above;
 - The difference between the current investable returns and the returns used in pricing new business are generally capitalized when new business is written. Lower interest rates result in higher new business strain until products are re-priced or interest rates increase; and
 - Fixed income reinvestment rates other than the URR are based on current market rates. The net income sensitivity to changes in current rates is outlined in the section "Interest Rate and Spread Risk Sensitivities and Exposure Measures" above.
- A rapid rise in interest rates could lead to customers surrendering policies and we may incur losses attributable to early liquidation of fixed income instruments supporting contractual surrender benefits.

The global interest rate benchmark reform, leading to the transition away from LIBOR / IBOR to alternative reference rates based on risk-free rates, may impact the value of our IBOR-based financial instruments.

- Manulife holds different types of instruments, including derivatives, bonds, loans and other floating rate instruments that reference LIBOR (London Interbank Offered Rate) or other Interbank Offered Rates (IBORs). As previously announced by the U.K. Financial Conduct Authority (FCA) in July 2017, the FCA will no longer compel panel banks to submit rate information used to determine LIBOR post 2021. On March 5, 2021, the Intercontinental Exchange Benchmark Administration, the administrator of LIBOR, announced that it will cease the publication of one-week and two-month USD LIBOR and all non-USD (GBP, EUR, CHF and JPY) LIBOR settings at the end of December 2021, but will extend the publication of the remaining USD LIBOR tenors (overnight and one, three, six and 12 month USD LIBOR) until the end of June 2023. In addition, on June 22, 2021, OSFI published a letter setting out their expectation that Federally Regulated Financial Institutions (FRFIs) will stop using USD LIBOR as a reference rate as soon as possible and will not enter into transactions referencing these rates after December 31, 2021. On December 16, 2021, the Canadian Alternative Reference Rate (CARR) working group recommended that Refinitiv Benchmark Services (UK) Limited (RBSL), the administrator of Canadian Dollar Offered Rate (CDOR), cease publication of all of CDOR's remaining tenors after June 30, 2024. The decision to ultimately cease CDOR lies solely with RBSL.
- Any changes to or discontinuation of LIBOR / IBOR or change to an alternative reference rate may adversely affect the valuation of our existing interest-rate linked and derivatives securities we hold, the effectiveness of those derivatives in mitigating our risks, securities we have issued, or other assets, liabilities and other contractual rights and obligations whose value is tied to LIBOR / IBOR or to a LIBOR / IBOR alternative. Furthermore, depending on the nature of the alternative reference rate, we may become exposed to additional risks such as legal settlement risk associated with instruments having inadequate fallback language.
- To ensure a timely transition to alternative reference rates, Manulife has established an enterprise-wide program and governance structure across functions to identify, measure, monitor and manage financial and non-financial risks of transition. Manulife's enterprise-wide program focuses on quantifying our exposures to various IBORs, evaluating contract fallback language, contract remediation, risk management, assessing accounting and tax implications, and ensuring operational readiness for IT systems, models, processes and controls. We continue to monitor market developments, changes and guidance from regulators, and adjust our project plan to align with updated timelines. We have successfully transitioned our exposures to LIBOR rates that decommissioned on December 31, 2021 and we are on track with our transition activities for upcoming USD LIBOR and other IBORs cessation dates.

Liquidity risk is impacted by various factors, including but not limited to, capital and credit market conditions, re-pricing risk on letters of credit, collateral pledging obligations, and reliance on confidence sensitive deposits.

- Adverse market conditions may significantly affect our liquidity risk.
 - Reduced asset liquidity may restrict our ability to sell certain types of assets for cash without taking significant losses. If providers of credit preserve their capital, our access to borrowing from banks and others or access to other types of credit such as letters of credit, may be reduced. If investors have a negative perception of our creditworthiness, this may reduce access to wholesale borrowing in the debt capital markets or increase borrowing costs.
 - Liquid assets are required to pledge as collateral to support activities such as the use of derivatives for hedging purposes and to cover cash settlement associated with such derivatives.
 - The principal sources of our liquidity are cash, insurance and annuity premiums, fee income earned on AUM, cash flow from our investment portfolios, and our assets that are readily convertible into cash, including money market securities. The issuance of long-term debt, common and preferred shares and other capital securities may also increase our available liquid assets or be required to replace certain maturing or callable liabilities. In the event we seek additional financing, the availability and terms of such financing will depend on a variety of factors including market conditions, the availability of credit to the financial services industry, our credit ratings and credit capacity, as well as the possibility that customers, lenders or investors could develop a negative perception of our long-term or short-term financial prospects if we incur large financial losses or if the level of our business activity decreases due to a significant market downturn.
- Increased cleared derivative transactions coupled with margin rules on non-cleared derivatives could adversely impact our liquidity risk.
 - Over time our existing over-the-counter derivatives will migrate to clearing houses, or the Company and its counterparties may have the right to cancel derivative contracts after specific dates or in certain situations such as a ratings downgrade, which could accelerate the transition to clearing houses. Cleared derivatives are subject to both initial and variation margin requirements, and a more restrictive set of eligible collateral than non-cleared derivatives.
 - In addition, initial margin rules for new non-cleared derivatives have been implemented since September 1, 2021, which may further increase our liquidity needs over time.
- We are exposed to re-pricing risk on letters of credit.
 - In the normal course of business, third-party banks issue letters of credit on our behalf. In lieu of posting collateral, our businesses utilize letters of credit for which third parties are the beneficiaries, as well as for affiliate reinsurance transactions between subsidiaries of MFC. Letters of credit and letters of credit facilities must be renewed periodically. At time of renewal, the Company is exposed to re-pricing risk and under adverse conditions increases in costs may be realized. In the most extreme scenarios, letters of credit capacity could become constrained due to non-renewals which would restrict our flexibility to manage capital. This could negatively impact our ability to meet local capital requirements or our sales of products in jurisdictions in which our operating companies have been affected. As at December 31, 2021, letters of credit for which third parties are

beneficiaries, in the amount of \$99 million, were outstanding. There were no assets pledged against these outstanding letters of credit as at December 31, 2021.

- Our obligations to pledge collateral or make payments related to declines in value of specified assets may adversely affect our liquidity.
 - In the normal course of business, we are obligated to pledge assets to comply with jurisdictional regulatory and other requirements including collateral pledged in relation to derivative contracts and assets held as collateral for repurchase funding agreements. The amount of collateral we may be required to post under these agreements, and the amount of payments we are required to make to our counterparties, may increase under certain circumstances, including a sustained or continued decline in the value of our derivative contracts. Such additional collateral requirements and payments could have an adverse effect on our liquidity. As at December 31, 2021, total pledged assets were \$9,896 million, compared with \$10,362 million as of December 31, 2020.
- Our bank subsidiary relies on confidence sensitive deposits.
 - Manulife Bank is a wholly owned subsidiary of our Canadian life insurance operating company, MLI. The Bank is principally funded by retail deposits. A real or perceived problem with the Bank or its parent companies could result in a loss of confidence in the Bank's ability to meet its obligations, which in turn may trigger a significant withdrawal of deposit funds. A substantial portion of the Bank's deposits are demand deposits that can be withdrawn at any time, while the majority of the Bank's assets are first residential mortgages in the form of home equity lines of credit, which represent long-term funding obligations. If deposit withdrawal speeds exceed our extreme stress test assumptions, the Bank may be forced to sell assets at a loss to third parties or call the home equity lines of credit.

The declaration and payment of dividends and the amount thereof is subject to change.

- The holders of common shares are entitled to receive dividends as and when declared by the Board, subject to the preference of the holders of Class A Shares, Class 1 Shares, Class B Shares (collectively, the "Preferred Shares") and any other shares ranking senior to the common shares with respect to priority in payment of dividends. The declaration and payment of dividends and the amount thereof is subject to the discretion of the Board of MFC and is dependent upon the results of operations, financial condition, cash requirements and future prospects of, and regulatory and contractual restrictions on the payment of dividends by MFC and other factors deemed relevant by the Board of MFC. Although MFC has historically declared quarterly cash dividends on the common shares, MFC is not required to do so and the Board of MFC may reduce, defer or eliminate MFC's common share dividend in the future.
- The foregoing risk disclosure in respect of the declaration and payment of dividends on the common shares applies equally in respect of the declaration and payment of dividends on the Preferred Shares, notwithstanding that the Preferred Shares have a fixed rate of dividend.
- See "Government Regulation" and "Dividends" in MFC's Annual Information Form dated February 9, 2022 for a summary of additional statutory and contractual restrictions concerning the declaration of dividends by MFC.

Credit Risk

Credit risk is the risk of loss due to the inability or unwillingness of a borrower or counterparty to fulfill its payment obligations.

Please read below for details on factors that could impact our level of credit risk and the strategies used to manage this risk:

Credit Risk Management Strategy

Credit risk is governed by the Credit Committee which oversees the overall credit risk management program. The Company has established objectives for overall quality and diversification of our general fund investment portfolio and criteria for the selection of counterparties, including derivative counterparties, reinsurers and insurance providers. Our policies establish exposure limits by borrower, corporate connection, quality rating, industry, and geographic region, and govern the usage of credit derivatives. Corporate connection limits vary according to risk rating. Our general fund fixed income investments are primarily public and private investment grade bonds and commercial mortgages. We have a program for selling Credit Default Swaps ("CDS") that employs a highly selective, diversified and conservative approach. CDS decisions follow the same underwriting standards as our cash bond portfolio. Our credit granting units follow a defined evaluation process that provides an objective assessment of credit proposals. We assign a risk rating, based on a standardized 22-point scale consistent with those of external rating agencies, following a detailed examination of the borrower that includes a review of business strategy, market competitiveness, industry trends, financial strength, access to funds, and other risks facing the counterparty. We assess and update risk ratings regularly. For additional input to the process, we also assess credit risks using a variety of industry standard market-based tools and metrics. We map our risk ratings to pre-established probabilities of default and loss given defaults, based on historical industry and Company experience, and to resulting default costs.

We establish delegated credit approval authorities and make credit decisions on a case-by-case basis at a management level appropriate to the size and risk level of the transaction, based on the delegated authorities that vary according to risk rating. Major credit decisions are approved by the Credit Committee and the largest decisions are approved by the CEO and, in certain cases, by the Board.

We limit the types of authorized derivatives and applications and require pre-approval of all derivative application strategies and regular monitoring of the effectiveness of derivative strategies. Derivative counterparty exposure limits are established based on a minimum acceptable counterparty credit rating (generally A- from internationally recognized rating agencies). We measure both bilateral and

exchange-traded derivative counterparty exposure as net potential credit exposure, which takes into consideration mark-to-market values of all transactions with each counterparty, net of any collateral held, and an allowance to reflect future potential exposure. Reinsurance counterparty exposure is measured reflecting the level of ceded liabilities net of collateral held. The creditworthiness of all reinsurance counterparties is reviewed internally on a regular basis.

Regular reviews of the credits within the various portfolios are undertaken with the goal of identifying changes to credit quality and, where appropriate, taking corrective action. Prompt identification of problem credits is a key objective.

We establish an allowance for losses on a loan when it becomes impaired as a result of deterioration in credit quality, to the extent there is no longer assurance of timely realization of the carrying value of the loan and related investment income. We reduce the carrying value of an impaired loan to its estimated net realizable value when we establish the allowance. We establish an allowance for losses on reinsurance contracts when a reinsurance counterparty becomes unable or unwilling to fulfill its contractual obligations. We base the allowance for loss on current recoverables and ceded policy liabilities. There is no assurance that the allowance for losses will be adequate to cover future potential losses or that additional allowances or asset write-downs will not be required.

Policy liabilities include general provisions for credit losses from future asset impairments.

Our credit policies, procedures and investment strategies are established under a strong governance framework and are designed to ensure that risks are identified, measured and monitored consistent with our risk appetite. We seek to actively manage credit exposure in our investment portfolio to reduce risk and minimize losses, and derivative counterparty exposure is managed proactively. However, we could experience volatility on a quarterly basis and losses could potentially rise above long-term expected and historical levels.

Credit Risk Exposure Measures

Allowances for losses on loans are established taking into consideration normal historical credit loss levels and future expectations, with an allowance for adverse deviations. Additionally, we make general provisions for credit losses from future asset impairments in the determination of policy liabilities. The amount of the provision for credit losses included in policy liabilities is established through regular monitoring of all credit related exposures, considering such information as general market conditions, industry and borrower specific credit events and any other relevant trends or conditions. To the extent that an asset is written off, or disposed of, any allowance and general provisions for credit losses are released.

Our general provision for credit losses included in policyholder liabilities as at December 31, 2021 was \$4,109 million compared with \$4,387 million as at December 31, 2020. This provision represents 1.5% of our fixed income assets¹ supporting policy liabilities reported on our Consolidated Statements of Financial Position as at December 31, 2021.

As at December 31, 2021 and December 31, 2020, the impact of a 50% increase in fixed income credit default rates over the next year in excess of the rates assumed in policy liabilities, would reduce net income attributed to shareholders by \$70 million and \$80 million, respectively.

Credit downgrades of fixed income investments would adversely impact our regulatory capital, as required capital levels for these investments are based on the credit quality of each instrument. In addition, credit downgrades could also lead to a higher general provision for credit losses than had been assumed in policy liabilities, resulting in an increase in policy liabilities and a reduction in net income attributed to shareholders. The estimated impact of a one-notch² ratings downgrade across 25% of fixed income assets would result in an increase to policy liabilities and a decrease to our net income attributed to shareholders of \$300 million post-tax. This ratings downgrade would result in a one percentage point reduction to our LICAT ratio.

Approximately 11% of the impact from the one-notch ratings downgrade on our policy liabilities and net income attributed to shareholders noted above relates to fixed income assets rated below investment grade. Approximately 1% of our fixed income assets as of December 31, 2021 is rated below investment grade. The table below shows net impaired assets and allowances for loan losses.

Net Impaired Assets and Loan Losses

As at December 31,

(\$ millions, unless otherwise stated)

	2021	2020
Net impaired fixed income assets	\$ 228	\$ 296
Net impaired fixed income assets as a % of total invested assets	0.053%	0.072%
Allowance for loan losses	\$ 44	\$ 107

Credit Risk Factors

Borrower or counterparty defaults or downgrades could adversely impact our earnings.

Worsening regional and global economic conditions could result in borrower or counterparty defaults or downgrades and could lead to increased provisions or impairments related to our general fund invested assets and off-balance sheet derivative financial instruments, and an increase in provisions for future credit impairments to be included in our policy liabilities. Any of our reinsurance providers being unable or unwilling to fulfill their contractual obligations related to the liabilities we cede to them could lead to an increase in policy liabilities.

¹ Includes debt securities, private placements and mortgages.

² A one-notch downgrade is equivalent to a ratings downgrade from A to A- or BBB- to BB+.

Our invested assets primarily include investment grade bonds, private placements, commercial mortgages, asset-backed securities, and consumer loans. These assets are generally carried at fair value, but changes in value that arise from a credit-related impairment are recorded as a charge against income. The return assumptions incorporated in actuarial liabilities include an expected level of future asset impairments. There is a risk that actual impairments will exceed the assumed level of impairments in the future and earnings could be adversely impacted.

Volatility may arise from defaults and downgrade charges on our invested assets and as a result, losses could potentially rise above long-term expected levels. Net impaired fixed income assets were \$228 million, representing 0.05% of total general fund invested assets as at December 31, 2021, compared with \$295 million, representing 0.07% of total general fund invested assets as at December 31, 2020.

If a counterparty fails to fulfill its obligations, we may be exposed to risks we had sought to mitigate.

- The Company uses derivative financial instruments to mitigate exposures to public equity, foreign currency, interest rate and other market risks arising from on-balance sheet financial instruments, guarantees related to variable annuity products, selected anticipated transactions and certain other guarantees. The Company may be exposed to counterparty risk if a counterparty fails to pay amounts owed to us or otherwise perform its obligations to us. Counterparty risk increases during economic downturns because the probability of default increases for most counterparties. If any of these counterparties default, we may not be able to recover the amounts due from that counterparty. As at December 31, 2021, the largest single counterparty exposure, without taking into account the impact of master netting agreements or the benefit of collateral held, was \$2,132 million (2020 – \$4,110 million). The net exposure to this counterparty, after taking into account master netting agreements and the fair value of collateral held, was nil (2020 – nil). As at December 31, 2021, the total maximum credit exposure related to derivatives across all counterparties, without taking into account the impact of master netting agreements and the benefit of collateral held, was \$18,226 million (2020 – \$28,685 million) compared with \$294 million after taking into account master netting agreements and the benefit of fair value of collateral held (2020 – \$119 million). The exposure to any counterparty would grow if, upon the counterparty's default, markets moved such that our derivatives with that counterparty gain in value. Until we are able to replace that derivative with another counterparty, the gain on the derivatives subsequent to the counterparty's default would not be backed by collateral.
- The Company reinsures a portion of the business we enter into; however, we remain legally liable for contracts that we had reinsured. In the event that any of our reinsurance providers were unable or unwilling to fulfill their contractual obligations related to the liabilities we cede to them, we would need to increase actuarial reserves, adversely impacting our net income attributed to shareholders and capital position. In addition, the Company has over time sold certain blocks of business to third-party purchasers using reinsurance. To the extent that the reinsured contracts are not subsequently novated to the purchasers, we remain legally liable to the insureds. Should the purchasers be unable or unwilling to fulfill their contractual obligations under the reinsurance agreement, we would need to increase policy liabilities resulting in a charge to net income attributed to shareholders. To reduce credit risk, the Company may require purchasers to provide collateral for their reinsurance liabilities.
- We participate in a securities lending program whereby blocks of securities are loaned to third parties, primarily major brokerage firms and commercial banks. Collateral, which exceeds the market value of the loaned securities, is retained by the Company until the underlying security has been returned. If any of our securities lending counterparties default and the value of the collateral is insufficient, we would incur losses. As at December 31, 2021, the Company had loaned securities (which are included in invested assets) valued at approximately \$564 million, compared with \$889 million as at December 31, 2020.

The determination of allowances and impairments on our investments is subjective and changes could materially impact our results of operations or financial position.

- The determination of allowances and impairments is based upon a periodic evaluation of known and inherent risks associated with the respective security. Management considers a wide range of factors about the security and uses its best judgment in evaluating the cause of the decline, in estimating the appropriate value for the security and in assessing the prospects for near-term recovery. Inherent in management's evaluation of the security are assumptions and estimates about the operations of the issuer and its future earnings potential. Considerations in the impairment evaluation process include: (i) the severity of the impairment; (ii) the length of time and the extent to which the market value of a security has been below its carrying value; (iii) the financial condition of the issuer; (iv) the potential for impairments in an entire industry sector or sub-sector; (v) the potential for impairments in certain economically depressed geographic locations; (vi) the potential for impairments of securities where the issuer, series of issuers or industry has suffered a catastrophic type of loss or has exhausted natural resources; (vii) our ability and intent to hold the security for a period of time sufficient to allow for the recovery of its value to an amount equal to or greater than cost or amortized cost; (viii) unfavourable changes in forecasted cash flows on mortgage-backed and asset-backed securities; and (ix) other subjective factors, including concentrations and information obtained from regulators and rating agencies.
- Such evaluations and assessments are revised as conditions change and new information becomes available. We update our evaluations regularly and reflect changes in allowances and impairments as such evaluations warrant. The evaluations are inherently subjective and incorporate only those risk factors known to us at the time the evaluation is made. There can be no assurance that management has accurately assessed the level of impairments that have occurred. Additional impairments will likely need to be taken or allowances provided for in the future as conditions evolve. Historical trends may not be indicative of future impairments or allowances.

Product Risk

We make a variety of assumptions related to the expected future level of claims, policyholder behaviour, expenses, reinsurance costs and sales levels when we design and price products, and when we establish policy liabilities. Product risk is the risk of failure to design, implement and maintain a product or service to achieve these expected outcomes and the risk of loss due to actual experience emerging differently than assumed when a product was designed and priced. Assumptions for future claims are generally based on both Company and industry experience, and assumptions for future policyholder behaviour and expenses are generally based on Company experience. Assumptions for future policyholder behaviour include assumptions related to the retention rates for insurance and wealth products. Assumptions for expenses include assumptions related to future maintenance expense levels and volume of the business.

Please read below for details on factors that could impact our level of product risk and the strategies used to manage this risk:

Product Risk Management Strategy

Product risk is governed by the Product Oversight Committee for the insurance business and by the Global WAM Risk Committee for Global WAM business.

Product Oversight Committee

The Product Oversight Committee oversees the overall insurance risk management program. The Product Oversight Committee has established a broad framework for managing insurance risk under a set of policies, standards and guidelines, to ensure that our product offerings align with our risk-taking philosophy and risk limits, and achieve acceptable profit margins. These cover:

- product design features
- use of reinsurance
- pricing models and software
- internal risk based capital allocations
- target profit objectives
- pricing methods and assumption setting
- stochastic and stress scenario testing
- required documentation
- review and approval processes
- experience monitoring programs

In each business unit that sells insurance, we designate individual pricing officers who are accountable for pricing activities, chief underwriters who are accountable for underwriting activities and chief claims risk managers who are accountable for claims activities. Both the pricing officer and the general manager of each business unit approve the design and pricing of each product, including key claims, policyholder behaviour, investment return and expense assumptions, in accordance with global policies and standards. Risk management functions provide additional oversight, review and approval of material product and pricing initiatives, as well as material underwriting initiatives. Actuarial functions provide oversight review and approval of policy liability valuation methods and assumptions. In addition, both risk and actuarial functions review and approve new reinsurance arrangements. We perform annual risk and compliance self-assessments of the product development, pricing, underwriting and claims activities of all insurance businesses. To leverage best practices, we facilitate knowledge transfer between staff working with similar businesses in different geographies.

We utilize a global underwriting manual intended to ensure insurance underwriting practices for direct written life business are consistent across the organization while reflecting local conditions. Each business unit establishes underwriting policies and procedures, including criteria for approval of risks and claims adjudication policies and procedures.

We apply retention limits per insured life that are intended to reduce our exposure to individual large claims which are monitored in each business unit. These retention limits vary by market and jurisdiction. We reinsure exposure in excess of these limits with other companies (see “Risk Management and Risk Factors – Product Risk Factors – External market conditions determine the availability, terms and cost of reinsurance protection”, below). Our current global life retention limit is US\$30 million for individual policies (US\$35 million for survivorship life policies) and is shared across businesses. We apply lower limits in some markets and jurisdictions. We aim to further reduce exposure to claims concentrations by applying geographical aggregate retention limits for certain covers. Enterprise-wide, we aim to reduce the likelihood of high aggregate claims by operating globally, insuring a wide range of unrelated risk events, and reinsuring some risks. We seek to actively manage the Company’s aggregate exposure to each of policyholder behaviour risk and claims risk against enterprise-wide economic capital limits. Policyholder behaviour risk limits cover the combined risk arising from policy lapses and surrenders, withdrawals and other policyholder driven activity. The claims risk limits cover the combined risk arising from mortality, longevity and morbidity.

Internal experience studies, as well as trends in our experience and that of the industry, are monitored to update current and projected claims and policyholder behaviour assumptions, resulting in updates to policy liabilities as appropriate.

Global WAM Product Risk Management Committee

Global WAM product risk is governed by the Global WAM Risk Management Committee, which reviews and approves notable new products prior to launch. This committee has established a framework for managing risk under a set of policies, standards and guidelines to ensure that notable product offerings align with Global WAM risk-taking philosophy and risk appetite.

The Global WAM Risk Management Committee also provides oversight of notable changes to existing products/solutions on the various Global WAM platforms.

Product Risk Factors

Losses may result should actual experience be materially different than that assumed in the valuation of policy liabilities.

- Such losses could have a significant adverse effect on our results of operations and financial condition. In addition, we periodically review the assumptions we make in determining our policy liabilities and the review may result in an increase in policy liabilities and a decrease in net income attributed to shareholders. Such assumptions require significant professional judgment, and actual experience may be materially different than the assumptions we make. (See “Critical Actuarial and Accounting Policies” below).

We may be unable to implement necessary price increases on our in-force businesses or may face delays in implementation.

- We continue to seek state regulatory approvals for price increases on existing long-term care business in the United States. We cannot be certain whether or when each approval will be granted. For some in-force business regulatory approval for price increases may not be required. However, regulators or policyholders may nonetheless seek to challenge our authority to implement such increases. Our policy liabilities reflect our estimates of the impact of these price increases, but should we be less successful than anticipated in obtaining them, then policy liabilities could increase accordingly and reduce net income attributed to shareholders.

Evolving legislation related to genetic testing could adversely impact our underwriting abilities.

- Current or future legislation in jurisdictions where Manulife operates may restrict its right to underwrite based on access to genetic test results. Without the obligation of disclosure, the asymmetry of information shared between applicant and insurer could increase anti-selection in both new business and in-force policyholder behaviour. The impact of restricting insurers’ access to this information and the associated problems of anti-selection becomes more acute where genetic technology leads to advancements in diagnosis of life-threatening conditions that are not matched by improvements in treatment. We cannot predict the potential financial impact that this would have on the Company or the industry as a whole. In addition, there may be further unforeseen implications as genetic testing continues to evolve and becomes more established in mainstream medical practice.

Life and health insurance claims may be impacted unexpectedly by changes in the prevalence of diseases or illnesses, medical and technology advances, widespread lifestyle changes, natural disasters, large-scale human-made disasters and acts of terrorism.

- Claims resulting from catastrophic events could cause substantial volatility in our financial results in any period and could materially reduce our profitability or harm our financial condition. Large-scale catastrophic events may also reduce the overall level of economic activity, which could hurt our business and our ability to write new business. It is possible that geographic concentration of insured individuals could increase the severity of claims we receive from future catastrophic events. The effectiveness of external parties, including governmental and nongovernmental organizations, in combating the severity of such an event is outside of our control and could have a material impact on the losses we experience.
- The cost of health insurance benefits may be impacted by unforeseen trends in the incidence, termination and severity rates of claims. The ultimate level of lifetime benefits paid to policyholders may be increased by an unexpected increase in life expectancy. For example, advances in technology could lead to longer lives through better medical treatment or better disease prevention. Policyholder behaviour including premium payment patterns, policy renewals, lapse rates and withdrawal and surrender activity are influenced by many factors including market and general economic conditions, and the availability and relative attractiveness of other products in the marketplace. For example, a weak or declining economic environment could increase the value of guarantees associated with variable annuities or other embedded guarantees and contribute to adverse policyholder behaviour experience, or a rapid rise in interest rates could increase the attractiveness of alternatives for customers holding products that offer contractual surrender benefits that are not market value adjusted, which could also contribute to adverse policyholder behaviour experience. As well, adverse claims experience could result from systematic anti-selection, which could arise from the development of investor owned and secondary markets for life insurance policies, anti-selective lapse behaviour, underwriting process failures, anti-selective policyholder behaviour due to greater consumer accessibility to home-based medical screening, or other factors.
- For information on the implications of COVID-19 on our product risk, please refer to “Pandemic risk and potential implications of COVID-19” below.

External market conditions determine the availability, terms and cost of reinsurance protection which could impact our financial position and our ability to write new policies.

- As part of our overall risk and capital management strategy, we purchase reinsurance protection on certain risks underwritten or assumed by our various insurance businesses. As the global reinsurance industry continues to review and optimize their business models, certain of our reinsurers have attempted to increase rates on our existing reinsurance contracts. The ability of our reinsurers to increase rates depends upon the terms of each reinsurance contract. Typically, the reinsurer’s ability to raise rates is restricted by a number of terms in our reinsurance contracts, which we seek to enforce. We believe our reinsurance provisions are appropriate; however, there can be no assurance regarding the impact of future rate increase actions taken by our reinsurers. Accordingly, future rate increase actions by our reinsurers could result in accounting charges, an increase in the cost of reinsurance and the assumption of more risk on business already reinsured.
- In addition, an increase in the cost of reinsurance could also adversely affect our ability to write future business or result in the assumption of more risk with respect to policies we issue. Premium rates charged on new policies we write are based, in part, on the assumption that reinsurance will be available at a certain cost. Certain reinsurers may attempt to increase the rates they charge us for new policies we write, and for competitive reasons, we may not be able to raise the premium rates we charge for newly written policies to offset the increase in reinsurance rates. If the cost of reinsurance were to increase, if reinsurance were to become unavailable and if

alternatives to reinsurance were not available, our ability to write new policies at competitive premium rates could be adversely affected.

Operational Risk

Operational risk is naturally present in all of our business activities and encompasses a broad range of risks, including regulatory compliance failures, legal disputes, technology failures, business interruption, information security and privacy breaches, human resource management failures, processing errors, modelling errors, business integration, theft and fraud, and damage to physical assets. Exposures can take the form of financial losses, regulatory sanctions, loss of competitive positioning, or damage to our reputation. Operational risk is also embedded in all the practices we use to manage other risks; therefore, if not managed effectively, operational risk can impact our ability to manage other key risks such as credit risk, market risk, liquidity risk and insurance risk.

Please read below for details on factors that could impact our level of operational risk and the strategies used to manage this risk:

Operational Risk Management Strategy

Our corporate governance practices, corporate values, and integrated enterprise-wide approach to managing risk set the foundation for mitigating operational risks. This base is further strengthened by internal controls and systems, compensation programs, and seeking to hire and retain trained and competent people throughout the organization. We align compensation programs with business strategy, long-term shareholder value and good governance practices, and we benchmark these compensation practices against peer companies.

We have an enterprise operational risk management framework that sets out the processes we use to identify, assess, manage, mitigate and report on significant operational risk exposures. Execution of our operational risk management strategy supports the drive towards a focus on the effective management of our key global operational risks. We have an Operational Risk Committee, which is the main decision-making committee for all operational risk matters and which has oversight responsibility for operational risk strategy, management and governance. We have enterprise-wide risk management programs for specific operational risks that could materially impact our ability to do business or impact our reputation.

Legal and Regulatory Risk Management Strategy

Global Compliance oversees our regulatory compliance program and function, supported by designated Chief Compliance Officers in every segment. The program is designed to promote compliance with regulatory obligations worldwide and to assist in making the Company's employees aware of the laws and regulations that affect it, and the risks associated with failing to comply. Segment Compliance groups monitor emerging legal and regulatory issues and changes and prepare us to address new requirements. Global Compliance also independently assesses and monitors the effectiveness of a broad range of regulatory compliance processes and business practices against potential legal, regulatory, fraud and reputation risks, and allows significant issues to be escalated and proactively mitigated. Among these processes and business practices are: privacy (i.e. handling of personal and other confidential information), sales and marketing practices, sales compensation practices, asset management practices, fiduciary responsibilities, employment practices, underwriting and claims processing, product design, the Ethics Hotline, and regulatory filings. In addition, we have policies, processes and controls in place to help protect the Company, our customers and other related third parties from acts of fraud and from risks associated with money laundering and terrorist financing. Audit Services, Global Compliance and Segment Compliance personnel periodically assess the effectiveness of the system of internal controls. For further discussion of government regulation and legal proceedings, refer to "Government Regulation" in MFC's Annual Information Form dated February 9, 2022 and note 18 of the 2021 Annual Consolidated Financial Statements.

Business Continuity Risk Management Strategy

We have an enterprise-wide business continuity and disaster recovery program. This includes policies, plans and procedures that seek to minimize the impact of natural or human-made disasters, and is designed to ensure that key business functions can continue normal operations in the event of a major disruption. Each business unit is accountable for preparing and maintaining detailed business continuity plans and processes. The global program incorporates periodic scenario analysis designed to validate the assessment of both critical and non-critical units, as well as the establishment and testing of appropriate business continuity plans for all critical functions. The business continuity team establishes and regularly tests crisis management plans and global crisis communications protocols. We maintain off-site data backup facilities and/or failover capabilities as required to manage the risk of downtime and to accelerate system recovery when needed.

Technology & Information Security Risk Management Strategy

Our Technology Risk Management function provides strategy, direction, and oversight and facilitates governance for all technology risk domain activities across the Company. The scope of this function includes: reducing information risk exposures by introducing a robust enterprise information risk management framework and supporting infrastructure for proactively identifying, managing, monitoring and reporting on critical information risk exposures; promoting transparency and informed decision-making by building and maintaining information risk profiles and risk dashboards for Enterprise Technology & Services and segments aligned with enterprise and operational risk reporting; providing advisory services to Global Technology and the segments around current and emerging technology risks and their impact to the Company's information risk profile; and reducing vendor information risk exposures by incorporating sound information risk management practices into sourcing, outsourcing and offshoring initiatives and programs.

The enterprise-wide information security program, which is overseen by the Chief Information Risk Officer, seeks to mitigate information security risks. This program establishes the information and cyber security framework for the Company, including governance, policies and standards, and appropriate controls to protect information and computer systems. We also have ongoing security awareness training sessions for all employees.

Many jurisdictions in which we operate are implementing more stringent privacy legislation. Our global privacy program, overseen by our Chief Privacy Officer, seeks to manage the risk of privacy breaches. It includes policies and standards, ongoing monitoring of emerging privacy legislation, and a network of privacy officers. Processes have been established to provide guidance on handling personal information and for reporting privacy incidents and issues to appropriate management for response and resolution.

In addition, the Chief Information Risk Officer, the Chief Privacy Officer, and their teams work closely on information security and privacy matters.

Human Resource Risk Management Strategy

We have a number of human resource policies, practices and programs in place that seek to manage the risks associated with attracting and retaining top talent. These include recruiting programs at every level of the organization, training and development programs for our individual contributors and people leaders, initiatives to help increase diversity, equity and inclusion, employee engagement surveys, and competitive compensation programs that are designed to attract, motivate and retain high-performing and high-potential employees.

Model Risk Management Strategy

We have designated model risk management teams working closely with model owners and users that seek to manage model risk. Our model risk oversight program includes processes intended to ensure that our critical business models are conceptually sound and used as intended, and to assess the appropriateness of the calculations and outputs.

Third-Party Risk Management Strategy

Our governance framework to address third-party risk includes appropriate policies (such as our Global Outsourcing, Global Risk Management and Vendor Management policies), standards and procedures, and monitoring of ongoing results and contractual compliance of third-party arrangements.

Initiative Risk Management Strategy

To seek to ensure that key initiatives are successfully implemented and monitored by management, we have a Global Strategy and Transformation Office, which is responsible for establishing policies and standards for initiative management. Our policies, standards and practices are benchmarked against leading practices.

The following section describes details on potential Operational Risk factors:

Operational Risk Factors

If we are not able to attract, motivate and retain agency leaders and individual agents, our competitive position, growth and profitability will suffer.

- We must attract and retain sales representatives to sell our products. Strong competition exists among financial services companies for efficient and effective sales representatives. We compete with other financial services companies for sales representatives primarily on the basis of our financial position, brand, support services and compensation and product features. Any of these factors could change either because we change the Company or our products, or because our competitors change theirs and we are unable or unwilling to adapt. If we are unable to attract and retain sufficient sales representatives to sell our products, our ability to compete would suffer, which could have a material adverse effect on our business, results of operations and financial condition.

Competition for the best people is intense and an inability to recruit qualified individuals may negatively impact our ability to execute on business strategies or to conduct our operations.

- We compete with other insurance companies and financial institutions for qualified executives, employees and agents. We must attract and retain top talent to maintain our competitive advantage. Failure to attract and retain the best people could adversely impact our business.

If we are unable to complete key projects on time, on budget, and capture planned benefits, our business strategies and plans, and operations may be impaired.

- We must successfully deliver a number of key projects in order to implement our business strategies and plans. If we are unable to complete these projects in accordance with planned schedules, and to capture projected benefits, there could be a material adverse effect on our business and financial condition.

Key business processes may fail, causing material loss events and impacting our customers and reputation.

- A large number of complex transactions are performed by the organization, and there is risk that errors may have significant impact on our customers or result in a loss to the organization. Controls are in place that seek to ensure processing accuracy for our most significant business processes, and escalation and reporting processes have been established for when errors do occur.

The interconnectedness of our operations and risk management strategies could expose us to risk if all factors are not appropriately considered and communicated.

- Our business operations, including strategies and operations related to risk management, asset liability management and liquidity management, are interconnected and complex. Changes in one area may have a secondary impact in another area of our operations. For example, risk management actions, such as the increased use of interest rate swaps, could have implications for the Company's Global WAM segment or its Treasury function, as this strategy could result in the need to post additional amounts of collateral. Failure to appropriately consider these inter-relationships, or effectively communicate changes in strategies or activities across our operations, could have a negative impact on the strategic objectives or operations of another group. Further, failure to consider these inter-relationships in our modeling and financial and strategic decision-making processes could have a negative impact on our operations.

Our risk management policies, procedures and strategies may leave us exposed to unidentified or unanticipated risks, which could negatively affect our business, results of operations and financial condition.

- We have devoted significant resources to develop our risk management policies, procedures and strategies and expect to continue to do so in the future. Nonetheless, there is a risk that our policies, procedures and strategies may not be comprehensive. Many of our methods for measuring and managing risk and exposures are based upon the use of observed historical market behaviour or statistics based on historical models. Future behaviour may be very different from past behaviour, especially if there are some fundamental changes that affect future behaviour. As an example, the increased occurrence of negative interest rates can make it difficult to model future interest rates as interest rate models have been generally developed for an environment of positive interest rates. As a result, these methods may not fully predict future exposures, which can be significantly greater than our historical measures indicate. Other risk management methods depend upon the evaluation and/or reporting of information regarding markets, clients, client transactions, catastrophe occurrence or other matters publicly available or otherwise accessible to us. This information may not always be accurate, complete, up-to-date or properly evaluated or reported.

We are subject to tax audits, tax litigation or similar proceedings, and as a result we may owe additional taxes, interest and penalties in amounts that may be material.

- We are subject to income and other taxes in the jurisdictions in which we do business. In determining our provisions for income taxes and our accounting for tax related matters in general, we are required to exercise judgment. We regularly make estimates where the ultimate tax determination is uncertain. There can be no assurance that the final determination of any tax audit, appeal of the decision of a taxing authority, tax litigation or similar proceedings will not be materially different from that reflected in our historical financial statements. The assessment of additional taxes, interest and penalties could be materially adverse to our current and future results of operations and financial condition.

Our operations face political, legal, operational and other risks that could negatively affect those operations or our results of operations and financial condition.

- Our operations face the risk of discriminatory regulation, political and economic instability, the imposition of economic or trade sanctions, civil unrest or disobedience, market volatility and significant inflation, limited protection for, or increased costs to protect intellectual property rights, inability to protect and/or enforce contractual or legal rights, nationalization or expropriation of assets, price controls and exchange controls or other restrictions that prevent us from transferring funds out of the countries in which we operate.
- A substantial portion of our revenue and net income attributed to shareholders is derived from our operations outside of North America, primarily in key Asian markets. Some of these key geographical markets are developing and are rapidly growing countries and markets where these risks may be heightened. Failure to manage these risks could have a significant negative impact on our operations and profitability globally.
- Any plans to expand our global operations in markets where we operate and potentially in new markets may require considerable management time, as well as start-up expenses for market development before any significant revenues and earnings are generated. Operations in new foreign markets may achieve low margins or may be unprofitable, and expansion in existing markets may be affected by local economic and market conditions.

We are regularly involved in litigation.

- We are regularly involved in litigation, either as a plaintiff or defendant. These cases could result in an unfavourable resolution and could have a material adverse effect on our results of operations and financial condition. For further discussion of legal proceedings refer to note 18 of the 2021 Annual Consolidated Financial Statements.

We are exposed to investors trying to profit from short positions in our stock.

- Short-sellers seek to profit from a decline in the price of our common shares. Through their actions and public statements, they may encourage the decline in price from which they profit and may encourage others to take short positions in our shares. The existence of such short positions and the related publicity may lead to continued volatility in our common share price.

System failures or events that impact our facilities may disrupt business operations.

- Technology is used in virtually all aspects of our business and operations; in addition, part of our strategy involves the expansion of technology to directly serve our customers. An interruption in the service of our technology resulting from system failure, cyber-attack,

human error, natural disaster, human-made disaster, pandemic, or other unpredictable events beyond reasonable control could prevent us from effectively operating our business.

- While our facilities and operations are distributed across the globe, we can experience extreme weather, natural disasters, civil unrest, human-made disasters, power outages, pandemic, and other events which can prevent access to, and operations within, the facilities for our employees, partners, and other parties that support our business operations.
- We take measures to plan, structure and protect against routine events that may impact our operations, and maintain plans to recover from unpredictable events. The experience learned from COVID-19 has stress tested these plans and has resulted in strengthening our continuity plans. For further information, see “Pandemic risk and potential implications of COVID-19” below. An interruption to our operations may subject us to regulatory sanctions and legal claims, lead to a loss of customers, assets and revenues, or otherwise adversely affect us from a financial, operational and reputational perspective.

An information security or privacy breach of our operations or of a related third party could adversely impact our business, results of operations, financial condition, and reputation.

- It is possible that the Company may not be able to anticipate or to implement effective preventive measures against all disruptions or privacy and security breaches, especially because the techniques used change frequently, generally increase in sophistication, often are not recognized until launched, and because cyber-attacks can originate from a wide variety of sources, including organized crime, hackers, terrorists, activists, and other external parties, including parties sponsored by hostile foreign governments. Those parties may also attempt to fraudulently induce employees, customers, and other users of the Company’s systems or third-party service providers to disclose sensitive information in order to gain access to the Company’s data or that of its customers or clients. We, our customers, regulators and other third parties have been subject to, and are likely to continue to be the target of, cyber-attacks, including computer viruses, malicious or destructive code, phishing attacks, denial of service and other security incidents, that could result in the unauthorized release, gathering, monitoring, misuse, loss or destruction of personal, confidential, proprietary and other information of the Company, our employees, our customers or of third parties, or otherwise materially disrupt our or our customers’ or other third parties’ network access or business operations. These attacks could adversely impact us from a financial, operational and reputational perspective.
- The Company maintains an Information Risk Management Program, which includes information and cyber security defenses, to protect our networks and systems from attacks; however, there can be no assurance that these counter measures will be successful in every instance in protecting our networks against advanced attacks. In addition to protection, detection and response mechanisms, the Company maintains cyber risk insurance, but this insurance may not cover all costs associated with the financial, operational and reputational consequences of personal, confidential or proprietary information being compromised.

Model risk may arise from the inappropriate use or interpretation of models or their output, or the use of deficient models, data or assumptions.

- We are relying on some highly complex models for pricing, valuation and risk measurement, and for input to decision making. Consequently, the risk of inappropriate use or interpretation of our models or their output, or the use of deficient models, could have a material adverse effect on our business.

Fraud risks may arise from incidents related to identity theft and account takeovers.

- Fraud incidents could adversely impact our business, results of operations, financial condition and reputation. Policies and procedures are in place and seek to protect against ever-evolving fraud threats. However, we may nevertheless not be able to prevent and detect all fraud incidents.

Contracted third parties may fail to deliver against contracted activities.

- We rely on third parties to perform a variety of activities on our behalf, and failure of our most significant third parties to meet their contracted obligations may impact our ability to meet our strategic objectives or may directly impact our customers. Vendor governance processes are in place that seek to ensure that appropriate due diligence is conducted at time of vendor contracting, and ongoing vendor monitoring activities are in place that seek to ensure that the contracted services are being fulfilled to satisfaction, but we may nevertheless not be able to mitigate all possible failures.

Environmental risk may arise related to our commercial mortgage loan portfolio and owned property or from our business operations.

- Environmental risk may originate from investment properties that are subject to natural or human-made environmental risk. Real estate assets may be owned, leased and/or managed, as well as mortgaged by Manulife and we might enter into the chain of liability due to foreclosure ownership when in default.
- Liability under environmental protection laws resulting from our commercial mortgage loan portfolio and owned property (including commercial real estate, oil and gas, timberland and farmland properties) may adversely impact our reputation, results of operations and financial condition. Under applicable laws, contamination of a property with hazardous materials or substances may give rise to a lien on the property to secure recovery of the costs of cleanup. In some instances, this lien has priority over the lien of an existing mortgage encumbering the property. The environmental risk may result from on-site or off-site (adjacent) due to migration of regulated pollutants or contaminants with financial or reputational environmental risk and liability consequences by virtue of strict liability. Environmental risk could also arise from natural disasters (e.g., climate change, weather, fire, earthquake, floods, and pests) or human activities (use of chemicals, pesticides) conducted within the site or when impacted from adjacent sites.

- Additionally, as lender, we may incur environmental liability (including without limitation liability for clean-up, remediation and damages incurred by third parties) similar to that of an owner or operator of the property, if we or our agents exercise sufficient control over the operations at the property. We may also have liability as the owner and/or operator of real estate for environmental conditions or contamination that exist or occur on the property or affecting other property.
- In addition, failure to adequately prepare for the potential impacts of climate change may have a negative impact on our financial position or our ability to operate. Potential impacts may be direct or indirect and may include: business losses or disruption resulting from extreme weather conditions; the impact of changes in legal or regulatory framework made to address climate change; the impact to fixed income asset values for portfolio investments in fossil-fuel related industries; or increased mortality or morbidity resulting from environmental damage or climate change. For further information, see “Strategic Risk Management Strategy, Environmental, Social and Governance Risks”.

Pandemic risk and potential implications of COVID-19

The ongoing prevalence of COVID-19, actions taken globally in response to it, and the ensuing economic uncertainty have caused significant disruption to global supply chains, business activities and economies. While the measures taken to combat the spread of the virus have enabled many economies to begin to recover, the depth, breadth and duration of economic disruptions continue to persist and remain highly uncertain. In addition, while governments and businesses in certain markets in which we operate have begun to ease some COVID-19 related restrictions, governments and businesses in other markets, in particular in Asia and Canada, have implemented or reimposed restrictions in response to increases in infection rates. As a result, it is difficult to predict how significant the longer-term impact of COVID-19 including any responses to it and any variants, will be on the global economy and our business, particularly as COVID-19 becomes endemic in the markets in which we operate. The unprecedented circumstances related to COVID-19 may result in future legal, regulatory, tax, and other responses that could have a significant adverse impact on our global businesses and operations and on our financial results.

Implications on strategic risk factors

- The ongoing prevalence of COVID-19 could continue to adversely impact our financial results in future periods as a result of reduced new business, reduced asset-based fee revenue, and net unfavourable policyholder experience including claims experience and premium persistency. The uncertainty around the ongoing spread of COVID-19, including any variants, and the expected duration of measures put in place by governments to respond to COVID-19 could further depress business activity and financial markets, which could lead to lower net income attributed to shareholders.
- As COVID-19 becomes endemic, there may be unexpected changes to the business and operating environment which may present new headwinds to our business strategy or new opportunities to pursue. We recognize that the pace of recovery will likely differ across geographies in which we operate, which could impact the execution of our business strategies. While in recent years we have taken significant actions to diversify and bolster the resilience of our Company, further management actions may be required, including, but not limited to, changes to business and product mix, pricing structures on in-force and new business, investment mix, hedging programs, and the use of reinsurance.
- Collaborative activities required to advance our strategic initiatives could also be impeded if emergency measures to combat the virus continue to significantly restrict direct human interactions and movement in certain markets. Although we expect that our digital capabilities and tools should enable us to reasonably conduct business, there can be no assurance these or other strategies taken to address adverse impacts related to COVID-19 will be successful.
- We have experienced ongoing disruptions to our underwriting processes in certain markets as a result of government measures taken to stop the spread of the virus, including the temporary closure of paramedical services in some markets, as well as consumer fears over in-person services which have led to lower sales volumes. To help mitigate the impacts of these disruptions, and to continue to support our customers with their insurance needs, we have been temporarily adjusting our underwriting processes to allow us to accept certain low risk applications. We continue to monitor the situation and adjust underwriting practices where necessary (for example, continued use of digital applications and further potential modifications to underwriting requirements for lower risk applications).

Implications on product risk factors

- We have a diversified business and during pandemic-related events, we expect charges from increased mortality in some businesses with offsets in policies with longevity risk. Claims and lower lapses on certain products resulting from pandemic-related events could cause substantial volatility in our financial results in any period and could materially reduce our profitability or impair our financial condition. Further, large-scale events such as COVID-19 reduce the overall level of economic activity as well as activity through our distribution channels, which could continue to adversely impact our ability to write new business. It is also possible that geographic concentration of insured individuals could increase the severity of claims experience. The effectiveness of external parties, including governmental and non-governmental organizations, in combating COVID-19 is outside of our control but could also have a material and adverse impact on our results of operations.
- Increased economic uncertainty and increased unemployment resulting from the economic impacts of COVID-19 in certain markets may also result in policyholders seeking sources of liquidity and withdrawing at rates greater than we previously expected. If premium persistency is less than anticipated or if policyholder lapse rates significantly exceed our expectations, it could have a material adverse effect on our business, financial condition, results of operations, and cash flows.

- We purchase reinsurance protection on certain risks underwritten or assumed by our various insurance businesses. As a result of COVID-19 we may find reinsurance more difficult or costly to obtain. In addition, reinsurers may dispute, or seek to reduce or eliminate, coverage on policies as a result of any changes to policies or practices we make as a result of COVID-19.

Implications on operational risk factors

- COVID-19 has resulted in the imposition of government measures in various jurisdictions to restrict the movement of people, including travel bans and physical distancing requirements and other containment measures. These restrictions are being lifted in certain markets in which we operate but have been introduced or reimposed in other markets, particularly in Asia and Canada, that have experienced elevated infection rates. These measures have been and may in the future be disruptive to business operations across our global offices. While our business continuity plans have been executed across the organization with the vast majority of employees initially shifting to remote work arrangements and our networks and systems have generally remained stable in supporting this large-scale effort, there can be no assurance that our ability to continue to operate our business will not be adversely impacted if our networks and systems, including those aspects of our operations which rely on services provided by third parties, fail to operate as expected. The successful execution of business continuity strategies by third parties is outside our control. If one or more of the third parties to whom we outsource certain critical business activities fails to perform as a result of the impacts from the spread of COVID-19, it may have a material adverse effect on our business and operations.
- While the capacity of our global processing centres was restored following the initial disruptions during the first half of 2020, there can be no assurance that strategies taken to mitigate COVID-19 related impacts will continue to be successful if operating conditions deteriorate further in the future, either due to additional restrictions imposed by authorities or because of any other adverse development.
- The implementation of widespread remote work arrangements also increased other operational risks, including, but not limited to, fraud, money-laundering, information security, privacy, and third-party risks. We are relying on our risk management strategies to monitor and mitigate these and other operational risks during this period of heightened uncertainty.
- We may incur increased administrative expenses as a result of process and other changes we implemented in response to COVID-19. In addition, we may face increased workplace safety costs and risks and employee-relations challenges and claims, when more of our employees begin to return in person to our offices.

Implications on market risk factors

- COVID-19 and the resulting economic downturn contributed to significant volatility and declines in financial and commodity markets. Central banks announced emergency interest rate cuts, while governments implemented and continue to assess additional and unprecedented fiscal stimulus packages to support economic stability. This has resulted in a global recessionary environment with continued market volatility and low or negative interest rates, which may continue to impact our net income attributed to shareholders. Our investment portfolio has been, and may continue to be, adversely affected as a result of market developments from COVID-19 and related uncertainty.
- Inflation expectations have continued to rise caused by supply chain disruptions and other COVID-19 related factors. Inflation is expected to remain elevated in 2022. Inflation spikes may result in central banks raising interest rates faster than expected. Our investment portfolio has been, and may continue to be, adversely affected as a result of market developments from COVID-19 and related uncertainty.
- We have hedging programs, supported by a comprehensive collateral management program in place to help mitigate the risk of interest rate and public equity market volatility. Our interest rate and public equity variable annuity hedging programs have performed with a high level of effectiveness during this period of volatility to date.
- Extreme market volatility may leave us unable to react to market events in a manner consistent with our historical investment practices in dealing with more orderly markets. Market dislocations, decreases in observable market activity or unavailability of information arising from the spread of COVID-19, may restrict our access to key inputs used to derive certain estimates and assumptions made in connection with financial reporting or otherwise, including estimates and changes in long-term macro-economic assumptions relating to accounting for future credit losses. Restricted access to such inputs may make our financial statement balances and estimates and assumptions used to run our business subject to greater variability.
- The global recessionary environment could continue to put downward pressure on asset valuations and increase the risk of potential impairments of investments, in particular, for more exposed sectors such as transportation, services, and consumer cyclical industries. COVID-19 has contributed to supply and demand shocks that have created historic dislocation in the energy markets and could continue to adversely impact our oil and gas and other energy-related investments. Furthermore, delays in general return-to-office policies and practices and/or reduced demand for office space could continue to have a negative impact on our commercial real estate portfolio.

Implications on liquidity risk and capital management

- Extreme market volatility and stressed conditions resulting from future waves of COVID-19, including any variants, could result in additional cash and collateral demands primarily from changes to policyholder termination or renewal rates, withdrawals of customer deposit balances, borrowers renewing or extending their loans when they mature, derivative settlements or collateral demands, reinsurance settlements or collateral demands and our willingness to support the local solvency position of our subsidiaries. Such an environment could also limit our access to capital markets. We maintain strong financial strength ratings from our credit rating agencies. However, sustained global economic uncertainty could result in adverse credit ratings changes which in turn could result in more costly or limited access to funding sources. In addition, while we currently have a variety of sources of liquidity including cash

balances, short-term investments, government and highly rated corporate bonds, and access to contingent liquidity facilities, there can be no assurance that these sources will provide us with sufficient liquidity on commercially reasonable terms in the future.

Implications on credit risk factors

- A prolonged economic slowdown or recession could continue to impact a wide range of industries to which we are exposed. Further, borrower or counterparty downgrades or defaults would cause increased provisions or impairments related to our general fund invested assets and derivative financial instruments, and an increase in provisions for future credit impairments to be included in our policy liabilities. This could result in losses potentially above our long-term expected levels.
- We have experienced downgrades across some industries in our portfolio which may continue in subsequent quarters. The general fund portfolio is constructed through credit selection criteria and is diversified with the majority of the portfolio rated investment grade which helps to mitigate risks associated with the current economic uncertainty. Our approach includes seeking investments which perform more favourably in the longer term, throughout economic and business cycles, but there can be no assurance these or other strategies taken to address adverse impacts related to COVID-19 will be successful.

Emerging Risks

The identification and assessment of our external environment for emerging risks is an important aspect of our ERM Framework, as these risks, although yet to materialize, could have the potential to have a material adverse impact on our operations and/or business strategies. We also consider taking advantage of opportunities identified to improve our competitiveness and ultimately our financial results.

Our Emerging Risk Framework facilitates the ongoing identification, assessment and monitoring of emerging risks, and includes: maintaining a process that facilitates the ongoing discussion and evaluation of potential emerging risks with senior business and functional management; reviewing and validating emerging risks with the ERC; creating and executing on responses to each emerging risk based on prioritization; and monitoring and reporting on emerging risks on a regular basis to the Board's Risk Committee.

Regulatory Capital

OSFI's LICAT capital regime applies to our business globally on a group consolidated basis. We continue to meet OSFI's requirements and maintain capital in excess of regulatory expectations.

No material changes in LICAT requirements are currently anticipated to be made effective in 2022, as OSFI is focusing its efforts on aligning the regulatory capital framework with the IFRS 17 accounting changes effective January 2023, followed by updating the capital rules for Segregated Fund Guarantees, expected to be effective in January 2025.

At its annual meeting in November 2019, the IAIS adopted a risk based global ICS, that is expected to be further developed over a five-year monitoring period that commenced in 2020. While broadly supportive of the goals of ICS, OSFI stated that it did not support the current ICS design, adopted by the IAIS in November 2019, citing that it was 'not fit for purpose for the Canadian market'. Without OSFI's consent, the IAIS rules will not apply in Canada or to Canadian companies on a group-wide basis, while other regulators may use the ICS framework for calculating capital in their specific markets. Limited changes have been made to ICS since the beginning of the five-year monitoring period. We will continue to monitor developments as the ICS methodology and its applicability evolve.

The IAIS has also been developing a holistic framework to assess and mitigate insurance sector systemic risk. It is not yet known how these proposals will affect capital or other regulatory requirements given that several key items of the framework remain under development.

Regulators in various jurisdictions in which we operate have embarked on reforming their respective capital regulations. The impact of these changes remains uncertain.

IFRS 17 and IFRS 9

IFRS 17 "Insurance Contracts" and IFRS 9 "Financial Instruments" are effective for insurance companies in 2023.

IFRS 17 will replace IFRS 4 "Insurance Contracts" and will materially change the timing of the recognition of earnings from our insurance business and therefore, our shareholders' equity. Furthermore, the requirements of the new standard are complex and will necessitate significant enhancements to finance infrastructure and processes and could impact our business strategy. IFRS 9 will impact the measurement and timing of investment income.

A summary of some of the key differences between IFRS 17 and IFRS 4 is outlined in the "Future Accounting and Reporting Changes" section below. Risks related to the new standards include:

- **The impact on regulatory capital.** In addition to the impact on timing of recognition of earnings and equity, the regulatory capital framework in Canada is currently aligned with IFRS. OSFI has stated that, to the extent possible, it intends to maintain capital frameworks consistent with current capital policies and to minimize potential industry-wide capital impacts that might arise from the accounting change. OSFI is in the process of consulting directly with affected stakeholders and has stated that it will finalize the amendments to the LICAT guideline in mid-2022.
- **The impact on our business strategy as a result of temporary volatility.** The Company's capital position and income for accounting purposes could be influenced by prevailing market conditions, resulting in volatility of reported results, which may require changes to

business strategies and the introduction of new non-GAAP financial measures to explain our results. The impact to business strategy could include changes to hedging and investment strategy, product strategy and the use of reinsurance and, as a result, could impact our exposures to other risks such as counterparty risk and liquidity risk.

- **The impact of accounting mismatches from derivatives used for economic hedging purposes.** Under CALM, both changes in insurance contract liabilities and changes in the fair value of derivatives used to economically hedge these liabilities are recognized in income, which results in a natural offset in net income. Under IFRS 17, an insurer may elect to present the impact of changes in discount rates on insurance contract liabilities in other comprehensive income (the “OCI option”). If the OCI option is elected and derivatives used for economic hedging purposes do not qualify for hedge accounting, a mismatch in accounting net income may occur, as changes in the fair value of these derivatives would be recorded in net income, while the impact of changes in discount rates on insurance contract liabilities would be recorded in other comprehensive income. In addition, if derivatives used for economic hedging purposes qualify for hedge accounting, IFRS 9 requires that the difference, if any, between the impact of changes in discount rates on the hedged portion of insurance contract liabilities and the change in the fair value of the hedging derivatives be reported in net income as hedge ineffectiveness.
- **The impact on tax.** In certain jurisdictions, including Canada, the implementation of IFRS 17 could have a material effect on tax positions and other financial metrics that are dependent upon IFRS accounting values.
- **The impact on operational readiness.** The adoption of IFRS 17 poses significant operational challenges for the insurance industry in the development and implementation of necessary technology systems solutions. The standard introduces complex estimation techniques, computational requirements and disclosures which necessitate a major transformation to the Company’s systems along with actuarial and financial reporting processes. Once a system solution is available, significant efforts are required to integrate it into the financial reporting environment, perform impact studies, and educate and socialize the potential impacts with stakeholders.
- **The impact of inconsistencies in timing of adoption among various jurisdictions.** As a global insurer with subsidiaries in Asia and other jurisdictions, regional differences in effective dates will require us to maintain more than one set of financial records to support both consolidated financial statements and for local subsidiary reporting requirements.

Our extensive enterprise-wide implementation program includes the necessary resources to implement appropriate changes to policies and processes, education to internal and external stakeholders, sourcing appropriate data and deploying system solutions. Our governance model and active engagement with industry working groups helps to manage the risks noted above.

Additional Risk Factors That May Affect Future Results

Other factors that may affect future results include changes in government trade policy, monetary policy or fiscal policy; including interest rates policy from central banks; political conditions and developments in or affecting the countries in which we operate; technological changes; public infrastructure disruptions; changes in consumer spending and saving habits; the possible impact on local, national or global economies from public health emergencies, and international conflicts and other developments including those relating to terrorist activities. Although we take steps to anticipate and minimize risks in general, unforeseen future events may have a negative impact on our business, financial condition and results of operations.

We caution that the preceding discussion of risks that may affect future results is not exhaustive. When relying on our forward-looking statements to make decisions with respect to our Company, investors and others should carefully consider the foregoing risks, as well as other uncertainties and potential events, and other external and Company specific risks that may adversely affect the future business, financial condition or results of operations of our Company.

10. Capital Management Framework

Manulife seeks to manage its capital with the objectives of:

- Operating with sufficient capital to be able to honour all commitments to its policyholders and creditors with a high degree of confidence;
- Retaining the ongoing confidence of regulators, policyholders, rating agencies, investors and other creditors in order to ensure access to capital markets; and
- Optimizing return on capital to meet shareholders' expectations subject to constraints and considerations of adequate levels of capital established to meet the first two objectives.

Capital is managed and monitored in accordance with the Capital Management Policy. The Policy is reviewed and approved by the Board annually and is integrated with the Company's risk and financial management frameworks. It establishes guidelines regarding the quantity and quality of capital, internal capital mobility, and proactive management of ongoing and future capital requirements.

Our capital management framework takes into account the requirements of the Company as a whole as well as the needs of each of our subsidiaries. Internal capital targets are set above regulatory requirements, and consider a number of factors, including results of sensitivity and stress testing and our own risk assessments, as well as business needs. We monitor against these internal targets and initiate actions appropriate to achieving our business objectives.

We periodically assess the strength of our capital position under various stress scenarios. The annual Financial Condition Testing ("FCT", formerly Dynamic Capital Adequacy Testing) typically quantifies the financial impact of economic events arising from shocks in public equity and other markets, interest rates and credit, amongst others. Our 2021 FCT results demonstrate that we would have sufficient assets, under the various adverse scenarios tested, to discharge our policy liabilities. This conclusion was also supported by a variety of other stress tests conducted by the Company.

We use an Economic Capital ("EC") framework to inform our internal view of the level of required capital and available capital. The EC framework is a key component of the ORSA process, which ties together our risk management, strategic planning and capital management practices to confirm that our capital levels continue to be adequate from an economic perspective.

Capital management is also integrated into our product planning and performance management practices.

The composition of capital between equity and other capital instruments impacts the financial leverage ratio which is an important consideration in determining the Company's financial strength and credit ratings. The Company monitors and rebalances its capital mix through capital issuances and redemptions.

Financing Activities

Securities transactions

During 2021, we raised a total of \$3.2 billion of equity instruments in Canada; and \$2.7 billion of securities were redeemed at par.

(\$ millions)	Par value	Issued ⁽¹⁾	Redeemed/ Matured ⁽¹⁾
3.375 % MFC Limited recourse capital notes Series 1, issued on Feb 19, 2021	\$ 2,000	\$ 1,982	\$ -
4.10 % MFC Limited recourse capital notes Series 2, issued on Nov 12, 2021	\$ 1,200	1,189	-
2.389% MLI Subordinated debentures, redeemed on Jan 5, 2021	\$ 350	-	350
3.85% MFC Subordinated debentures, redeemed on May 25, 2021	\$ 500	-	481
4.70% MFC US Senior notes, redeemed on Jun 23, 2021	US\$ 1,000	-	1,265
5.60% MFC Class 1 preferred shares Series 21, redeemed on Jun 19, 2021	\$ 425	-	417
3.891% MFC Class 1 preferred shares Series 5, redeemed on Dec 19, 2021	\$ 200	-	195
Total		\$ 3,171	\$ 2,708

⁽¹⁾ Represents carrying value, net of issuance costs.

On January 24, 2022, we announced our intention to redeem the Class 1 Series 7 and Class 1 Series 23 preferred shares at par, on March 19, 2022, the earliest par redemption date.

Normal Course Issuer Bid

On March 13, 2020, OSFI announced measures to support the resilience of financial institutions. Consistent with these measures, OSFI set the expectation for all federally regulated financial institutions that dividend increases and share buybacks should be halted for the time being. On November 4, 2021, OSFI announced that this expectation is no longer in place.

We announced on February 1, 2022 the launch of a normal course issuer bid ("NCIB") permitting the purchase for cancellation of up to 97 million common shares, representing approximately 5% of our issued and outstanding common shares. Purchases under the NCIB may commence through the TSX on February 3, 2022 and continue until February 2, 2023, when the NCIB expires, or such earlier date as we complete our purchases.

Consolidated capital

As at December 31,
(\$ millions)

	2021	2020
Non-controlling interests	\$ 1,694	\$ 1,455
Participating policyholders' equity	(1,233)	(784)
Preferred shares and other equity	6,381	3,822
Common shareholders' equity ⁽¹⁾	52,027	48,513
Total equity	58,869	53,006
Exclude the accumulated other comprehensive gain/(loss) on cash flow hedges	(156)	(229)
Total equity excluding accumulated other comprehensive gain/(loss) on cash flow hedges	59,025	53,235
Qualifying capital instruments	6,980	7,829
Consolidated capital⁽²⁾	\$ 66,005	\$ 61,064

⁽¹⁾ Common shareholders' equity is equal to total shareholders' equity less preferred shares and other equity.

⁽²⁾ Consolidated capital does not include \$4.9 billion (2020 – \$6.2 billion) of MFC senior debt as this form of financing does not meet OSFI's definition of regulatory capital at the MFC level. The Company has down-streamed the proceeds from this financing into operating entities in a form that qualifies as regulatory capital at the subsidiary level.

MFC's consolidated capital was \$66.0 billion as at December 31, 2021, an increase of \$4.9 billion compared with \$61.1 billion as at December 31, 2020, primarily driven by growth in total equity, partially offset by redemption of capital instruments. The increase in total equity is due to growth in retained earnings and net issuance of preferred shares and other equity instruments.

Remittance of Capital

As part of its capital management, Manulife promotes internal capital mobility so that Manulife's parent company, MFC, has access to funds to meet its obligations and to optimize capital deployment. Remittances is defined as the cash remitted or made available for distribution to the Manulife Group from operating subsidiaries and excess capital generated by standalone Canadian operations. It is one of the key metrics used by management to evaluate our financial flexibility. In 2021, MFC subsidiaries delivered \$4.4 billion in remittances compared with \$1.6 billion in 2020, an increase of \$2.8 billion. The increase was primarily due to capital injections made to our Asia operations in 2020 in response to the COVID-19 related decline in interest rates.

Financial Leverage Ratio

MFC's financial leverage ratio decreased to 25.8% as at December 31, 2021 from 26.6% as at December 31, 2020, driven by growth in retained earnings, partially offset by net issuances of debt, a reduction in the value of AFS debt securities, and the unfavourable impact of a stronger Canadian dollar.

Common Shareholder Dividends

The declaration and payment of shareholder dividends and the amount thereof are at the discretion of the Board and depend upon various factors, including the results of operations, financial conditions, future prospects of the Company, dividend payout ratio and taking into account regulatory restrictions on the payment of shareholder dividends. On March 13, 2020, OSFI announced measures to support the resilience of financial institutions and set the expectation for all federally regulated financial institutions that dividend increases and share buybacks should be halted. On November 4, 2021, OSFI announced that this expectation is no longer in place.

Common Shareholder Dividends Paid

Following OSFI's November 4, 2021 announcement lifting restrictions on dividend increases, the Company increased the quarterly dividend paid on its common shares beginning with the dividend paid in the fourth quarter of 2021¹, from \$0.28 per common share to \$0.33 per common share, bringing total common shareholder dividends to \$1.17 in 2021, an increase of 4% from 2020.

For the years ended December 31,
\$ per share

	2021	2020
Dividends paid	\$ 1.17	\$ 1.12

The Company offers a Dividend Reinvestment Program ("DRIP") whereby shareholders may elect to automatically reinvest dividends in the form of MFC common shares instead of receiving cash. The offering of the program and its terms of execution are subject to the Board's discretion.

During 2021, the required common shares in connection with the DRIP were purchased on the open market with no applicable discount.

¹ Declared on November 5, 2021.

Regulatory Capital Position¹

MFC and MLI are regulated by OSFI and are subject to consolidated risk-based capital requirements. Manulife monitors and manages its consolidated capital in compliance with the OSFI LICAT guideline. Under this regime, our available capital and other eligible capital resources are measured against a required amount of risk capital determined in accordance with the guideline. For regulatory reporting purposes under the LICAT framework, consolidated capital is adjusted for various additions or deductions to capital as mandated by the guidelines defined by OSFI.

Manulife's operating activities are conducted within MLI and its subsidiaries. MLI's LICAT ratio was 142% as at December 31, 2021, compared with 149% as at December 31, 2020. The seven percentage point decrease from December 31, 2020 was driven by unfavourable market movements, primarily from an increase in risk-free interest rates and a narrowing of spreads.

MFC's LICAT ratio was 132% as at December 31, 2021 compared with 135% as at December 31, 2020, with the decrease driven by similar factors that impacted the movement in MLI's LICAT ratio. The difference between the MLI and MFC ratios is largely due to the \$4.9 billion (2020 – \$6.2 billion) of MFC senior debt outstanding that does not qualify as available capital at the MFC level but, based on the form it was down-streamed to MLI, it qualifies as regulatory capital at the MLI level.

The LICAT ratios as at December 31, 2021 resulted in excess capital of \$27.1 billion over OSFI's supervisory target ratio of 100% for MLI, and \$27.2 billion over OSFI's regulatory minimum target ratio of 90% for MFC (no supervisory target is applicable to MFC). As at December 31, 2021, all MLI's subsidiaries maintained capital levels in excess of local requirements.

Credit Ratings

Manulife's operating companies have strong financial strength ratings from credit rating agencies. These ratings are important factors in establishing the competitive position of insurance companies and maintaining public confidence in products being offered. Maintaining strong ratings on debt and capital instruments issued by MFC and its subsidiaries allows us to access capital markets at competitive pricing levels. Should these credit ratings decrease materially, our cost of financing may increase and our access to funding and capital through capital markets could be reduced.

During 2021, S&P, Moody's, DBRS Morningstar, Fitch and AM Best Company ("AM Best") maintained their assigned ratings of MFC and its primary insurance operating companies.

The following table summarizes the financial strength ratings of MLI and certain of its subsidiaries as at January 31, 2022.

Financial Strength Ratings

Subsidiary	Jurisdiction	S&P	Moody's	DBRS Morningstar	Fitch	AM Best
The Manufacturers Life Insurance Company	Canada	AA-	A1	AA	AA-	A+ (Superior)
John Hancock Life Insurance Company (U.S.A.)	United States	AA-	A1	Not Rated	AA-	A+ (Superior)
Manulife (International) Limited	Hong Kong	AA-	Not Rated	Not Rated	Not Rated	Not Rated
Manulife Life Insurance Company	Japan	A+	Not Rated	Not Rated	Not Rated	Not Rated
Manulife (Singapore) Pte. Ltd.	Singapore	AA-	Not Rated	Not Rated	Not Rated	Not Rated

As of January 31, 2022, S&P, Moody's, DBRS Morningstar, Fitch, and AM Best had a stable outlook on these ratings. The S&P rating and related outlook for Manulife Life Insurance Company are constrained by the sovereign rating on Japan (A+/Stable).

¹ The "Risk Management and Risk Factors" section of the MD&A outlines a number of regulatory capital risks.

11. Critical Actuarial and Accounting Policies

The preparation of Consolidated Financial Statements in conformity with IFRS requires management to make judgments, estimates and assumptions that affect the application of accounting policies and the reported amounts of assets and liabilities, and the disclosure of contingent assets and liabilities as at the date of the Consolidated Financial Statements, and the reported amounts of revenue and expenses during the reporting periods. Actual results may differ from these estimates. The most significant estimation processes relate to assumptions used in measuring insurance and investment contract liabilities, assessing assets for impairment, determining of pension and other post-employment benefit obligation and expense assumptions, determining income taxes and uncertain tax positions and fair valuation of certain invested assets. Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the year in which the estimates are revised and in any future years affected. Although some variability is inherent in these estimates, management believes that the amounts recorded are appropriate. The significant accounting policies used and the most significant judgments made by management in applying these accounting policies in the preparation of the 2021 Annual Consolidated Financial Statements are described in note 1 to the Consolidated Financial Statements.

Critical Actuarial Policies – Policy Liabilities (Insurance and Investment Contract Liabilities)

Policy liabilities for IFRS are valued in Canada under standards established by the ASB. These standards are designed to ensure we establish an appropriate liability on the Consolidated Statements of Financial Position to cover future obligations to all our policyholders. The assumptions underlying the valuation of policy liabilities are required to be reviewed and updated on an ongoing basis to reflect recent and emerging trends in experience and changes in risk profile of the business. In conjunction with prudent business practices to manage both product and asset related risks, the selection and monitoring of appropriate valuation assumptions is designed to minimize our exposure to measurement uncertainty related to policy liabilities.

Policy liabilities have two major components: a best estimate amount and a provision for adverse deviation. The best estimate amount represents the estimated value of future policyholder benefits and settlement obligations to be paid over the term remaining on in-force policies, including the costs of servicing the policies. The best estimate amount is reduced by the future expected policy revenues and future expected investment income on assets supporting the policies, before any consideration for reinsurance ceded. To determine the best estimate amount, assumptions must be made for a number of key factors, including future mortality and morbidity rates, investment returns, rates of policy termination and premium persistency, operating expenses, certain taxes (other than income taxes and includes temporary tax timing and permanent tax rate differences on the cash flows available to satisfy policy obligations) and foreign currency. Reinsurance is used to transfer part or all of a policy liability to another insurance company at terms negotiated with that insurance company. A separate asset for reinsurance ceded is calculated based on the terms of the reinsurance treaties that are in-force, with deductions taken for the credit standing of the reinsurance counterparties where appropriate.

To recognize the uncertainty involved in determining the best estimate actuarial liability assumptions, a provision for adverse deviation (“PfAD”) is established. The PfAD is determined by including a margin of conservatism for each assumption to allow for possible mis-estimation of, or deterioration in, future experience in order to provide greater comfort that the policy liabilities will be sufficient to pay future benefits. The CIA establishes suggested ranges for the level of margins for adverse deviation based on the risk profile of the business. Our margins are set taking into account the risk profile of our business. The effect of these margins is to increase policy liabilities over the best estimate assumptions. The margins for adverse deviation decrease the income that is recognized at the time a new policy is sold and increase the income recognized in later periods as the margins release as the remaining policy risks reduce.

Best Estimate Assumptions

We follow established processes to determine the assumptions used in the valuation of our policy liabilities. The nature of each risk factor and the process for setting the assumptions used in the valuation are discussed below.

Mortality

Mortality relates to the occurrence of death. Mortality assumptions are based on our internal as well as industry past and emerging experience and are differentiated by sex, underwriting class, policy type and geographic market. We make assumptions about future mortality improvements using historical experience derived from population data. Reinsurance is used to offset some of our direct mortality exposure on in-force life insurance policies with the impact of the reinsurance directly reflected in our policy valuation for the determination of policy liabilities net of reinsurance. Actual mortality experience is monitored against these assumptions separately for each business. The results are favourable where mortality rates are lower than assumed for life insurance and where mortality rates are higher than assumed for payout annuities. Overall 2021 experience was unfavourable (2020 – unfavourable) when compared with our assumptions.

Morbidity

Morbidity relates to the occurrence of accidents and sickness for the insured risks. Morbidity assumptions are based on our internal as well as industry past and emerging experience and are established for each type of morbidity risk and geographic market. For our JH Long Term Care business we make assumptions about future morbidity changes. Actual morbidity experience is monitored against these

assumptions separately for each business. Our morbidity risk exposure relates to future expected claims costs for long-term care insurance, as well as for group benefits and certain individual health insurance products we offer. Overall 2021 experience was favourable (2020 – favourable) when compared with our assumptions.

Policy Termination and Premium Persistency

Policy termination includes lapses and surrenders, where lapses represent the termination of policies due to non-payment of premiums and surrenders represent the voluntary termination of policies by policyholders. Premium persistency represents the level of ongoing deposits on contracts where there is policyholder discretion as to the amount and timing of deposits. Policy termination and premium persistency assumptions are primarily based on our recent experience adjusted for expected future conditions. Assumptions reflect differences by type of contract within each geographic market and actual experience is monitored against these assumptions separately for each business. Overall 2021 experience was unfavourable (2020 – unfavourable) when compared with our assumptions.

Expenses and Taxes

Operating expense assumptions reflect the projected costs of maintaining and servicing in-force policies, including associated overhead expenses. The expenses are derived from internal cost studies and are projected into the future with an allowance for inflation. For some developing businesses, there is an expectation that unit costs will decline as these businesses mature. Actual expenses are monitored against assumptions separately for each business. Overall maintenance expenses for 2021 were unfavourable (2020 – unfavourable) when compared with our assumptions. Taxes reflect assumptions for future premium taxes and other non-income related taxes. For income taxes, policy liabilities are adjusted only for temporary tax timing and permanent tax rate differences on the cash flows available to satisfy policy obligations.

Investment Returns

As noted in the “Risk Management and Risk Factors – Market Risk – Asset Liability Management Strategy” section above, our general fund product liabilities are categorized into groups with similar characteristics in order to support them with a specific asset strategy. We seek to align the asset strategy for each group to the premium and benefit pattern, policyholder options and guarantees, and crediting rate strategies of the products they support. The projected cash flows from the assets are combined with projected cash flows from future asset purchases/sales to determine expected rates of return for future years. The investment strategies for future asset purchases and sales are based on our target investment policies for each segment and the reinvestment returns are derived from current and projected market rates for fixed interest investments and our projected outlook for non-fixed interest assets. Credit losses are projected based on our own and industry experience, as well as specific reviews of the current investment portfolio. Investment return assumptions for each asset class also incorporate expected investment management expenses that are derived from internal cost studies. In 2021, actual investment returns were favourable (2020 – unfavourable) when compared with our assumptions. Investment-related experience and the direct impact of interest rates and equity markets are discussed in the “Financial Performance” section above.

Segregated Funds

We offer segregated funds to policyholders that offer certain guarantees, including guaranteed returns of principal on maturity or death, as well as guarantees of minimum withdrawal amounts or income benefits. The on-balance sheet liability for these benefits is the expected cost of these guarantees including appropriate valuation margins for the various contingencies including mortality and lapse. The dominant driver of the cost of guarantees is the return on the underlying funds in which the policyholders invest. See “Risk Management and Risk Factors – Market Risk – Hedging Strategies for Variable Annuity and Other Equity Risks” and the “Financial Performance – Analysis of Net Income” sections above.

Foreign Currency

Foreign currency risk results from a mismatch of the currency of the policy liabilities and the currency of the assets designated to support these obligations. We generally match the currency of our assets with the currency of the liabilities they support, with the objective of mitigating the risk of economic loss arising from movements in currency exchange rates. Where a currency mismatch exists, the assumed rate of return on the assets supporting the liabilities is reduced to reflect the potential for adverse movements in exchange rates.

Experience Adjusted Products

Where policies have features that allow the impact of changes in experience to be passed on to policyholders through policy dividends, experience rating refunds, credited rates or other adjustable features, the projected policyholder benefits are adjusted to reflect the projected experience. Minimum contractual guarantees and other market considerations are taken into account in determining the policy adjustments.

Provision for Adverse Deviation

The total provision for adverse deviation is the sum of the provisions for adverse deviation for each risk factor. Margins for adverse deviation are established by product type and geographic market for each assumption or factor used in the determination of the best estimate actuarial liability. The margins are established based on the risk characteristics of the business being valued.

Margins for interest rate risk are included by testing a number of scenarios of future interest rates. The margin can be established by testing a limited number of scenarios, some of which are prescribed by Canadian Actuarial Standards of Practice, and determining the liability based on the worst outcome. Alternatively, the margin can be set by testing many scenarios which are developed according to actuarial guidance. Under this approach the liability would be the average of the outcomes above a percentile in the range prescribed by the Canadian Actuarial Standards of Practice.

In addition to the explicit margin for adverse deviation, the valuation basis for segregated fund liabilities explicitly limits the future revenue recognition in the valuation basis to the amount necessary to offset acquisition expenses after allowing for the cost of any guarantee features. The fees that are in excess of this limitation are reported as an additional margin and are shown in segregated fund non-capitalized margins.

The provision for adverse deviation and the future revenue deferred in the valuation due to the limitations on recognition of future revenue in the valuation of segregated fund liabilities are shown in the table below.

As at December 31,
(\$ millions)

	2021	2020
Best estimate actuarial liability	\$ 275,552	\$ 268,147
Provision for adverse deviation ("PfAD")		
Insurance risks (mortality/morbidity)	\$ 18,888	\$ 19,549
Policyholder behaviour (lapse/surrender/premium persistency)	6,541	6,757
Expenses	1,834	1,950
Investment risks (non-credit)	34,396	33,531
Investment risks (credit)	1,020	1,121
Segregated funds guarantees	1,679	2,178
Total PfAD⁽¹⁾	64,358	65,086
Segregated funds – additional margins	17,099	16,388
Total of PfAD and additional segregated fund margins	\$ 81,457	\$ 81,474

⁽¹⁾ Reported net actuarial liabilities (excluding the \$4,474 million (2020 – \$4,720 million) reinsurance asset related to the Company's in-force participating life insurance closed block that is retained on a funds withheld basis as part of the New York Life transaction) as at December 31, 2021 of \$339,910 million (2020 – \$333,233 million) are comprised of \$275,552 million (2020 – \$268,147 million) of best estimate actuarial liabilities and \$64,358 million (2020 – \$65,086 million) of PfAD.

The change in the PfAD from period to period is impacted by changes in liability and asset composition, by currency and interest rate movements and by material changes in valuation assumptions. The overall decrease in PfADs for insurance risks was primarily due to the impact of higher interest rates in the U.S. and Canada, the annual review of actuarial valuation methods and assumptions, and the appreciation of the Canadian dollar relative to the Japanese yen, U.S. dollar and Hong Kong dollar, partially offset by the expected PfAD growth from in-force and new business. The overall decrease in PfADs for policyholder behaviour and expense was driven by the impact of higher interest rates in the U.S. and Canada and the appreciation of the Canadian dollar, partially offset by the expected PfAD growth from in-force and new business. The overall increase in PfADs for non-credit investment risks was driven by the expected PfAD growth from in-force and new business, the annual review of actuarial valuation methods and assumptions, partially offset by the appreciation of the Canadian dollar and higher interest rates in the U.S. and Canada. The increase in the additional segregated fund margins was primarily due to increase in equity markets, partially offset by increase in interest rates in the U.S. and Canada.

Sensitivity of Earnings to Changes in Assumptions

When the assumptions underlying our determination of policy liabilities are updated to reflect recent and emerging experience or change in outlook, the result is a change in the value of policy liabilities which in turn affects net income attributed to shareholders. The sensitivity of net income attributed to shareholders to changes in non-economic and certain asset related assumptions underlying policy liabilities is shown below and assumes that there is a simultaneous change in the assumptions across all business units. The sensitivity of net income attributed to shareholders to a deterioration or improvement in non-economic assumptions underlying long-term care policy liabilities as at December 31, 2021 is also shown below.

For changes in asset related assumptions, the sensitivity is shown net of the corresponding impact on income of the change in the value of the assets supporting policy liabilities. In practice, experience for each assumption will frequently vary by geographic market and business, and assumption updates are made on a business/geographic specific basis. Actual results can differ materially from these estimates for a variety of reasons including the interaction among these factors when more than one changes, changes in actuarial and investment return and future investment activity assumptions, actual experience differing from the assumptions, changes in business mix, effective tax rates and other market factors, and the general limitations of our internal models.

Potential impact on net income attributed to shareholders arising from changes to non-economic assumptions⁽¹⁾

As at December 31, (\$ millions)	Decrease in after-tax net income attributed to shareholders	
	2021	2020
Policy related assumptions		
2% adverse change in future mortality rates ^{(2),(4)}		
Products where an increase in rates increases insurance contract liabilities	\$ (500)	\$ (500)
Products where a decrease in rates increases insurance contract liabilities	(500)	(600)
5% adverse change in future morbidity rates (incidence and termination) ^{(3),(4),(5)}	(5,500)	(5,700)
10% adverse change in future policy termination rates ⁽⁴⁾	(2,400)	(2,600)
5% increase in future expense levels	(600)	(600)

⁽¹⁾ The participating policy funds are largely self-supporting and generate no material impact on net income attributed to shareholders as a result of changes in non-economic assumptions. Experience gains or losses would generally result in changes to future dividends, with no direct impact to shareholders.

⁽²⁾ An increase in mortality rates will generally increase policy liabilities for life insurance contracts whereas a decrease in mortality rates will generally increase policy liabilities for policies with longevity risk such as payout annuities.

⁽³⁾ No amounts related to morbidity risk are included for policies where the policy liability provides only for claims costs expected over a short period, generally less than one year, such as Group Life and Health.

⁽⁴⁾ The impacts of the sensitivities on LTC for morbidity, mortality and lapse do not assume any offsets from the Company's ability to contractually raise premium rates in such events, subject to state regulatory approval. In practice, we would plan to file for rate increases equal to the amount of deterioration resulting from the sensitivity.

⁽⁵⁾ This includes a 5% deterioration in incidence rates and 5% deterioration in claim termination rates.

Potential impact on net income attributed to shareholders arising from changes to non-economic assumptions for Long Term Care⁽¹⁾

As at December 31, (\$ millions)	Decrease in after-tax net income attributed to shareholders	
	2021	2020
Policy related assumptions		
2% adverse change in future mortality rates ^{(2),(3)}	\$ (300)	\$ (300)
5% adverse change in future morbidity incidence rates ^{(2),(3)}	(2,000)	(2,100)
5% adverse change in future morbidity claims termination rates ^{(2),(3)}	(3,100)	(3,100)
10% adverse change in future policy termination rates ^{(2),(3)}	(400)	(400)
5% increase in future expense levels ⁽³⁾	(100)	(100)

⁽¹⁾ Translated from US\$ at 1.2678 for 2021.

⁽²⁾ The impacts of the sensitivities on LTC for morbidity, mortality and lapse do not assume any offsets from the Company's ability to contractually raise premium rates in such events, subject to state regulatory approval. In practice, we would plan to file for rate increases equal to the amount of deterioration resulting from the sensitivities.

⁽³⁾ The impact of favourable changes to all the sensitivities is relatively symmetrical.

Potential impact on net income attributed to shareholders arising from changes to asset related assumptions supporting actuarial liabilities⁽¹⁾

As at December 31, (\$ millions)	Increase (decrease) in after-tax net income attributed to shareholders			
	2021		2020	
	Increase	Decrease	Increase	Decrease
Asset related assumptions updated periodically in valuation basis changes				
100 basis point change in future annual returns for public equities ⁽¹⁾	\$ 500	\$ (500)	\$ 500	\$ (500)
100 basis point change in future annual returns for ALDA ⁽²⁾	3,900	(4,700)	4,200	(5,200)
100 basis point change in equity volatility assumption for stochastic segregated fund modelling ⁽³⁾	(200)	200	(200)	200

⁽¹⁾ The sensitivity to public equity returns above includes the impact on both segregated fund guarantee reserves and on other policy liabilities. Expected long-term annual market growth assumptions for public equities are based on long-term historical observed experience and compliance with actuarial standards. As at December 31, 2021 and December 31, 2020, unless otherwise noted, the growth rates inclusive of dividends in the major markets used in the stochastic valuation models for valuing segregated fund guarantees are 9.0% (9.2% as at December 31, 2020) per annum in Canada, 9.6% per annum in the U.S. and 6.2% per annum in Japan. Growth assumptions for European equity funds are market-specific and vary between 8.3% and 9.9%.

⁽²⁾ ALDA include commercial real estate, timber, farmland, infrastructure and private equities, some of which relate to oil and gas. Expected long-term return assumptions for ALDA and public equity are set in accordance with the Standards of Practice for the valuation of insurance contract liabilities and guidance published by the CIA. Annual best estimate return assumptions for ALDA and public equity include market growth rates and annual income, such as rent, production proceeds and dividends, and will vary based on our holding period. Over a 20-year horizon, our best estimate return assumptions range between 5.25% and 11.5% (5.25% and 11.65% as at December 31, 2020), with an average of 9.2% (9.3% as at December 31, 2020) based on the current asset mix backing our guaranteed insurance and annuity business as of December 31, 2021. Our return assumptions including the margins for adverse deviations in our valuation, which take into account the uncertainty of achieving the returns, range between 2.5% and 7.5%, with an average of 6.0% (6.1% as at December 31, 2020) based on the asset mix backing our guaranteed insurance and annuity business as of December 31, 2021.

⁽³⁾ Volatility assumptions for public equities are based on long-term historical observed experience and compliance with actuarial standards. As of December 31, 2021 and December 31, 2020, unless otherwise stated, the resulting volatility assumptions are 16.5% per annum in Canada and 17.1% per annum in the U.S. for large cap public equities, and 19.1% per annum in Japan. For European equity funds, the volatility varies between 16.3% and 17.7%.

Review of Actuarial Methods and Assumptions

A comprehensive review of actuarial methods and assumptions is performed annually. The review is designed to reduce the Company's exposure to uncertainty by ensuring assumptions for both asset related and liability related risks remain appropriate. This is accomplished by monitoring experience and selecting assumptions which represent a current best estimate view of expected future experience, and margins for adverse deviations that are appropriate for the risks assumed. While the assumptions selected represent the Company's current best estimates and assessment of risk, the ongoing monitoring of experience and changes in the economic environment are likely to result in future changes to the actuarial assumptions, which could materially impact the measurement of insurance contract liabilities.

2021 Review of Actuarial Methods and Assumptions

This year's review of actuarial methods and assumptions did not reflect COVID-19 experience as it is too soon to assess the impact of COVID-19 on long-term assumptions. Experience related to COVID-19 will continue to be closely monitored, as well as emerging research on the long-term implications of COVID-19 on mortality and other assumptions.

The completion of the 2021 annual review of actuarial methods and assumptions resulted in an increase in insurance contract liabilities of \$287 million, net of reinsurance, and a decrease in net income attributed to shareholders of \$41 million post-tax.

For the year ended December 31, 2021 (\$ millions)	Change in insurance contract liabilities, net of reinsurance			Change in net income attributed to shareholders (post-tax)
	Total	Attributed to participating policyholders' account ⁽¹⁾	Attributed to shareholders' account	
U.S. variable annuity product review	\$ 51	\$ –	\$ 51	\$ (40)
Mortality and morbidity updates	350	–	350	(257)
Lapses and policyholder behaviour updates	686	18	668	(534)
Expense updates	(653)	(25)	(628)	503
Investment-related updates	(257)	(2)	(255)	168
Other updates	110	231	(121)	119
Net impact	\$ 287	\$ 222	\$ 65	\$ (41)

⁽¹⁾ The change in insurance contract liabilities, net of reinsurance, attributable to the participating policyholders' account was primarily driven by a reduction in the expected long-term interest rates within the valuation models to reflect the low interest rate environment.

U.S. variable annuity product review

The review of our variable annuity products in the U.S. resulted in a \$40 million post-tax charge to net income attributed to shareholders.

The charge was primarily driven by updates to lapse assumptions to reflect emerging experience, partially offset by refinements to our segregated fund guaranteed minimum withdrawal benefit valuation models.

Updates to mortality and morbidity

Mortality and morbidity updates resulted in a \$257 million post-tax charge to net income attributed to shareholders.

The charge was driven by updates to older age mortality on certain products in our U.S. life insurance business, mortality assumption updates in Indonesia to reflect recent experience, as well as from refining assumptions on several reinsurance arrangements in Canada.

Updates to lapses and policyholder behaviour

Updates to lapses and policyholder behaviour assumptions resulted in a \$534 million post-tax charge to net income attributed to shareholders.

We completed a detailed review of lapse assumptions for non-participating policies within our U.S. life insurance business including those for universal life, variable universal life, and term products. We observed a trend of low lapse rates on our protection-focused universal life insurance products as consumers continue to value the product guarantees in the prolonged low interest rate environment. We lowered the overall lapse assumptions for these products to reflect actual experience, which resulted in a post-tax charge to net income attributed to shareholders.

Other updates to lapse and policyholder behaviour assumptions were made across several products in Canada and Japan to reflect recent experience, resulting in a modest post-tax charge to net income attributed to shareholders.

Expense updates

Updates to expense assumptions resulted in a \$503 million post-tax gain to net income attributed to shareholders.

We completed a detailed review of our investment expense assumptions across the Company. This resulted in a \$263 million post-tax gain to net income attributed to shareholders, primarily driven by scale benefits.

We also completed a global expense study, which resulted in a \$256 million post-tax gain to net income attributed to shareholders. The favourable result primarily reflects a reallocation of expenses across certain business lines to align with actual experience, as well as from expense savings related to various expense efficiency initiatives.

Investment-related updates

Updates to investment return assumptions resulted in a \$168 million post-tax gain to net income attributed to shareholders.

The primary driver of the gain was an update to our corporate bond default rates to reflect recent experience; we reduced default assumptions for certain credit ratings in Canada, the U.S., and Japan. This was partially offset by a reduction to our Canadian real estate investment return assumptions.

Other updates

Other updates resulted in a \$119 million post-tax gain to net income attributed to shareholders.

This was primarily driven by Japan, whereby investment fees for certain mandates in the general account provided by affiliate investment managers were reviewed and updated to align with broader market levels.

Impact of changes in actuarial methods and assumptions by segment

The impact of changes in actuarial methods and assumptions in Canada resulted in a \$65 million post-tax charge to net income attributed to shareholders. The charge was primarily driven by a reduction to our real estate investment return assumptions, as well as from refining assumptions on several reinsurance arrangements in individual insurance, largely offset by positive updates related to our company-wide expense review and corporate bond default study.

The impact of changes in actuarial methods and assumptions in the U.S. resulted in a \$314 million post-tax charge to net income attributed to shareholders. The charge was primarily driven by updates to lapse and mortality assumptions in our U.S. life insurance business to reflect emerging experience, partially offset by positive updates related to our company-wide expense review and corporate bond default study.

The impact of changes in actuarial methods and assumptions in Asia resulted in a \$343 million post-tax gain to net income attributed to shareholders. The gain was primarily driven by Japan, whereby investment fees for certain mandates in the general account provided by affiliate investment managers were reviewed and updated to align with broader market levels, as well as from the positive updates related to our corporate bond default study. This was partially offset by updates to the mortality assumptions in Indonesia to reflect recent experience.

The impact of changes in actuarial methods and assumptions in Corporate and Other (which includes our Reinsurance business) resulted in a \$5 million post-tax charge to net income attributed to shareholders.

2020 Review of Actuarial Methods and Assumptions

The 2020 full year review of actuarial methods and assumptions resulted in an increase in insurance contract liabilities of \$563 million, net of reinsurance, and a decrease in net income attributed to shareholders of \$198 million post-tax.

For the year ended December 31, 2020 (\$ millions)	Change in insurance contract liabilities, net of reinsurance			
	Total	Attributed to participating policyholders' account ⁽¹⁾	Attributed to shareholders' account	Change in net income attributed to shareholders (post-tax)
Canada variable annuity product review	\$ (42)	\$ –	\$ (42)	\$ 31
Mortality and morbidity updates	(304)	(1)	(303)	232
Lapses and policyholder behaviour	893	–	893	(682)
Investment return assumptions	(212)	(153)	(59)	31
Other updates	228	455	(227)	190
Net impact	\$ 563	\$ 301	\$ 262	\$ (198)

⁽¹⁾ The change in insurance contract liabilities, net of reinsurance, attributable to the participating policyholders' account was driven by refinements to our valuation models, primarily due to annual updates to reflect market movements in the first half of 2020.

Canada variable annuity product review

The review of our variable annuity product in Canada resulted in a \$31 million post-tax gain to net income attributed to shareholders.

The gain was driven by refinements to our segregated fund guaranteed minimum withdrawal benefit valuation models, partially offset by updates to lapse assumptions to reflect emerging experience.

Updates to mortality and morbidity

Mortality and morbidity updates resulted in a \$232 million post-tax gain to net income attributed to shareholders.

The gain was primarily driven by a review of our reinsurance arrangements and mortality margins for preferred risk classes in our Canada Individual Insurance business, as well as updates to the morbidity assumptions on certain products in Japan. This was partially offset by a charge from the review of mortality assumptions in our U.S. Insurance business, where emerging experience showed higher mortality at older attained ages.

Other updates to mortality and morbidity assumptions were made across several products, largely in Canada, to reflect recent experience resulting in a net post-tax gain to net income attributable to shareholders.

Updates to lapses and policyholder behaviour

Updates to lapses and policyholder behaviour assumptions resulted in a \$682 million post-tax charge to net income attributed to shareholders.

We completed a detailed review of the lapse assumptions for universal life policies in Canada, including both yearly renewable term, and level cost of insurance products. We lowered the ultimate lapse assumptions due to the emergence of more recent data, which resulted in a post-tax charge of \$504 million to net income attributed to shareholders, primarily driven by adverse experience on large policies.

Other updates to lapse and policyholder behaviour assumptions were made across several products to reflect recent experience resulting in a net post-tax charge to net income attributable to shareholders. The primary driver of the charge was adverse lapse experience from retail policies in Japan.

Investment-related updates

Updates to investment return assumptions resulted in a \$31 million post-tax gain to net income attributed to shareholders.

Other updates

Other updates resulted in a \$190 million post-tax gain to net income attributed to shareholders. This incorporated several positive items including updates to our U.S. segregated fund guaranteed minimum withdrawal benefit valuation models, as well as updates to the projection of our tax and liability cash flows in the U.S. to align with updated U.S. tax and statutory reporting standard changes, partially offset by refinements to our valuation models, primarily driven by annual updates to reflect market movements in the first half of 2020.

Impact of changes in actuarial methods and assumptions by segment

The impact of changes in actuarial methods and assumptions in Canada resulted in a \$77 million post-tax gain to net income attributed to shareholders. The gain was driven by updates to certain Individual Insurance reinsurance arrangements and mortality margins for preferred risk classes, as well as refinements to our valuation models, primarily driven by annual updates to reflect market movements in the first half of 2020, largely offset by updated lapse assumptions on our universal life products.

In the U.S., the impact of changes in actuarial methods and assumptions resulted in a \$301 million post-tax charge to net income attributed to shareholders. The charge was driven by updates to our life mortality assumptions to reflect emerging experience, as well as refinements to our valuation models, primarily driven by annual updates to reflect market movements in the first half of 2020, partially offset by updates to our U.S. segregated fund guaranteed minimum withdrawal benefit valuation models, as well as updates to the projection of our tax and liability cash flows to align with updated U.S. tax and statutory reporting standards.

The impact of changes in actuarial methods and assumptions in Asia resulted in a \$41 million post-tax charge to net income attributed to shareholders. The charge was primarily driven by Japan, whereby lapse and morbidity updates on certain products to reflect emerging experience were partially offsetting.

The impact of changes in actuarial methods and assumptions in Corporate and Other (which includes our Reinsurance business) resulted in a \$67 million post-tax gain to net income attributed to shareholders.

Change in net insurance contract liabilities

The change in net insurance contract liabilities can be attributed to several sources: new business, acquisitions, in-force movement and currency impact. Changes in net insurance contract liabilities are substantially offset in the financial statements by premiums, investment income, policy benefits and other policy related cash flows. The changes in net insurance contract liabilities by business segment are shown below:

2021 Net Insurance Contract Liability Movement Analysis

For the year ended December 31, 2021

(\$ millions)	Asia	Canada	U.S.	Corporate and Other	Total
Balance, January 1	\$ 102,958	\$ 90,346	\$ 146,939	\$ (458)	\$ 339,785
New business ^{(1),(2)}	5,748	(211)	410	–	5,947
In-force movement ^{(1),(3)}	6,402	(939)	348	161	5,972
Changes in methods and assumptions ⁽¹⁾	(335)	177	439	6	287
Reinsurance transactions ⁽¹⁾	–	–	–	–	–
Currency impact ⁽⁴⁾	(3,341)	–	(906)	–	(4,247)
Balance, December 31	\$ 111,432	\$ 89,373	\$ 147,230	\$ (291)	\$ 347,744

⁽¹⁾ The \$11,473 million increase reported as the change in insurance contract liabilities and change in reinsurance assets on the 2021 Consolidated Statements of Income primarily consists of changes due to the changes in methods and assumptions, normal in-force movement, new policies and associated embedded derivatives. The net impact of these items resulted in an increase of \$12,206 million, of which \$10,923 million is included in the Consolidated Statements of Income as an increase in insurance contract liabilities and change in reinsurance assets, with the remaining \$1,283 million increase included in net claims and benefits. The change in insurance contract liabilities amount on the Consolidated Statements of Income also includes the change in embedded derivatives associated with insurance contracts, however these embedded derivatives are included in other liabilities on the Consolidated Statements of Financial Position.

⁽²⁾ New business policy liability impact is positive/(negative) when estimated future premiums, together with future investment income, are expected to be more/(less) than sufficient to pay estimated future benefits, policyholder dividends and refunds, taxes (excluding income taxes) and expenses on new policies issued.

⁽³⁾ The net in-force movement over the year was an increase of \$5,972 million, primarily reflecting the expected growth in insurance contract liabilities in all three geographic segments, partially offset by the impact of interest rate increases.

⁽⁴⁾ The decrease in policy liabilities from currency impact reflects the appreciation of the Canadian dollar relative to the Japanese yen and U.S. dollar. To the extent assets are currency matched to liabilities, the decrease in insurance contract liabilities due to currency impact is offset by a corresponding decrease from currency impact in the value of assets supporting those liabilities.

2020 Net Insurance Contract Liability Movement Analysis

For the year ended December 31, 2020

(\$ millions)	Asia	Canada	U.S.	Corporate and Other	Total
Balance, January 1	\$ 87,937	\$ 83,297	\$ 138,859	\$ (285)	\$ 309,808
New business ^{(1),(2)}	3,014	(229)	381	–	3,166
In-force movement ^{(1),(3)}	11,516	7,897	14,370	(131)	33,652
Changes in methods and assumptions ⁽¹⁾	393	(619)	840	(51)	563
Reinsurance transactions ^{(1),(4)}	–	–	(3,360)	–	(3,360)
Currency impact ⁽⁵⁾	98	–	(4,151)	9	(4,044)
Balance, December 31	\$ 102,958	\$ 90,346	\$ 146,939	\$ (458)	\$ 339,785

⁽¹⁾ The \$31,719 million increase reported as the change in insurance contract liabilities and change in reinsurance assets on the 2020 Consolidated Statements of Income primarily consists of changes due to the changes in methods and assumptions, normal in-force movement, new policies and associated embedded derivatives, partially offset by reinsurance transactions. The net impact of these items result in an increase of \$34,021 million, of which \$32,709 million is included in the Consolidated Statements of Income as an increase in insurance contract liabilities and change in reinsurance assets, with the remaining \$1,312 million increase included in net claims and benefits. The change in insurance contract liabilities amount on the Consolidated Statements of Income also includes the change in embedded derivatives associated with insurance contracts, however these embedded derivatives are included in other liabilities on the Consolidated Statements of Financial Position.

⁽²⁾ New business policy liability impact is positive/(negative) when estimated future premiums, together with future investment income, are expected to be more/(less) than sufficient to pay estimated future benefits, policyholder dividends and refunds, taxes (excluding income taxes) and expenses on new policies issued.

⁽³⁾ The net in-force movement over the year was an increase of \$33,652 million, primarily reflecting the impact of interest rate declines and expected growth in insurance contract liabilities in all three geographic segments.

⁽⁴⁾ On September 30, 2020, the Company, through its subsidiary John Hancock Life Insurance Company (U.S.A.), entered into a reinsurance agreement with Global Atlantic Financial Group Ltd to reinsure a block of legacy U.S. bank owned life insurance ("BOLI"). Under the terms of the transaction, the Company will maintain responsibility for servicing the policies with no expected impact to the BOLI policyholders. The transaction was structured such that the Company ceded policyholder contract liabilities and transferred invested assets backing these liabilities.

⁽⁵⁾ The decrease in policy liabilities from currency impact reflects the appreciation of the Canadian dollar relative to the U.S. dollar, Hong Kong dollar, slightly offset by the depreciation of the Canadian dollar relative to the Japanese yen. To the extent assets are currency matched to liabilities, the decrease in insurance contract liabilities due to currency impact is offset by a corresponding decrease from currency impact in the value of assets supporting those liabilities.

Critical Accounting Policies

Consolidation

The Company is required to consolidate the financial position and results of entities it controls. Control exists when the Company:

- Has the power to govern the financial and operating policies of the entity;
- Is exposed to a significant portion of the entity's variable returns; and

- Is able to use its power to influence variable returns from the entity.

The Company uses the same principles to assess control over any entity it is involved with. In evaluating control, potential factors assessed include the effects of:

- Substantive potential voting rights that are currently exercisable or convertible;
- Contractual management relationships with the entity;
- Rights and obligations resulting from policyholders to manage investments on their behalf; and
- The effect of any legal or contractual restraints on the Company from using its power to affect its variable returns from the entity.

An assessment of control is based on arrangements in place and the assessed risk exposures at inception. Initial evaluations are reconsidered at a later date if:

- The Company acquires additional interests in the entity or its interests in an entity are diluted;
- The contractual arrangements of the entity are amended such that the Company's involvement with the entity changes; or
- The Company's ability to use its power to affect its variable returns from the entity changes.

Subsidiaries are consolidated from the date on which control is obtained by the Company and cease to be consolidated from the date that control ceases.

Fair Value of Invested Assets

A large portion of the Company's invested assets are recorded at fair value. Refer to note 1 of the 2021 Annual Consolidated Financial Statements for a description of the methods used in determining fair values. When quoted prices in active markets are not available for a particular investment, significant judgment is required to determine an estimated fair value based on market standard valuation methodologies including discounted cash flow methodologies, matrix pricing, consensus pricing services, or other similar techniques. The inputs to these market standard valuation methodologies include: current interest rates or yields for similar instruments, credit rating of the issuer or counterparty, industry sector of the issuer, coupon rate, call provisions, sinking fund requirements, tenor (or expected tenor) of the instrument, management's assumptions regarding liquidity, volatilities and estimated future cash flows. Accordingly, the estimated fair values are based on available market information and management's judgments about the key market factors impacting these financial instruments. Financial markets are susceptible to severe events evidenced by rapid depreciation in asset values accompanied by a reduction in asset liquidity. The Company's ability to sell assets, or the price ultimately realized for these assets, depends upon the demand and liquidity in the market and increases the use of judgment in determining the estimated fair value of certain assets.

Evaluation of Invested Asset Impairment

AFS fixed income and equity securities are carried at fair market value, with changes in fair value recorded in other comprehensive income ("OCI") with the exception of unrealized gains and losses on foreign currency translation of AFS fixed income securities which are included in net income attributed to shareholders. Securities are reviewed on a regular basis and any fair value decrement is transferred out of AOCI and recorded in net income attributed to shareholders when it is deemed probable that the Company will not be able to collect all amounts due according to the contractual terms of a fixed income security or when fair value of an equity security has declined significantly below cost or for a prolonged period of time.

Provisions for impairments of mortgage loans and private placement loans are recorded with losses reported in earnings when there is no longer reasonable assurance as to the timely collection of the full amount of the principal and interest.

Significant judgment is required in assessing whether an impairment has occurred and in assessing fair values and recoverable values. Key matters considered include economic factors, Company and industry specific developments, and specific issues with respect to single issuers and borrowers.

Changes in circumstances may cause future assessments of asset impairment to be materially different from current assessments, which could require additional provisions for impairment. Additional information on the process and methodology for determining the allowance for credit losses is included in the discussion of credit risk in note 8 to the 2021 Consolidated Financial Statements.

Derivative Financial Instruments

The Company uses derivative financial instruments ("derivatives") including swaps, forwards and futures agreements, and options to help manage current and anticipated exposures to changes in interest rates, foreign exchange rates, commodity prices and equity market prices, and to replicate permissible investments. Refer to note 4 to the 2021 Consolidated Financial Statements for a description of the methods used to determine the fair value of derivatives.

The accounting for derivatives is complex and interpretations of the primary accounting guidance continue to evolve in practice. Judgment is applied in determining the availability and application of hedge accounting designations and the appropriate accounting treatment under such accounting guidance. Differences in judgment as to the availability and application of hedge accounting designations and the appropriate accounting treatment may result in a differing impact on the Consolidated Financial Statements of the Company from that previously reported. Assessments of hedge effectiveness and measurements of ineffectiveness of hedging relationships are also subject to interpretations and estimations. If it was determined that hedge accounting designations were not appropriately applied, reported net income attributed to shareholders could be materially affected.

Employee Future Benefits

The Company maintains defined contribution and defined benefit pension plans and other post-employment plans for employees and agents, including registered (tax qualified) pension plans that are typically funded, as well as supplemental non-registered (non-qualified) pension plans for executives, retiree welfare plans and disability welfare plans that are typically not funded. The largest defined benefit pension and retiree welfare plans in the U.S. and Canada are the material plans that are discussed herein and in note 15 to the 2021 Annual Consolidated Financial Statements.

Due to the long-term nature of defined benefit pension and retiree welfare plans, the calculation of the defined benefit obligation and net benefit cost depends on various assumptions such as discount rates, salary increase rates, cash balance interest crediting rates, health care cost trend rates and rates of mortality. These assumptions are determined by management and are reviewed annually. The key assumptions, as well as the sensitivity of the defined benefit obligation to changes in these assumptions, are presented in note 15 to the 2021 Annual Consolidated Financial Statements.

Changes in assumptions and differences between actual and expected experience give rise to actuarial gains and losses that affect the amount of the defined benefit obligation and OCI. For 2021, the amount recorded in OCI was a gain of \$217 million (2020 – gain of \$47 million) for the defined benefit pension plans and a gain of \$27 million (2020 – gain of \$10 million) for the retiree welfare plans.

Contributions to the registered (tax qualified) defined benefit pension plans are made in accordance with the applicable U.S. and Canadian regulations. During 2021, the Company contributed \$2 million (2020 – \$6 million) to these plans. As at December 31, 2021, the difference between the fair value of assets and the defined benefit obligation for these plans was a surplus of \$600 million (2020 – surplus of \$446 million). For 2022, the contributions to the plans are expected to be approximately \$7 million.¹

The Company's supplemental pension plans for executives are not funded; benefits under these plans are paid as they become due. During 2021, the Company paid benefits of \$59 million (2020 – \$65 million) under these plans. As at December 31, 2021, the defined benefit obligation for these plans, which is reflected as a liability in the balance sheet, amounted to \$687 million (2020 – \$752 million).

The Company's retiree welfare plans are partially funded, although there are no regulations or laws governing or requiring the funding of these plans. As at December 31, 2021, the difference between the fair value of plan assets and the defined benefit obligation for these plans was a surplus of \$3 million (2020 – deficit of \$32 million).

Income Taxes

The Company is subject to income tax laws in various jurisdictions. Tax laws are complex and potentially subject to different interpretations by the taxpayer and the relevant tax authority. The provision for income taxes represents management's interpretation of the relevant tax laws and its estimate of current and future income tax implications of the transactions and events during the period. A deferred tax asset or liability results from temporary differences between carrying values of the assets and liabilities and their respective tax basis. Deferred tax assets and liabilities are recorded based on expected future tax rates and management's assumptions regarding the expected timing of the reversal of such temporary differences. The realization of deferred tax assets depends upon the existence of sufficient taxable income within the carryback or carryforward periods under the tax law in the applicable tax jurisdiction. A deferred tax asset is recognized to the extent that future realization of the tax benefit is probable. Deferred tax assets are reviewed at each reporting date and are reduced to the extent that it is no longer probable that the tax benefit will be realized. At December 31, 2021, we had \$5,254 million of deferred tax assets (December 31, 2020 – \$4,842 million). Factors in management's determination include, among other things, the following:

- Future taxable income exclusive of reversing temporary differences and carryforwards;
- Future reversals of existing taxable temporary differences;
- Taxable income in prior carryback years; and
- Tax planning strategies.

The Company may be required to change its provision for income taxes if the ultimate deductibility of certain items is successfully challenged by taxing authorities or if estimates used in determining the amount of deferred tax assets to recognize change significantly, or when receipt of new information indicates the need for adjustment in the recognition of deferred tax assets. Additionally, future events, such as changes in tax laws, tax regulations, or interpretations of such laws or regulations, could have an impact on the provision for income tax, deferred tax balances, actuarial liabilities (see Critical Actuarial and Accounting Policies – Expenses and Taxes above) and the effective tax rate. Any such changes could significantly affect the amounts reported in the Consolidated Financial Statements in the year these changes occur.

Goodwill and Intangible Assets

At December 31, 2021, under IFRS we had \$5,651 million of goodwill and \$4,264 million of intangible assets (\$1,549 million of which are intangible assets with indefinite lives). Goodwill and intangible assets with indefinite lives are tested at the cash generating unit level ("CGU") or group of CGUs level. A CGU comprises the smallest group of assets that are capable of generating largely independent cash flows and is either a business segment or a level below. The tests performed in 2021 demonstrated that there was no impairment of goodwill or intangible assets with indefinite lives. Changes in discount rates and cash flow projections used in the determination of embedded values or reductions in market-based earnings multiples may result in impairment charges in the future, which could be material.

¹ See "Caution regarding forward-looking statements" above.

Impairment charges could occur in the future as a result of changes in economic conditions. The goodwill testing for 2022 will be updated based on the conditions that exist in 2022 and may result in impairment charges, which could be material.

Future Accounting and Reporting Changes

There are several new accounting and reporting changes issued under IFRS including those still under development by the IASB. We have summarized below key recently issued accounting standards that are anticipated to have a significant impact on the Company. Accounting and reporting changes are discussed in note 2 of the 2021 Consolidated Financial Statements.

IFRS 9 “Financial Instruments”

IFRS 9 “Financial Instruments” was issued in November 2009 and amended in October 2010, November 2013 and July 2014, and is effective for years beginning on or after January 1, 2018, to be applied retrospectively, or on a modified retrospective basis. Additionally, the IASB issued amendments in October 2017 that are effective for annual periods beginning on or after January 1, 2019. In conjunction with the amendments to IFRS 17 issued in June 2020, the IASB amended IFRS 4 “Insurance Contracts” to permit eligible insurers to apply IFRS 9 effective January 1, 2023, alongside IFRS 17. The standard is intended to replace IAS 39 “Financial Instruments: Recognition and Measurement”.

The project has been divided into three phases: classification and measurement, impairment of financial assets, and hedge accounting. IFRS 9’s current classification and measurement methodology provides that financial assets are measured at either amortized cost or fair value on the basis of the entity’s business model for managing the financial assets and the contractual cash flow characteristics of the financial assets. The classification and measurement for financial liabilities remains generally unchanged; however, for a financial liability designated as at fair value through profit or loss, revisions have been made in the accounting for changes in fair value attributable to changes in the credit risk of that liability. Gains or losses caused by changes in an entity’s own credit risk on such liabilities are no longer recognized in profit or loss but instead are reflected in OCI.

Revisions to hedge accounting were issued in November 2013 as part of the overall IFRS 9 project. The amendment introduces a new hedge accounting model, together with corresponding disclosures about risk management activity for those applying hedge accounting. The new model represents a substantial overhaul of hedge accounting that will enable entities to better reflect their risk management activities in their financial statements.

Revisions issued in July 2014 replace the existing incurred loss model used for measuring the allowance for credit losses with an expected loss model. Changes were also made to the existing classification and measurement model designed primarily to address specific application issues raised by early adopters of the standard. They also address the income statement accounting mismatches and short-term volatility issues which have been identified as a result of the insurance contracts project.

The Company elected to defer IFRS 9 until January 1, 2023 as permitted under the June 2020 amendments to IFRS 4 “Insurance Contracts”. The Company is assessing the impact of this standard on the Company’s Consolidated Financial Statements.

IFRS 17 “Insurance Contracts”

IFRS 17 “Insurance Contracts” was issued in May 2017 to be effective for years beginning on January 1, 2021. Amendments to IFRS 17 “Insurance Contracts” were issued in June 2020 and include a two-year deferral of the effective date. IFRS 17 as amended, is effective for years beginning on January 1, 2023, to be applied retrospectively. If full retrospective application to a group of contracts is impractical, the modified retrospective or fair value methods may be used. The standard will replace IFRS 4 “Insurance Contracts” and will materially change the recognition and measurement of insurance contracts and the corresponding presentation and disclosures in the Company’s Financial Statements.

Narrow-scope amendments to IFRS 17 “Insurance Contracts” were issued in December 2021 and are effective on initial application of IFRS 17 and IFRS 9 “Financial Instruments” which the Company will adopt on January 1, 2023. The amendments remove accounting mismatches between insurance contract liabilities and financial assets in scope of IFRS 9 within comparative prior periods when initially applying IFRS 17 and IFRS 9. The amendments allow insurers to present comparative information on financial assets as if IFRS 9 were fully applicable during the comparative period. The amendments do not permit application of IFRS 9 hedge accounting principles to the comparative period. The Company is considering the effect of these amendments on its IFRS 9 transition disclosures.

The principles underlying IFRS 17 differ from CALM as permitted by IFRS 4. While there are many differences, the following outlines some of the key differences:

- Under IFRS 17 the discount rate used to estimate the present value of insurance contract liabilities is based on the characteristics of the liability, whereas under CALM, the Company uses the rates of returns for current and projected assets supporting insurance contract liabilities to value the liabilities. The difference in the discount rate approach also impacts the timing of investment-related experience earnings emergence. Under CALM, investment-related experience includes the impact of investing activities. The impact of investing activities is directly related to the CALM methodology. Under IFRS 17, the impact of investing activities will emerge over the life of the asset and is independent of the liability measurement.
- Under IFRS 17 the discount rate is not related to the expected return on our ALDA and public equity assets, and, as a result, the earnings sensitivity of a change in return assumptions for ALDA and public equity will be significantly reduced.

- Under IFRS 17 the discount rate used to present value future cashflows is disconnected from the assets we hold to support our insurance contract liabilities. As a result, we are considering electing the other comprehensive income option under IFRS 17 for our insurance contract liabilities and the fair value through other comprehensive income option under IFRS 9 for our fixed income assets.
- Under IFRS 17 new business gains are recorded on the Consolidated Statements of Financial Position (in the Contractual Service Margin component of the insurance contract liability) and amortized into income as services are provided. New business losses are recorded into income immediately. Under CALM, both new business gains and new business losses are recognized in income immediately. We reported \$1,274 million post-tax of new business gains in net income attributed to shareholders in 2021 (2020 – \$909 million).
- The change in timing of recognition of earnings under IFRS 17 does not impact the cash flows generated by the business, and, hence, IFRS 17 does not change the economics of our business. The value of new business will be recorded in the Contractual Service Margin on the Consolidated Statements of Financial Position. An increase in the Contractual Service Margin is indicative of growth in future earnings, all else being equal.

A summary of some of the key risks are outlined in the “Risk Factors and Risk Management – Emerging Risks” section above.

The Company continues its assessment of the implications of this standard and expects that it will have a significant impact on the Company’s Consolidated Financial Statements. The establishment of a Contractual Service Margin on our in-force business is expected to lead to an increase in insurance contract liabilities and a corresponding decrease in equity upon transition. The Contractual Service Margin represents unearned profits that are expected to amortize into income as services are provided. We continue to evaluate the potential impacts of all other changes including available accounting policy choices under IFRS 17 on the measurement of our insurance contract liabilities.

12. Controls and Procedures

Disclosure Controls and Procedures

Our disclosure controls and procedures are designed to provide reasonable assurance that information required to be disclosed by us is recorded, processed, summarized, and reported accurately and completely and within the time periods specified under Canadian and U.S. securities laws. Our process includes controls and procedures that are designed to ensure that information is accumulated and communicated to management, including the CEO and CFO, to allow timely decisions regarding required disclosure.

As of December 31, 2021, management evaluated the effectiveness of its disclosure controls and procedures as defined under the rules adopted by the U.S. Securities and Exchange Commission and the Canadian securities regulatory authorities. This evaluation was performed under the supervision of the Audit Committee, the CEO and CFO. Based on that evaluation, the CEO and CFO concluded that our disclosure controls and procedures were effective as at December 31, 2021.

MFC's Audit Committee has reviewed this MD&A and the 2021 Consolidated Financial Statements and MFC's Board approved these reports prior to their release.

Management's Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting. The Company's internal control system was designed to provide reasonable assurance to management and the Board regarding the preparation and fair presentation of published financial statements in accordance with generally accepted accounting principles. All internal control systems, no matter how well designed, have inherent limitations. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation.

Management maintains a comprehensive system of controls intended to ensure that transactions are executed in accordance with management's authorization, assets are safeguarded, and financial records are reliable. Management also takes steps to ensure that information and communication flows are effective and to monitor performance, including performance of internal control procedures.

Management assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2021 based on the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission 2013 framework in Internal Control – Integrated Framework. Based on this assessment, management believes that, as of December 31, 2021, the Company's internal control over financial reporting is effective.

The effectiveness of the Company's internal control over financial reporting as of December 31, 2021 has been audited by Ernst & Young LLP, the Company's independent registered public accounting firm that also audited the Consolidated Financial Statements of the Company for the year ended December 31, 2021. Their report expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting as of December 31, 2021.

Changes in Internal Control over Financial Reporting

No changes were made in our internal control over financial reporting during the year ended December 31, 2021 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

13. Non-GAAP and Other Financial Measures

The Company prepares its Consolidated Financial Statements in accordance with International Financial Reporting Standards (“IFRS”) as issued by the International Accounting Standards Board. We use a number of non-GAAP and other financial measures to evaluate overall performance and to assess each of our businesses. This section includes information required by National Instrument 52-112 – *Non-GAAP and Other Financial Measures Disclosure* in respect of “specified financial measures” (as defined therein).

Non-GAAP financial measures include core earnings (loss); pre-tax core earnings; core earnings available to common shareholders; core earnings before income taxes, depreciation and amortization (“core EBITDA”); core general expenses; Manulife Bank net lending assets; Manulife Bank average net lending assets; assets under management (“AUM”); assets under management and administration (“AUMA”); Global WAM managed AUMA; and net annualized fee income. In addition, non-GAAP financial measures include the following stated on a constant exchange rate (“CER”) basis: any of the foregoing non-GAAP financial measures; Global WAM revenue; net income attributed to shareholders; and common shareholders’ net income.

Non-GAAP ratios include core ROE; diluted core earnings per common share (“core EPS”); common share core dividend payout ratio; expense efficiency ratio; core EBITDA margin; effective tax rate on core earnings and net annualized fee income yield on average AUMA. In addition, non-GAAP ratios include the percentage growth/decline on a CER basis in any of the above non-GAAP financial measures; Global WAM revenue; net income attributed to shareholders; common shareholders’ net income; pre-tax net income attributed to shareholders; general expenses; basic earnings per common share; and diluted earnings per common share.

Other specified financial measures include assets under administration (“AUA”); consolidated capital; embedded value; new business value (“NBV”); new business value margin (“NBV margin”); sales; annualized premium equivalent (“APE”) sales; gross flows; net flows; market value to book value ratio; average assets under management and administration (“average AUMA”), Global WAM average managed AUMA; average assets under administration; remittances; any of the foregoing specified financial measures stated on a CER basis; and percentage growth/decline in any of the foregoing specified financial measures on a CER basis.

Non-GAAP financial measures and non-GAAP ratios are not standardized financial measures under GAAP and, therefore, might not be comparable to similar financial measures disclosed by other issuers. Therefore, they should not be considered in isolation or as a substitute for any other financial information prepared in accordance with GAAP.

Core earnings (loss) is a financial measure which we believe aids investors in better understanding the long-term earnings capacity and valuation of the business. Core earnings allows investors to focus on the Company’s operating performance by excluding the direct impact of changes in equity markets and interest rates, changes in actuarial methods and assumptions as well as a number of other items, outlined below, that we believe are material, but do not reflect the underlying earnings capacity of the business. For example, due to the long-term nature of our business, the mark-to-market movements of equity markets, interest rates, foreign currency exchange rates and commodity prices from period-to-period can, and frequently do, have a substantial impact on the reported amounts of our assets, liabilities and net income attributed to shareholders. These reported amounts are not actually realized at the time and may never be realized if the markets move in the opposite direction in a subsequent period. This makes it very difficult for investors to evaluate how our businesses are performing from period-to-period and to compare our performance with other issuers.

We believe that core earnings better reflect the underlying earnings capacity and valuation of our business. We use core earnings as the basis for management planning and reporting and, along with net income attributed to shareholders, as a key metric used in our short and mid-term incentive plans at the total Company and operating segment level. We also base our mid and long-term strategic priorities on core earnings.

While core earnings is relevant to how we manage our business and offers a consistent methodology, it is not insulated from macro-economic factors which can have a significant impact. See below for reconciliation of core earnings to net income attributed to shareholders and income before income taxes. Net income attributed to shareholders excludes net income attributed to participating policyholders and non-controlling interests.

The items included in core earnings and items excluded from core earnings are determined in accordance with the methodology under OSFI’s Source of Earnings Disclosure (Life Insurance Companies) guideline and are listed below.

Any future changes to the core earnings definition referred to below, will be disclosed.

Items included in core earnings:

1. Expected earnings on in-force policies, including expected release of provisions for adverse deviation, fee income, margins on group business and spread business such as Manulife Bank and asset fund management.
2. Macro hedging costs based on expected market returns.
3. New business strain and gains.
4. Policyholder experience gains or losses.
5. Acquisition and operating expenses compared with expense assumptions used in the measurement of policy liabilities.
6. Up to \$400 million of net favourable investment-related experience reported in a single year, which are referred to as “core investment gains”. This means up to \$100 million in the first quarter, up to \$200 million on a year-to-date basis in the second

quarter, up to \$300 million on a year-to-date basis in the third quarter and up to \$400 million on a full year basis in the fourth quarter. Any investment-related experience losses reported in a quarter will be offset against the net year-to-date investment-related experience gains with the difference being included in core earnings subject to a maximum of the year-to-date core investment gains and a minimum of zero, which reflects our expectation that investment-related experience will be positive through-the-business cycle. To the extent any investment-related experience losses cannot be fully offset in a quarter, they will be carried forward to be offset against investment-related experience gains in subsequent quarters in the same year, for purposes of determining core investment gains. Investment-related experience relates to fixed income investing, ALDA returns, credit experience and asset mix changes other than those related to a strategic change. An example of a strategic asset mix change is outlined below.

- This favourable and unfavourable investment-related experience is a combination of reported investment experience as well as the impact of investing activities on the measurement of our policy liabilities. We do not attribute specific components of investment-related experience to amounts included or excluded from core earnings.
- The \$400 million threshold represents the estimated average annualized amount of net favourable investment-related experience that the Company reasonably expects to achieve through-the-business cycle based on historical experience. It is not a forecast of expected net favourable investment-related experience for any given fiscal year.
- Our average net annualized investment-related experience, including core investment gains, calculated from the introduction of core earnings in 2012 to the end of 2021 was \$546 million (2012 to the end of 2020 was \$380 million).
- The decision announced on December 22, 2017 to reduce the allocation to ALDA in the portfolio asset mix supporting our legacy businesses was the first strategic asset mix change since we introduced the core earnings metric in 2012. We refined our description of investment-related experience in 2017 to note that asset mix changes other than those related to a strategic change are taken into consideration in the investment-related experience component of core investment gains.
- While historical investment return time horizons may vary in length based on underlying asset classes generally exceeding 20 years, for purposes of establishing the threshold, we look at a business cycle that is five or more years and includes a recession. We monitor the appropriateness of the threshold as part of our annual five-year planning process and would adjust it, either to a higher or lower amount, in the future if we believed that our threshold was no longer appropriate.
- Specific criteria used for evaluating a potential adjustment to the threshold may include, but are not limited to, the extent to which actual investment-related experience differs materially from actuarial assumptions used in measuring insurance contract liabilities, material market events, material dispositions or acquisitions of assets, and regulatory or accounting changes.

Core investment gains are reported in the Corporate and Other segment, with an offsetting adjustment to investment-related experience gains and losses in items excluded from core earnings.

7. Earnings on surplus other than mark-to-market items. Gains on available-for-sale (“AFS”) equities and seed money investments in segregated and mutual funds are included in core earnings.
8. Routine or non-material legal settlements.
9. All other items not specifically excluded.
10. Tax on the above items.
11. All tax related items except the impact of enacted or substantively enacted income tax rate changes.

Items excluded from core earnings:

1. The direct impact of equity markets and interest rates and variable annuity guarantee liabilities includes the items listed below.
 - The earnings impact of the difference between the net increase (decrease) in variable annuity liabilities that are dynamically hedged and the performance of the related hedge assets. Our variable annuity dynamic hedging strategy is not designed to completely offset the sensitivity of insurance and investment contract liabilities to all risks or measurements associated with the guarantees embedded in these products for a number of reasons, including: provisions for adverse deviation, fund performance, the portion of the interest rate risk that is not dynamically hedged, realized equity and interest rate volatilities and changes to policyholder behaviour.
 - Gains (charges) on variable annuity guarantee liabilities not dynamically hedged.
 - Gains (charges) on general fund equity investments supporting policy liabilities and on fee income.
 - Gains (charges) on macro equity hedges relative to expected costs. The expected cost of macro hedges is calculated using the equity assumptions used in the valuation of insurance and investment contract liabilities.
 - Gains (charges) on higher (lower) fixed income reinvestment rates assumed in the valuation of insurance and investment contract liabilities.
 - Gains (charges) on sale of AFS bonds and open derivatives not in hedging relationships in the Corporate and Other segment.
2. Net favourable investment-related experience in excess of \$400 million per annum or net unfavourable investment-related experience on a year-to-date basis.
3. Mark-to-market gains or losses on assets held in the Corporate and Other segment other than gains on AFS equities and seed money investments in new segregated or mutual funds.
4. Changes in actuarial methods and assumptions. As noted in the “Critical Actuarial and Accounting Policies” section above, policy liabilities for IFRS are valued in Canada under standards established by the Actuarial Standards Board. The standards require a comprehensive review of actuarial methods and assumptions to be performed annually. The review is designed to reduce the Company’s exposure to uncertainty by ensuring assumptions for both asset related and liability related risks remain appropriate and is accomplished by monitoring experience and selecting assumptions which represent a current best estimate view of expected

future experience, and margins that are appropriate for the risks assumed. Changes related to ultimate reinvestment rates (“URR”) are included in the direct impact of equity markets and interest rates and variable annuity guarantee liabilities. By excluding the results of the annual reviews, core earnings assist investors in evaluating our operational performance and comparing our operational performance from period to period with other global insurance companies because the associated gain or loss is not reflective of current year performance and not reported in net income in most actuarial standards outside of Canada.

5. The impact on the measurement of policy liabilities of changes in product features or new reinsurance transactions, if material.
6. Goodwill impairment charges.
7. Gains or losses on disposition of a business.
8. Material one-time only adjustments, including highly unusual/extraordinary and material legal settlements or other items that are material and exceptional in nature.
9. Tax on the above items.
10. Net income (loss) attributed to participating policyholders and non-controlling interests.
11. Impact of enacted or substantially enacted income tax rate changes.

Reconciliation of core earnings to net income attributed to shareholders

	2021					
(\$ in millions, post-tax and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)	Asia	Canada	U.S.	Global WAM	Corporate and Other	Total Company
Income (loss) before income taxes	\$ 3,188	\$ 1,791	\$ 2,484	\$ 1,641	\$ (979)	\$ 8,125
Income tax (expense) recovery						
Core earnings	(322)	(413)	(418)	(234)	27	(1,360)
Items excluded from core earnings	(120)	77	32	(1)	159	147
Income tax (expense) recovery	(442)	(336)	(386)	(235)	186	(1,213)
Net income (post-tax)	2,746	1,455	2,098	1,406	(793)	6,912
Less: Net income (post-tax) attributed to						
Non-controlling interests	256	-	-	-	(1)	255
Participating policyholders	(567)	101	18	-	-	(448)
Net income (loss) attributed to shareholders (post-tax)	3,057	1,354	2,080	1,406	(792)	7,105
Less: Items excluded from core earnings ⁽¹⁾						
Investment-related experience outside of core earnings	313	329	1,341	-	(341)	1,642
Direct impact of equity markets and interest rates and variable annuity guarantee liabilities	169	(89)	(727)	-	(170)	(817)
Change in actuarial methods and assumptions	343	(65)	(314)	-	(5)	(41)
Restructuring charge	-	-	-	-	(115)	(115)
Reinsurance transactions, tax related items and other	56	-	(156)	-	-	(100)
Core earnings (post-tax)	\$ 2,176	\$ 1,179	\$ 1,936	\$ 1,406	\$ (161)	\$ 6,536
Income tax on core earnings (see above)	322	413	418	234	(27)	1,360
Core earnings (pre-tax)	\$ 2,498	\$ 1,592	\$ 2,354	\$ 1,640	\$ (188)	\$ 7,896

⁽¹⁾ These items are disclosed under OSFI's Source of Earnings Disclosure (Life Insurance Companies) guideline.

Core earnings, CER basis and U.S. dollars

	2021					
(Canadian \$ in millions, post-tax and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)	Asia	Canada	U.S.	Global WAM	Corporate and Other	Total Company
Core earnings (post-tax)	\$ 2,176	\$ 1,179	\$ 1,936	\$ 1,406	\$ (161)	\$ 6,536
CER adjustment ⁽¹⁾	(1)	-	9	4	1	13
Core earnings, CER basis (post-tax)	\$ 2,175	\$ 1,179	\$ 1,945	\$ 1,410	\$ (160)	\$ 6,549
Income tax on core earnings, CER basis ⁽²⁾	321	413	421	234	(26)	1,363
Core earnings, CER basis (pre-tax)	\$ 2,496	\$ 1,592	\$ 2,366	\$ 1,644	\$ (186)	\$ 7,912
Core earnings (U.S. dollars) – Asia and U.S. segments⁽¹⁾						
Core earnings (post-tax)⁽³⁾, US \$	US\$ 1,736		US\$ 1,544			
CER adjustment US \$ ⁽¹⁾	(8)		-			
Core earnings, CER basis (post-tax), US \$	US\$ 1,728		US\$ 1,544			

⁽¹⁾ The impact of updating foreign exchange rates to that which was used in 4Q21.

⁽²⁾ Income tax on core earnings adjusted to reflect the foreign exchange rates for the Statement of Income in effect for 4Q21.

⁽³⁾ Core earnings (post-tax) in Canadian \$ is translated to US \$ using the US \$ Statement of Income exchange rates for the 4 respective quarters that make up 2021 core earnings.

Reconciliation of core earnings to net income attributed to shareholders

	2020						2019
(\$ in millions, post-tax and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)	Asia	Canada	U.S.	Global WAM	Corporate and Other	Total Company	Total Company
Income (loss) before income taxes	\$ 1,635	\$ 390	\$ 1,564	\$ 1,272	\$ 1,910	\$ 6,771	\$ 6,220
Income tax (expense) recovery							
Core earnings	(336)	(378)	(481)	(172)	199	(1,168)	(1,083)
Items excluded from core earnings	104	247	186	–	(564)	(27)	365
Income tax (expense) recovery	(232)	(131)	(295)	(172)	(365)	(1,195)	(718)
Net income (post-tax)	1,403	259	1,269	1,100	1,545	5,576	5,502
Less: Net income (post-tax) attributed to							
Non-controlling interests	250	–	–	–	–	250	233
Participating policyholders	(609)	64	–	–	–	(545)	(333)
Net income (loss) attributed to shareholders (post-tax)	1,762	195	1,269	1,100	1,545	5,871	5,602
Less: Items excluded from core earnings ⁽¹⁾							
Investment-related experience outside of core earnings	218	(260)	(717)	–	(33)	(792)	366
Direct impact of equity markets and interest rates and variable annuity guarantee liabilities	(583)	(817)	30	–	2,302	932	(778)
Change in actuarial methods and assumptions	(41)	77	(301)	–	67	(198)	(21)
Restructuring charge	–	–	–	–	–	–	–
Reinsurance transactions, tax related items and other	58	21	262	–	72	413	31
Core earnings (post-tax)	\$ 2,110	\$ 1,174	\$ 1,995	\$ 1,100	\$ (863)	\$ 5,516	\$ 6,004
Income tax on core earnings (see above)	336	378	481	172	(199)	1,168	
Core earnings (pre-tax)	\$ 2,446	\$ 1,552	\$ 2,476	\$ 1,272	\$ (1,062)	\$ 6,684	

⁽¹⁾ These items are disclosed under OSFI's Source of Earnings Disclosure (Life Insurance Companies) guideline.

Core earnings, CER basis and U.S. dollars

	2020					
(Canadian \$ in millions, post-tax and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)	Asia	Canada	U.S.	Global WAM	Corporate and Other	Total Company
Core earnings (post-tax)	\$ 2,110	\$ 1,174	\$ 1,995	\$ 1,100	\$ (863)	\$ 5,516
CER adjustment ⁽¹⁾	(128)	–	(124)	(42)	(9)	(303)
Core earnings, CER basis (post-tax)	\$ 1,982	\$ 1,174	\$ 1,871	\$ 1,058	\$ (872)	\$ 5,213
Income tax on core earnings, CER basis ⁽²⁾	323	378	450	169	(199)	1,121
Core earnings, CER basis (pre-tax)	\$ 2,305	\$ 1,552	\$ 2,321	\$ 1,227	\$ (1,071)	\$ 6,334
Core earnings (U.S. dollars) – Asia and U.S. segments⁽¹⁾						
Core earnings (post-tax)⁽³⁾, US \$	US\$ 1,576		US\$ 1,485			
CER adjustment US \$ ⁽¹⁾	(1)		–			
Core earnings, CER basis (post-tax), US \$	US\$ 1,575		US\$ 1,485			

⁽¹⁾ The impact of updating foreign exchange rates to that which was used in 4Q21.

⁽²⁾ Income tax on core earnings adjusted to reflect the foreign exchange rates for the Statement of Income in effect for 4Q21.

⁽³⁾ Core earnings (post-tax) in Canadian \$ is translated to US \$ using the US \$ Statement of Income exchange rates for 4 respective quarters that make up 2020 core earnings.

Reconciliation of core earnings to net income attributed to shareholders

(\$ in millions, post-tax and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)	4Q21					
	Asia	Canada	U.S.	Global WAM	Corporate and Other	Total Company
Income (loss) before income taxes	\$ 684	\$ 806	\$ 614	\$ 438	\$ (61)	\$ 2,481
Income tax (expense) recovery						
Core earnings	(68)	(101)	(117)	(52)	(8)	(346)
Items excluded from core earnings	(13)	(77)	(4)	-	10	(84)
Income tax (expense) recovery	(81)	(178)	(121)	(52)	2	(430)
Net income (post-tax)	603	628	493	386	(59)	2,051
Less: Net income (post-tax) attributed to						
Non-controlling interests	34	-	-	(1)	(1)	32
Participating policyholders	(76)	12	(1)	-	-	(65)
Net income (loss) attributed to shareholders (post-tax)	645	616	494	387	(58)	2,084
Less: Items excluded from core earnings ⁽¹⁾						
Investment-related experience outside of core earnings	58	90	58	-	(80)	126
Direct impact of equity markets and interest rates and variable annuity guarantee liabilities	32	240	125	-	1	398
Change in actuarial methods and assumptions	-	-	-	-	-	-
Restructuring charge	-	-	-	-	-	-
Reinsurance transactions, tax related items and other	8	-	(156)	-	-	(148)
Core earnings (post-tax)	\$ 547	\$ 286	\$ 467	\$ 387	\$ 21	\$ 1,708
Income tax on core earnings (see above)	68	101	117	52	8	346
Core earnings (pre-tax)	\$ 615	\$ 387	\$ 584	\$ 439	\$ 29	\$ 2,054

⁽¹⁾ These items are disclosed under OSFI's Source of Earnings Disclosure (Life Insurance Companies) guideline.

Core earnings, CER basis and U.S. dollars

(Canadian \$ in millions, post-tax and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)	4Q21					
	Asia	Canada	U.S.	Global WAM	Corporate and Other	Total Company
Core earnings (post-tax)	\$ 547	\$ 286	\$ 467	\$ 387	\$ 21	\$ 1,708
CER adjustment ⁽¹⁾	-	-	-	-	-	-
Core earnings, CER basis (post-tax)	\$ 547	\$ 286	\$ 467	\$ 387	\$ 21	\$ 1,708
Income tax on core earnings, CER basis ⁽²⁾	68	101	117	52	8	346
Core earnings, CER basis (pre-tax)	\$ 615	\$ 387	\$ 584	\$ 439	\$ 29	\$ 2,054
Core earnings (U.S. dollars) – Asia and U.S. segments⁽¹⁾						
Core earnings (post-tax)⁽³⁾, US \$	US\$ 435		US\$ 370			
CER adjustment US \$ ⁽¹⁾	-		-			
Core earnings, CER basis (post-tax), US \$	US\$ 435		US\$ 370			

⁽¹⁾ The impact of updating foreign exchange rates to that which was used in 4Q21.

⁽²⁾ Income tax on core earnings adjusted to reflect the foreign exchange rates for the Statement of Income in effect for 4Q21.

⁽³⁾ Core earnings (post-tax) in Canadian \$ is translated to US \$ using the US \$ Statement of Income exchange rate for 4Q21.

Reconciliation of core earnings to net income attributed to shareholders

	3Q21					
(\$ in millions, post-tax and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)	Asia	Canada	U.S.	Global WAM	Corporate and Other	Total Company
Income (loss) before income taxes	\$ 650	\$ (101)	\$ 800	\$ 418	\$ (287)	\$ 1,480
Income tax (expense) recovery						
Core earnings	(52)	(109)	(79)	(66)	12	(294)
Items excluded from core earnings	(31)	153	(16)	(1)	23	128
Income tax (expense) recovery	(83)	44	(95)	(67)	35	(166)
Net income (post-tax)	567	(57)	705	351	(252)	1,314
Less: Net income (post-tax) attributed to						
Non-controlling interests	48	–	–	–	–	48
Participating policyholders	(303)	(31)	8	–	–	(326)
Net income (loss) attributed to shareholders (post-tax)	822	(26)	697	351	(252)	1,592
Less: Items excluded from core earnings ⁽¹⁾						
Investment-related experience outside of core earnings	62	97	617	–	(76)	700
Direct impact of equity markets and interest rates and variable annuity guarantee liabilities	(129)	(369)	(96)	–	(3)	(597)
Change in actuarial methods and assumptions	343	(65)	(314)	–	(5)	(41)
Restructuring charge	–	–	–	–	–	–
Reinsurance transactions, tax related items and other	13	–	–	–	–	13
Core earnings (post-tax)	\$ 533	\$ 311	\$ 490	\$ 351	\$ (168)	\$ 1,517
Income tax on core earnings (see above)	52	109	79	66	(12)	294
Core earnings (pre-tax)	\$ 585	\$ 420	\$ 569	\$ 417	\$ (180)	\$ 1,811

⁽¹⁾ These items are disclosed under OSFI's Source of Earnings Disclosure (Life Insurance Companies) guideline.

Core earnings, CER basis and U.S. dollars

	3Q21					
(Canadian \$ in millions, post-tax and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)	Asia	Canada	U.S.	Global WAM	Corporate and Other	Total Company
Core earnings (post-tax)	\$ 533	\$ 311	\$ 490	\$ 351	\$ (168)	\$ 1,517
CER adjustment ⁽¹⁾	(2)	–	–	(1)	–	(3)
Core earnings, CER basis (post-tax)	\$ 531	\$ 311	\$ 490	\$ 350	\$ (168)	\$ 1,514
Income tax on core earnings, CER basis ⁽²⁾	51	109	80	66	(12)	294
Core earnings, CER basis (pre-tax)	\$ 582	\$ 420	\$ 570	\$ 416	\$ (180)	\$ 1,808
Core earnings (U.S. dollars) – Asia and U.S. segments⁽¹⁾						
Core earnings (post-tax)⁽³⁾, US \$	US\$ 424		US\$ 389			
CER adjustment US \$ ⁽¹⁾	(3)		–			
Core earnings, CER basis (post-tax), US \$	US\$ 421		US\$ 389			

⁽¹⁾ The impact of updating foreign exchange rates to that which was used in 4Q21.

⁽²⁾ Income tax on core earnings adjusted to reflect the foreign exchange rates for the Statement of Income in effect for 4Q21.

⁽³⁾ Core earnings (post-tax) in Canadian \$ is translated to US \$ using the US \$ Statement of Income exchange rate for 3Q21.

Reconciliation of core earnings to net income attributed to shareholders

	2Q21					
(\$ in millions, post-tax and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)	Asia	Canada	U.S.	Global WAM	Corporate and Other	Total Company
Income (loss) before income taxes	\$ 736	\$ 1,031	\$ 986	\$ 419	\$ 120	\$ 3,292
Income tax (expense) recovery						
Core earnings	(78)	(112)	(106)	(64)	6	(354)
Items excluded from core earnings	(22)	(107)	(83)	1	(45)	(256)
Income tax (expense) recovery	(100)	(219)	(189)	(63)	(39)	(610)
Net income (post-tax)	636	812	797	356	81	2,682
Less: Net income (post-tax) attributed to						
Non-controlling interests	84	–	–	–	–	84
Participating policyholders	(81)	29	4	–	–	(48)
Net income (loss) attributed to shareholders (post-tax)	633	783	793	356	81	2,646
Less: Items excluded from core earnings ⁽¹⁾						
Investment-related experience outside of core earnings	121	207	506	–	(95)	739
Direct impact of equity markets and interest rates and variable annuity guarantee liabilities	(22)	258	(191)	–	172	217
Change in actuarial methods and assumptions	–	–	–	–	–	–
Restructuring charge	–	–	–	–	–	–
Reinsurance transactions, tax related items and other	8	–	–	–	–	8
Core earnings (post-tax)	\$ 526	\$ 318	\$ 478	\$ 356	\$ 4	\$ 1,682
Income tax on core earnings (see above)	78	112	106	64	(6)	354
Core earnings (pre-tax)	\$ 604	\$ 430	\$ 584	\$ 420	\$ (2)	\$ 2,036

⁽¹⁾ These items are disclosed under OSFI's Source of Earnings Disclosure (Life Insurance Companies) guideline.

Core earnings, CER basis and U.S. dollars

	2Q21					
(Canadian \$ in millions, post-tax and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)	Asia	Canada	U.S.	Global WAM	Corporate and Other	Total Company
Core earnings (post-tax)	\$ 526	\$ 318	\$ 478	\$ 356	\$ 4	\$ 1,682
CER adjustment ⁽¹⁾	10	–	12	6	1	29
Core earnings, CER basis (post-tax)	\$ 536	\$ 318	\$ 490	\$ 362	\$ 5	\$ 1,711
Income tax on core earnings, CER basis ⁽²⁾	80	112	108	64	(5)	359
Core earnings, CER basis (pre-tax)	\$ 616	\$ 430	\$ 598	\$ 426	\$ –	\$ 2,070
Core earnings (U.S. dollars) – Asia and U.S. segments⁽¹⁾						
Core earnings (post-tax)⁽³⁾, US \$	US\$ 427		US\$ 389			
CER adjustment US \$ ⁽¹⁾	(1)		–			
Core earnings, CER basis (post-tax), US \$	US\$ 426		US\$ 389			

⁽¹⁾ The impact of updating foreign exchange rates to that which was used in 4Q21.

⁽²⁾ Income tax on core earnings adjusted to reflect the foreign exchange rates for the Statement of Income in effect for 4Q21.

⁽³⁾ Core earnings (post-tax) in Canadian \$ is translated to US \$ using the US \$ Statement of Income exchange rate for 2Q21.

Reconciliation of core earnings to net income attributed to shareholders

	1Q21					
(\$ in millions, post-tax and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)	Asia	Canada	U.S.	Global WAM	Corporate and Other	Total Company
Income (loss) before income taxes	\$ 1,118	\$ 55	\$ 84	\$ 366	\$ (751)	\$ 872
Income tax (expense) recovery						
Core earnings	(124)	(91)	(116)	(52)	17	(366)
Items excluded from core earnings	(54)	108	135	(1)	171	359
Income tax (expense) recovery	(178)	17	19	(53)	188	(7)
Net income (post-tax)	940	72	103	313	(563)	865
Less: Net income (post-tax) attributed to						
Non-controlling interests	90	–	–	1	–	91
Participating policyholders	(107)	91	7	–	–	(9)
Net income (loss) attributed to shareholders (post-tax)	957	(19)	96	312	(563)	783
Less: Items excluded from core earnings ⁽¹⁾						
Investment-related experience outside of core earnings	72	(65)	160	–	(90)	77
Direct impact of equity markets and interest rates and variable annuity guarantee liabilities	288	(218)	(565)	–	(340)	(835)
Change in actuarial methods and assumptions	–	–	–	–	–	–
Restructuring charge	–	–	–	–	(115)	(115)
Reinsurance transactions, tax related items and other	27	–	–	–	–	27
Core earnings (post-tax)	\$ 570	\$ 264	\$ 501	\$ 312	\$ (18)	\$ 1,629
Income tax on core earnings (see above)	124	91	116	52	(17)	366
Core earnings (pre-tax)	\$ 694	\$ 355	\$ 617	\$ 364	\$ (35)	\$ 1,995

⁽¹⁾ These items are disclosed under OSFI's Source of Earnings Disclosure (Life Insurance Companies) guideline.

Core earnings, CER basis and U.S. dollars

	1Q21					
(Canadian \$ in millions, post-tax and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)	Asia	Canada	U.S.	Global WAM	Corporate and Other	Total Company
Core earnings (post-tax)	\$ 570	\$ 264	\$ 501	\$ 312	\$ (18)	\$ 1,629
CER adjustment ⁽¹⁾	(9)	–	(3)	(1)	–	(13)
Core earnings, CER basis (post-tax)	\$ 561	\$ 264	\$ 498	\$ 311	\$ (18)	\$ 1,616
Income tax on core earnings, CER basis ⁽²⁾	122	91	116	52	(17)	364
Core earnings, CER basis (pre-tax)	\$ 683	\$ 355	\$ 614	\$ 363	\$ (35)	\$ 1,980
Core earnings (U.S. dollars) – Asia and U.S. segments⁽¹⁾						
Core earnings (post-tax)⁽³⁾, US \$	US\$ 450		US\$ 396			
CER adjustment US \$ ⁽¹⁾	(4)		–			
Core earnings, CER basis (post-tax), US \$	US\$ 446		US\$ 396			

⁽¹⁾ The impact of updating foreign exchange rates to that which was used in 4Q21.

⁽²⁾ Income tax on core earnings adjusted to reflect the foreign exchange rates for the Statement of Income in effect for 4Q21.

⁽³⁾ Core earnings (post-tax) in Canadian \$ is translated to US \$ using the US \$ Statement of Income exchange rate for 1Q21.

Reconciliation of core earnings to net income attributed to shareholders

	4Q20					
(\$ in millions, post-tax and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)	Asia	Canada	U.S.	Global WAM	Corporate and Other	Total Company
Income (loss) before income taxes	\$ 755	\$ 707	\$ 108	\$ 361	\$ 134	\$ 2,065
Income tax (expense) recovery						
Core earnings	(89)	(86)	(110)	(57)	49	(293)
Items excluded from core earnings	1	40	108	–	(80)	69
Income tax (expense) recovery	(88)	(46)	(2)	(57)	(31)	(224)
Net income (post-tax)	667	661	106	304	103	1,841
Less: Net income (post-tax) attributed to						
Non-controlling interests	57	–	–	–	–	57
Participating policyholders	(29)	33	–	–	–	4
Net income (loss) attributed to shareholders (post-tax)	639	628	106	304	103	1,780
Less: Items excluded from core earnings ⁽¹⁾						
Investment-related experience outside of core earnings	127	332	110	–	16	585
Direct impact of equity markets and interest rates and variable annuity guarantee liabilities	(88)	(35)	(483)	–	283	(323)
Change in actuarial methods and assumptions	–	–	–	–	–	–
Restructuring charge	–	–	–	–	–	–
Reinsurance transactions, tax related items and other	29	15	–	–	–	44
Core earnings (post-tax)	\$ 571	\$ 316	\$ 479	\$ 304	\$ (196)	\$ 1,474
Income tax on core earnings (see above)	89	86	110	57	(49)	293
Core earnings (pre-tax)	\$ 660	\$ 402	\$ 589	\$ 361	\$ (245)	\$ 1,767

⁽¹⁾ These items are disclosed under OSFI's Source of Earnings Disclosure (Life Insurance Companies) guideline.

Core earnings, CER basis and U.S. dollars

	4Q20					
(Canadian \$ in millions, post-tax and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)	Asia	Canada	U.S.	Global WAM	Corporate and Other	Total Company
Core earnings (post-tax)	\$ 571	\$ 316	\$ 479	\$ 304	\$ (196)	\$ 1,474
CER adjustment ⁽¹⁾	(24)	–	(16)	(6)	(1)	(47)
Core earnings, CER basis (post-tax)	\$ 547	\$ 316	\$ 463	\$ 298	\$ (197)	\$ 1,427
Income tax on core earnings, CER basis ⁽²⁾	87	86	106	56	(49)	286
Core earnings, CER basis (pre-tax)	\$ 634	\$ 402	\$ 569	\$ 354	\$ (246)	\$ 1,713
Core earnings (U.S. dollars) – Asia and U.S. segments⁽¹⁾						
Core earnings (post-tax)⁽³⁾, US \$	US\$ 438		US\$ 367			
CER adjustment US \$ ⁽¹⁾	(3)		–			
Core earnings, CER basis (post-tax), US \$	US\$ 435		US\$ 367			

⁽¹⁾ The impact of updating foreign exchange rates to that which was used in 4Q21.

⁽²⁾ Income tax on core earnings adjusted to reflect the foreign exchange rates for the Statement of Income in effect for 4Q21.

⁽³⁾ Core earnings (post-tax) in Canadian \$ is translated to US \$ using the US \$ Statement of Income exchange rate for 4Q20.

Segment core earnings by business line or geographic source

(\$ millions, post-tax and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)

Asia

(US \$ in millions)	Quarterly					Full Year	
	4Q21	3Q21	2Q21	1Q21	4Q20	2021	2020
Hong Kong	\$ 270	\$ 248	\$ 214	\$ 217	\$ 229	\$ 949	\$ 813
Japan	77	86	78	82	78	323	310
Asia Other ⁽¹⁾	132	125	169	193	157	619	572
China						96	139
Singapore						162	110
Vietnam						290	233
Other Emerging Markets ⁽²⁾						71	90
Regional Office	(44)	(35)	(34)	(42)	(26)	(155)	(119)
Total Asia core earnings	\$ 435	\$ 424	\$ 427	\$ 450	\$ 438	\$ 1,736	\$ 1,576

⁽¹⁾ Core earnings for Asia Other is reported by country annually, on a full year basis.

⁽²⁾ Other Emerging Markets includes Indonesia, the Philippines, Malaysia, Thailand, Cambodia and Myanmar.

(US \$ in millions), CER basis ⁽¹⁾	Quarterly					Full Year	
	4Q21	3Q21	2Q21	1Q21	4Q20	2021	2020
Hong Kong	\$ 270	\$ 248	\$ 214	\$ 217	\$ 230	\$ 949	\$ 813
Japan	77	83	75	77	71	312	291
Asia Other ⁽²⁾	132	125	170	195	161	622	590
China						97	150
Singapore						161	111
Vietnam						294	238
Other Emerging Markets ⁽³⁾						70	91
Regional Office	(44)	(35)	(33)	(43)	(27)	(155)	(119)
Total Asia core earnings, CER basis	\$ 435	\$ 421	\$ 426	\$ 446	\$ 435	\$ 1,728	\$ 1,575

⁽¹⁾ Core earnings adjusted to reflect the foreign exchange rates for the Statement of Income in effect for 4Q21.

⁽²⁾ Core earnings for Asia Other is reported by country annually, on a full year basis.

⁽³⁾ Other Emerging Markets includes Indonesia, the Philippines, Malaysia, Thailand, Cambodia and Myanmar.

Canada

(Canadian \$ in millions)	Quarterly					Full Year	
	4Q21	3Q21	2Q21	1Q21	4Q20	2021	2020
Insurance	\$ 184	\$ 211	\$ 210	\$ 165	\$ 204	\$ 770	\$ 765
Annuities	62	56	64	52	64	234	252
Manulife Bank	40	44	44	47	48	175	157
Total Canada core earnings	\$ 286	\$ 311	\$ 318	\$ 264	\$ 316	\$ 1,179	\$ 1,174

U.S.

(US \$ in millions)	Quarterly					Full Year	
	4Q21	3Q21	2Q21	1Q21	4Q20	2021	2020
U.S. Insurance	\$ 274	\$ 279	\$ 298	\$ 277	\$ 247	\$ 1,128	\$ 1,045
U.S. Annuities	96	110	91	119	120	416	440
Total U.S. core earnings	\$ 370	\$ 389	\$ 389	\$ 396	\$ 367	\$ 1,544	\$ 1,485

Global WAM by business line

(Canadian \$ in millions)	Quarterly					Full Year	
	4Q21	3Q21	2Q21	1Q21	4Q20	2021	2020
Retirement	\$ 218	\$ 206	\$ 206	\$ 189	\$ 182	\$ 819	\$ 641
Retail	160	136	137	118	116	551	435
Institutional asset management	9	9	13	5	6	36	24
Total Global WAM core earnings	\$ 387	\$ 351	\$ 356	\$ 312	\$ 304	\$ 1,406	\$ 1,100

(Canadian \$ in millions), CER basis ⁽¹⁾	Quarterly					Full Year	
	4Q21	3Q21	2Q21	1Q21	4Q20	2021	2020
Retirement	\$ 218	\$ 206	\$ 210	\$ 188	\$ 178	\$ 822	\$ 612
Retail	160	136	139	118	114	553	423
Institutional asset management	9	8	13	5	6	35	23
Total Global WAM core earnings, CER basis	\$ 387	\$ 350	\$ 362	\$ 311	\$ 298	\$ 1,410	\$ 1,058

⁽¹⁾ Core earnings adjusted to reflect the foreign exchange rates for the Statement of Income in effect for 4Q21.

Global WAM by geographic source

(Canadian \$ in millions)	Quarterly					Full Year	
	4Q21	3Q21	2Q21	1Q21	4Q20	2021	2020
Asia	\$ 88	\$ 103	\$ 103	\$ 103	\$ 84	\$ 397	\$ 344
Canada	119	106	108	96	102	429	363
U.S.	180	142	145	113	118	580	393
Total Global WAM core earnings	\$ 387	\$ 351	\$ 356	\$ 312	\$ 304	\$ 1,406	\$ 1,100

(Canadian \$ in millions), CER basis ⁽¹⁾	Quarterly					Full Year	
	4Q21	3Q21	2Q21	1Q21	4Q20	2021	2020
Asia	\$ 88	\$ 102	\$ 106	\$ 102	\$ 82	\$ 398	\$ 324
Canada	119	106	108	96	102	429	363
U.S.	180	142	148	113	114	583	371
Total Global WAM core earnings, CER basis	\$ 387	\$ 350	\$ 362	\$ 311	\$ 298	\$ 1,410	\$ 1,058

⁽¹⁾ Core earnings adjusted to reflect the foreign exchange rates for the Statement of Income in effect for 4Q21.

Corporate and Other

(Canadian \$ in millions)	Quarterly					Full Year	
	4Q21	3Q21	2Q21	1Q21	4Q20	2021	2020
Corporate and Other excluding core investment gains	\$ (79)	\$ (268)	\$ (96)	\$ (118)	\$ (196)	\$ (561)	\$ (863)
Core investment gains	100	100	100	100	–	400	–
Total Corporate and Other core earnings	\$ 21	\$ (168)	\$ 4	\$ (18)	\$ (196)	\$ (161)	\$ (863)

Core earnings available to common shareholders is a financial measure that is used in the calculation of core ROE and core EPS. It is calculated as core earnings (post-tax) less preferred share dividends.

(\$ millions, post-tax and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)	Quarterly					Full Year	
	4Q21	3Q21	2Q21	1Q21	4Q20	2021	2020
Core earnings (post-tax)	\$ 1,708	\$ 1,517	\$ 1,682	\$ 1,629	\$ 1,474	\$ 6,536	\$ 5,516
Less: Preferred share dividends	(71)	(37)	(64)	(43)	(43)	(215)	(171)
Core earnings available to common shareholders	1,637	1,480	1,618	1,586	1,431	6,321	5,345
CER adjustment ⁽¹⁾	–	(3)	29	(13)	(47)	13	(303)
Core earnings available to common shareholders, CER basis	\$ 1,637	\$ 1,477	\$ 1,647	\$ 1,573	\$ 1,384	\$ 6,334	\$ 5,042

⁽¹⁾ The impact of updating foreign exchange rates to that which was used in 4Q21.

Core ROE measures profitability using core earnings available to common shareholders as a percentage of the capital deployed to earn the core earnings. The Company calculates core ROE using average common shareholders' equity quarterly, as the average of common shareholders' equity at the start and end of the quarter, and annually, as the average of the quarterly average common shareholders' equity for the year.

(\$ millions and based on actual foreign exchange rates in effect in the applicable reporting period)

	Quarterly					Full Year	
	4Q21	3Q21	2Q21	1Q21	4Q20	2021	2020
Core earnings available to common shareholders (post-tax)	\$ 1,637	\$ 1,480	\$ 1,618	\$ 1,586	\$ 1,431	\$ 6,321	\$ 5,345
Annualized core earnings available to common shareholders (post-tax)	\$ 6,483	\$ 5,874	\$ 6,485	\$ 6,435	\$ 5,697	\$ 6,321	\$ 5,345
Average common shareholders' equity (see below)	\$ 51,049	\$49,075	\$ 46,757	\$ 46,974	\$ 48,984	\$ 48,463	\$ 49,145
Core ROE	12.7%	12.0%	13.9%	13.7%	11.6%	13.0%	10.9%
Average common shareholders' equity							
Total shareholders' and other equity	\$ 58,408	\$55,457	\$ 53,466	\$ 51,238	\$ 52,335	\$ 58,408	\$ 52,335
Less: Preferred shares and other equity	(6,381)	(5,387)	(5,387)	(5,804)	(3,822)	(6,381)	(3,822)
Common shareholders' equity	\$ 52,027	\$50,070	\$ 48,079	\$ 45,434	\$ 48,513	\$ 52,027	\$ 48,513
Average common shareholders' equity	\$ 51,049	\$49,075	\$ 46,757	\$ 46,974	\$ 48,984	\$ 48,463	\$ 49,145

Core EPS is equal to core earnings available to common shareholders divided by diluted weighted average common shares outstanding.

(\$ millions and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)

	Quarterly					Full Year	
	4Q21	3Q21	2Q21	1Q21	4Q20	2021	2020
Core EPS							
Core earnings available to common shareholders (post-tax)	\$ 1,637	\$ 1,480	\$ 1,618	\$ 1,586	\$ 1,431	\$ 6,321	\$ 5,345
Diluted weighted average common shares outstanding (millions)	1,946	1,946	1,946	1,945	1,943	1,946	1,943
Core earnings per share	0.84	0.76	0.83	0.82	0.74	3.25	2.75
Core EPS, CER basis							
Core earnings available to common shareholders (post-tax), CER basis	\$ 1,637	\$ 1,477	\$ 1,647	\$ 1,573	\$ 1,384	\$ 6,334	\$ 5,042
Diluted weighted average common shares outstanding (millions)	1,946	1,946	1,946	1,945	1,943	1,946	1,943
Core earnings per share, CER basis	0.84	0.76	0.85	0.81	0.71	3.26	2.59

Core earnings related to strategic priorities

The Company measures its progress on certain strategic priorities using core earnings. These strategic priorities include core earnings from highest potential businesses, core earnings from Asia region, and core earnings from long-term care insurance ("LTC") and variable annuities ("VA") businesses. The core earnings for these businesses is calculated consistent with our definition of core earnings.

Highest potential businesses

For the years ended December 31,

(\$ millions, post-tax and based on actual foreign exchange rates in effect in the applicable reporting period)

	2021			2020		
	Reported	Adjustments	Normalized	Reported	Adjustments ⁽²⁾	Normalized
Core earnings highest potential businesses ⁽¹⁾	\$ 4,111	\$ -	\$ 4,111	\$ 3,651	\$ -	\$ 3,651
Core earnings – All other businesses excl. core investment gains	2,025	-	2,025	1,865	-	1,865
Core investment gains	400	-	400	-	400	400
Core earnings (post-tax)	6,536	-	6,536	5,516	400	5,916
Items excluded from core earnings	569	-	569	355	-	355
Net income (loss) attributed to shareholders (post-tax)	\$ 7,105	\$ -	\$ 7,105	\$ 5,871	\$ 400	\$ 6,271
Highest Potential Businesses Core Earnings contribution	63%		63%	66%		62%

⁽¹⁾ Includes core earnings from Asia and Global WAM segments, Canada Group Benefits, and behavioural insurance products.

⁽²⁾ To provide a consistent basis for year over year comparison, 2020 total company core earnings were normalized to include \$400 million of annual core investment gains.

Asia region

For the years ended December 31,

(\$ millions, post-tax and based on actual foreign exchange rates in effect in the applicable reporting period)

	2021			2020		
	Reported	Adjustments	Normalized	Reported	Adjustments ⁽²⁾	Normalized
Core earnings of Asia region ⁽¹⁾	\$ 2,573	\$ –	\$ 2,573	\$ 2,454	\$ –	\$ 2,454
Core earnings – All other businesses excl. core investment gains	3,563	–	3,563	3,062	–	3,062
Core investment gains	400	–	400	–	400	400
Core earnings (post-tax)	6,536	–	6,536	5,516	400	5,916
Items excluded from core earnings	569	–	569	355	–	355
Net income (loss) attributed to shareholders (post-tax)	\$ 7,105	\$ –	\$ 7,105	\$ 5,871	\$ 400	\$ 6,271
Asia Region Core Earnings contribution	39%		39%	44%		41%

⁽¹⁾ Includes core earnings from Asia segment and Global WAM's business in Asia.

⁽²⁾ To provide a consistent basis for year over year comparison, 2020 total company core earnings were normalized to include \$400 million of annual core investment gains.

LTC & VA businesses

For the years ended December 31,

(\$ millions, post-tax and based on actual foreign exchange rates in effect in the applicable reporting period)

	2021			2020		
	Reported	Adjustments ⁽³⁾	Normalized	Reported	Adjustments ^{(2),(3)}	Normalized
Core earnings of LTC and VA businesses ⁽¹⁾	\$ 1,426	\$ (152)	\$ 1,274	\$ 1,611	\$ (170)	\$ 1,441
Core earnings – All other businesses excl. core investment gains	4,710	–	4,710	3,905	–	3,905
Core investment gains	400	–	400	–	400	400
Core earnings (post-tax)	6,536	(152)	6,384	5,516	230	5,746
Items excluded from core earnings	569	–	569	355	–	355
Net income (loss) attributed to shareholders (post-tax)	\$ 7,105	\$ (152)	\$ 6,953	\$ 5,871	\$ 230	\$ 6,101
LTC & VA Core Earnings contribution	22%		20%	29%		25%

⁽¹⁾ Includes core earnings from U.S. long-term care and Asia, Canada and U.S. variable annuities businesses.

⁽²⁾ To provide a consistent basis for year over year comparison, 2020 total company core earnings were normalized to include \$400 million of annual core investment gains.

⁽³⁾ 2021 and 2020 total company and U.S. LTC core earnings were normalized to remove estimated gains on U.S. LTC policyholder experience due to COVID-19.

The **effective tax rate on core earnings** is equal to income tax on core earnings divided by pre-tax core earnings.

The Company also uses financial performance measures that are prepared on a **constant exchange rate basis**, which exclude the impact of currency fluctuations (from local currency to Canadian dollars at a total Company level and from local currency to U.S. dollars in Asia). Such financial measures may be stated on a constant exchange rate basis or the percentage growth/decline in the financial measure on a constant exchange rate basis, using the income statement and balance sheet exchange rates effective for the fourth quarter of 2021.

Information supporting constant exchange rate basis for GAAP and non-GAAP financial measures is presented below and throughout the rest of this section.

Net income financial measures on a CER basis

(\$ millions, post-tax and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)

	Quarterly					Full Year	
	4Q21	3Q21	2Q21	1Q21	4Q20	2021	2020
Net income (loss) attributed to shareholders:							
Asia	\$ 645	\$ 822	\$ 633	\$ 957	\$ 639	\$ 3,057	\$ 1,762
Canada	616	(26)	783	(19)	628	1,354	195
U.S.	494	697	793	96	106	2,080	1,269
Global WAM	387	351	356	312	304	1,406	1,100
Corporate and Other	(58)	(252)	81	(563)	103	(792)	1,545
Total net income (loss) attributed to shareholders	2,084	1,592	2,646	783	1,780	7,105	5,871
Preferred share dividends and other equity distributions	(71)	(37)	(64)	(43)	(43)	(215)	(171)
Common shareholders net income (loss)	\$ 2,013	\$ 1,555	\$ 2,582	\$ 740	\$ 1,737	\$ 6,890	\$ 5,700
CER adjustment⁽¹⁾							
Asia	\$ -	\$ -	\$ 12	\$ 16	\$ (25)	\$ 28	\$ (112)
Canada	-	-	-	-	-	-	-
U.S.	-	1	22	2	1	25	(19)
Global WAM	-	1	5	(1)	(7)	5	(46)
Corporate and Other	-	-	4	2	(4)	6	(91)
Total net income (loss) attributed to shareholders	-	2	43	19	(35)	64	(268)
Preferred share dividends and other equity distributions	-	-	-	-	-	-	-
Common shareholders net income (loss)	\$ -	\$ 2	\$ 43	\$ 19	\$ (35)	\$ 64	\$ (268)
Net income (loss) attributed to shareholders, CER basis							
Asia	\$ 645	\$ 822	\$ 645	\$ 973	\$ 614	\$ 3,085	\$ 1,650
Canada	616	(26)	783	(19)	628	1,354	195
U.S.	494	698	815	98	107	2,105	1,250
Global WAM	387	352	361	311	297	1,411	1,054
Corporate and Other	(58)	(252)	85	(561)	99	(786)	1,454
Total net income (loss) attributed to shareholders, CER basis	2,084	1,594	2,689	802	1,745	7,169	5,603
Preferred share dividends and other equity distributions, CER basis	(71)	(37)	(64)	(43)	(43)	(215)	(171)
Common shareholders net income (loss), CER basis	\$ 2,013	\$ 1,557	\$ 2,625	\$ 759	\$ 1,702	\$ 6,954	\$ 5,432
Asia U.S. dollar net income attributed to shareholders							
Asia net income attributed to shareholders, US \$ ⁽²⁾	\$ 513	\$ 654	\$ 515	\$ 755	\$ 490	\$ 2,437	\$ 1,322
CER adjustment, US \$ ⁽¹⁾	-	-	(3)	20	(1)	17	(11)
Asia net income (loss) attributed to shareholders, U.S. dollars, CER basis⁽¹⁾	\$ 513	\$ 654	\$ 512	\$ 775	\$ 489	\$ 2,454	\$ 1,311
Net income (loss) attributed to shareholders (pre-tax)							
Net income (loss) attributed to shareholders (post-tax)	\$ 2,084	\$ 1,592	\$ 2,646	\$ 783	\$ 1,780	\$ 7,105	\$ 5,871
Tax on net income attributed to shareholders	440	171	605	(31)	189	1,185	1,146
Net income (loss) attributed to shareholders (pre-tax)	2,524	1,763	3,251	752	1,969	8,290	7,017
CER adjustment ⁽¹⁾	-	(2)	46	(40)	(37)	4	(164)
Net income (loss) attributed to shareholders (pre-tax), CER basis	\$ 2,524	\$ 1,761	\$ 3,297	\$ 712	\$ 1,932	\$ 8,294	\$ 6,853

⁽¹⁾ The impact of updating foreign exchange rates to that which was used in 4Q21.

⁽²⁾ Asia net income attributed to shareholders (post-tax) in Canadian dollars is translated to U.S. dollars using the U.S. dollar Statement of Income rate for the reporting period.

Basic and diluted earnings per share on a CER basis

(\$ millions, post-tax and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)	Quarterly					Full Year	
	4Q21	3Q21	2Q21	1Q21	4Q20	2021	2020
Common shareholders net income (post-tax), CER basis	\$ 2,013	\$ 1,557	\$ 2,625	\$ 759	\$ 1,702	\$ 6,954	\$ 5,432
Weighted average common shares outstanding (millions)	1,943	1,942	1,942	1,941	1,940	1,942	1,941
Basic EPS, CER basis	\$ 1.04	\$ 0.80	\$ 1.35	\$ 0.39	\$ 0.88	\$ 3.58	\$ 2.80
Common shareholders net income (post-tax), CER basis	\$ 2,013	\$ 1,557	\$ 2,625	\$ 759	\$ 1,702	\$ 6,954	\$ 5,432
Diluted weighted average common shares outstanding (millions)	1,946	1,946	1,946	1,945	1,943	1,946	1,943
Quarterly diluted EPS, CER basis	\$ 1.03	\$ 0.80	\$ 1.35	\$ 0.39	\$ 0.88	\$ 3.57	\$ 2.80

General expenses, CER basis

(\$ millions, pre-tax and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)	Quarterly					Full Year	
	4Q21	3Q21	2Q21	1Q21	4Q20	2021	2020
General expenses	\$ 2,000	\$ 1,904	\$ 1,892	\$ 2,032	\$ 1,968	\$ 7,828	\$ 7,510
CER adjustment ⁽¹⁾	-	(3)	26	(20)	(54)	3	(312)
General expenses, CER basis	\$ 2,000	\$ 1,901	\$ 1,918	\$ 2,012	\$ 1,914	\$ 7,831	\$ 7,198

⁽¹⁾ The impact of updating foreign exchange rates to that which was used in 4Q21.

Global WAM revenue, CER basis

(\$ millions, pre-tax and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)	Quarterly					Full Year	
	4Q21	3Q21	2Q21	1Q21	4Q20	2021	2020
Total Revenue	\$ 21,611	\$ 15,983	\$ 25,824	\$ (1,597)	\$ 17,869	\$ 61,821	\$ 78,908
Less: Revenue for segments other than Global WAM	19,884	14,303	24,217	(3,124)	16,372	55,280	73,159
Global WAM revenue	1,727	1,680	1,607	1,527	1,497	6,541	5,749
CER adjustment ⁽¹⁾	-	1	26	(8)	(36)	19	(237)
Global WAM revenue, CER basis	\$ 1,727	\$ 1,681	\$ 1,633	\$ 1,519	\$ 1,461	\$ 6,560	\$ 5,512

⁽¹⁾ The impact of updating foreign exchange rates to that which was used in 4Q21.

Common share core dividend payout ratio is a ratio that measures the percentage of core earnings paid to common shareholders as dividends. It is calculated as dividends per common share divided by core EPS.

	Quarterly					Full Year	
	4Q21	3Q21	2Q21	1Q21	4Q20	2021	2020
Per share dividend	0.33	0.28	0.28	0.28	0.28	1.17	1.12
Core EPS	0.84	0.76	0.83	0.82	0.74	3.25	2.75
Common share core dividend payout ratio	39%	37%	34%	34%	38%	36%	41%

AUMA is a financial measure of the size of the Company. It is comprised of AUM and AUA. AUM includes assets of general account, consisting of total invested assets and segregated funds net assets, and external client assets for which we provide investment management services, consisting of mutual fund, institutional asset management and other fund net assets. AUA are assets for which we provide administrative services only. Assets under management and administration is a common industry metric for wealth and asset management businesses.

Our Global WAM business also manages assets on behalf of other segments of the Company. Global WAM-managed AUMA is a financial measure equal to the sum of Global WAM's AUMA and assets managed by Global WAM on behalf of other segments. It is an important measure of the assets managed by Global WAM.

AUM and AUMA reconciliations

(Canadian \$ in millions, and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)

As at	December 31, 2021						US \$(⁵)	
	Asia	Canada	U.S.	Global WAM	Corporate and Other	Total Company	December 31, 2021	U.S.
Total Invested Assets								
Manulife Bank net lending assets	\$ -	\$ 23,447	\$ -	\$ -	\$ -	\$ 23,447	US\$ -	-
Derivative reclassification ⁽¹⁾	-	-	-	-	(7,475)	(7,475)	-	-
Invested assets excluding above items	129,207	96,425	164,830	4,458	16,206	411,126	101,893	130,013
Total	129,207	119,872	164,830	4,458	8,731	427,098	101,893	130,013
Segregated funds net assets								
Segregated funds net assets – Institutional	-	-	-	4,470	-	4,470	-	-
Segregated funds net assets – Other ⁽²⁾	25,505	42,124	79,620	248,097	(28)	395,318	20,112	62,801
Total	25,505	42,124	79,620	252,567	(28)	399,788	20,112	62,801
AUM per financial statements	154,712	161,996	244,450	257,025	8,703	826,886	122,005	192,814
Mutual funds	-	-	-	290,863	-	290,863	-	-
Institutional asset management ⁽³⁾	-	-	-	106,407	-	106,407	-	-
Other funds	-	-	-	14,001	-	14,001	-	-
Total AUM	154,712	161,996	244,450	668,296	8,703	1,238,157	122,005	192,814
Assets under administration	-	-	-	187,631	-	187,631	-	-
Total AUMA	\$ 154,712	\$ 161,996	\$ 244,450	\$ 855,927	\$ 8,703	\$ 1,425,788	US\$ 122,005	US\$ 192,814
Total AUMA	\$ 154,712	\$ 161,996	\$ 244,450	\$ 855,927	\$ 8,703	\$ 1,425,788		
CER adjustment ⁽⁴⁾	-	-	-	-	-	-		
Total AUMA, CER basis	\$ 154,712	\$ 161,996	\$ 244,450	\$ 855,927	\$ 8,703	\$ 1,425,788		
Global WAM Managed AUMA								
Global WAM AUMA				\$ 855,927				
AUM managed by Global WAM for Manulife's other segments				246,773				
Total				\$ 1,102,700				
AUMA in US \$(⁵)	US\$ 122,005		US\$ 192,814			US\$ 1,124,616		
Global WAM Managed AUMA in US \$(⁵)				US\$ 869,774				

⁽¹⁾ Corporate and Other consolidation adjustment related to net derivative assets reclassified from total invested assets to other lines on the Statement of Financial Position.

⁽²⁾ Corporate and Other segregated funds net asset represents elimination of amounts held by the Company.

⁽³⁾ Institutional asset management excludes Institutional segregated funds net assets.

⁽⁴⁾ The impact of updating foreign exchange rates to that which was used in 4Q21.

⁽⁵⁾ US \$ AUMA is calculated as total AUMA in Canadian \$ divided by the US \$ exchange rate in effect at the end of the quarter.

As at	September 30, 2021						US \$ ⁽⁵⁾	
	September 30, 2021						September 30, 2021	
	Asia	Canada	U.S.	Global WAM	Corporate and Other	Total Company	Asia	U.S.
Total Invested Assets								
Manulife Bank net lending assets	\$ –	\$ 23,139	\$ –	\$ –	\$ –	23,139	US\$ –	US\$ –
Derivative reclassification ⁽¹⁾	–	–	–	–	(6,226)	(6,226)	–	–
Invested assets excluding above items	124,880	94,510	162,720	4,333	15,731	402,174	98,022	127,714
Total	124,880	117,649	162,720	4,333	9,505	419,087	98,022	127,714
Segregated funds net assets								
Segregated funds net assets – Institutional	–	–	–	4,400	–	4,400	–	–
Segregated funds net assets – Other ⁽²⁾	24,892	40,178	78,223	240,151	(45)	383,399	19,540	61,395
Total	24,892	40,178	78,223	244,551	(45)	387,799	19,540	61,395
AUM per financial statements	149,772	157,827	240,943	248,884	9,460	806,886	117,562	189,109
Mutual funds	–	–	–	277,421	–	277,421	–	–
Institutional asset management ⁽³⁾	–	–	–	103,732	–	103,732	–	–
Other funds	–	–	–	12,562	–	12,562	–	–
Total AUM	149,772	157,827	240,943	642,599	9,460	1,200,601	117,562	189,109
Assets under administration	–	–	–	181,013	–	181,013	–	–
Total AUMA	\$ 149,772	\$ 157,827	\$ 240,943	\$ 823,612	\$ 9,460	\$ 1,381,614	US\$ 117,562	US\$ 189,109
Total AUMA	\$ 149,772	\$ 157,827	\$ 240,943	\$ 823,612	\$ 9,460	\$ 1,381,614		
CER adjustment ⁽⁴⁾	(1,193)	–	(1,188)	(3,191)	–	(5,572)		
Total AUMA, CER basis	\$ 148,579	\$ 157,827	\$ 239,755	\$ 820,421	\$ 9,460	\$ 1,376,042		
Global WAM Managed AUMA								
Global WAM AUMA			\$ 823,612					
AUM managed by Global WAM for Manulife's other segments				240,798				
Total			\$ 1,064,410					
AUMA in US \$⁽⁵⁾	US\$ 117,562		US\$ 189,109			US\$ 1,084,384		
Global WAM Managed AUMA in US \$⁽⁵⁾			US\$ 835,421					

Note: For footnotes (1) to (5), refer to the “AUM and AUMA reconciliation” table as at December 31, 2021 above.

As at	June 30, 2021						US \$ ⁽⁵⁾	
	June 30, 2021						June 30, 2021	
	Asia	Canada	U.S.	Global WAM	Corporate and Other	Total Company	Asia	U.S.
Total Invested Assets								
Manulife Bank net lending assets	\$ –	\$ 22,884	\$ –	\$ –	\$ –	22,884	US\$ –	US\$ –
Derivative reclassification ⁽¹⁾	–	–	–	–	(6,907)	(6,907)	–	–
Invested assets excluding above items	117,808	94,950	156,171	4,211	16,092	389,232	95,089	126,005
Total	117,808	117,834	156,171	4,211	9,185	405,209	95,089	126,005
Segregated funds net assets								
Segregated funds net assets – Institutional	–	–	–	4,229	–	4,229	–	–
Segregated funds net assets – Other ⁽²⁾	24,117	39,666	77,488	238,389	(44)	379,616	19,466	62,521
Total	24,117	39,666	77,488	242,618	(44)	383,845	19,466	62,521
AUM per financial statements	141,925	157,500	233,659	246,829	9,141	789,054	114,555	188,526
Mutual funds	–	–	–	265,110	–	265,110	–	–
Institutional asset management ⁽³⁾	–	–	–	99,983	–	99,983	–	–
Other funds	–	–	–	12,232	–	12,232	–	–
Total AUM	141,925	157,500	233,659	624,154	9,141	1,166,379	114,555	188,526
Assets under administration	–	–	–	174,376	–	174,376	–	–
Total AUMA	\$ 141,925	\$ 157,500	\$ 233,659	\$ 798,530	\$ 9,141	\$ 1,340,755	US\$ 114,555	US\$ 188,526
Total AUMA	\$ 141,925	\$ 157,500	\$ 233,659	\$ 798,530	\$ 9,141	\$ 1,340,755		
CER adjustment basis ⁽⁴⁾	2,018	–	5,341	12,587	–	19,946		
Total AUMA, CER basis	\$ 143,943	\$ 157,500	\$ 239,000	\$ 811,117	\$ 9,141	\$ 1,360,701		
Global WAM Managed AUMA								
Global WAM AUMA			\$ 798,530					
AUM managed by Global WAM for Manulife's other segments				235,234				
Total			\$ 1,033,764					
AUMA in US \$⁽⁵⁾	US\$ 114,555		US\$ 188,526			US\$ 1,081,777		
Global WAM Managed AUMA in US \$⁽⁵⁾			US\$ 834,084					

Note: For footnotes (1) to (5), refer to the “AUM and AUMA reconciliation” table as at December 31, 2021 above.

As at	March 31, 2021						US \$ ⁽⁵⁾	
	March 31, 2021						March 31, 2021	
	Asia	Canada	U.S.	Global WAM	Corporate and Other	Total Company	Asia	U.S.
Total Invested Assets								
Manulife Bank net lending assets	\$ –	\$ 22,770	\$ –	\$ –	\$ –	22,770	US\$ –	US\$ –
Derivative reclassification ⁽¹⁾	–	–	–	–	(3,685)	(3,685)	–	–
Invested assets excluding above items	113,925	91,680	151,892	4,325	17,041	378,863	90,610	120,789
Total	113,925	114,450	151,892	4,325	13,356	397,948	90,610	120,789
Segregated funds net assets								
Segregated funds net assets – Institutional	–	–	–	4,157	–	4,157	–	–
Segregated funds net assets– Other ⁽²⁾	23,046	37,937	76,280	230,305	(43)	367,525	18,325	60,661
Total	23,046	37,937	76,280	234,462	(43)	371,682	18,325	60,661
AUM per financial statements								
	136,971	152,387	228,172	238,787	13,313	769,630	108,935	181,450
Mutual funds	–	–	–	249,137	–	249,137	–	–
Institutional asset management ⁽³⁾	–	–	–	96,989	–	96,989	–	–
Other funds	–	–	–	11,611	–	11,611	–	–
Total AUM	136,971	152,387	228,172	596,524	13,313	1,127,367	108,935	181,450
Assets under administration	–	–	–	167,558	–	167,558	–	–
Total AUMA	\$ 136,971	\$ 152,387	\$ 228,172	\$ 764,082	\$ 13,313	\$ 1,294,925	US\$ 108,935	US\$ 181,450
Total AUMA	\$ 136,971	\$ 152,387	\$ 228,172	\$ 764,082	\$ 13,313	\$ 1,294,925		
CER adjustment ⁽⁴⁾	(174)	–	1,854	4,244	–	5,924		
Total AUMA, CER basis	\$ 136,797	\$ 152,387	\$ 230,026	\$ 768,326	\$ 13,313	\$ 1,300,849		
Global WAM Managed AUMA								
Global WAM AUMA				\$ 764,082				
AUM managed by Global WAM for Manulife's other segments				229,265				
Total				\$ 993,347				
AUMA in US \$⁽⁵⁾	US\$ 108,935		US\$ 181,450			US\$ 1,029,761		
Global WAM Managed AUMA in US \$⁽⁵⁾				US\$ 789,938				

Note: For footnotes (1) to (5), refer to the “AUM and AUMA reconciliation” table as at December 31, 2021 above.

As at	December 31, 2020						US \$ ⁽⁵⁾	
	December 31, 2020						December 31, 2020	
	Asia	Canada	U.S.	Global WAM	Corporate and Other	Total Company	Asia	U.S.
Total Invested Assets								
Manulife Bank net lending assets	\$ –	\$ 22,763	\$ –	\$ –	\$ –	22,763	US\$ –	US\$ –
Derivative reclassification ⁽¹⁾	–	–	–	–	(12,861)	(12,861)	–	–
Invested assets excluding above items	115,430	98,894	162,508	4,760	19,483	401,075	90,639	127,638
Total	115,430	121,657	162,508	4,760	6,622	410,977	90,639	127,638
Segregated funds net assets								
Segregated funds net assets – Institutional	–	–	–	1,886	–	1,886	–	–
Segregated funds net assets – Other ⁽²⁾	22,948	37,650	77,053	227,941	(42)	365,550	18,016	60,519
Total	22,948	37,650	77,053	229,827	(42)	367,436	18,016	60,519
AUM per financial statements	138,378	159,307	239,561	234,587	6,580	778,413	108,655	188,157
Mutual funds	–	–	–	238,068	–	238,068	–	–
Institutional asset management ⁽³⁾	–	–	–	107,387	–	107,387	–	–
Other funds	–	–	–	10,880	–	10,880	–	–
Total AUM	138,378	159,307	239,561	590,922	6,580	1,134,748	108,655	188,157
Assets under administration	–	–	–	162,688	–	162,688	–	–
Total AUMA	\$ 138,378	\$ 159,307	\$ 239,561	\$ 753,610	\$ 6,580	\$ 1,297,436	US\$ 108,655	US\$ 188,157
Total AUMA	\$ 138,378	\$ 159,307	\$ 239,561	\$ 753,610	\$ 6,580	\$ 1,297,436		
CER adjustment ⁽⁴⁾	(4,617)	–	(1,044)	(5,003)	–	(10,664)		
Total AUMA, CER basis	\$ 133,761	\$ 159,307	\$ 238,517	\$ 748,607	\$ 6,580	\$ 1,286,772		
Global WAM Managed AUMA								
Global WAM AUMA			\$ 753,610					
AUM managed by Global WAM for Manulife's other segments				230,775				
Total			\$ 984,385					
AUMA in US \$⁽⁵⁾	US\$ 108,655		US\$ 188,157			US\$ 1,019,036		
Global WAM Managed AUMA in US \$⁽⁵⁾				US\$ 773,158				

Note: For footnotes (1) to (5), refer to the "AUM and AUMA reconciliation" table as at December 31, 2021 above.

Global WAM AUMA and Managed AUMA by business line and geographic source

As at (\$ millions, and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)	Dec 31, 2021	Sept 30, 2021	Jun 30, 2021	Mar 31, 2021	Dec 31, 2020
Global WAM AUMA by business line					
Retirement	\$ 440,831	\$ 426,742	\$ 418,907	\$ 403,576	\$ 397,423
Retail	303,232	287,717	274,661	258,560	246,140
Institutional asset management	111,864	109,153	104,962	101,946	110,047
Total	\$ 855,927	\$ 823,612	\$ 798,530	\$ 764,082	\$ 753,610
Global WAM AUMA by business line, CER basis⁽¹⁾					
Retirement	\$ 440,831	\$ 425,058	\$ 426,263	\$ 406,179	\$ 395,997
Retail	303,232	286,796	278,735	259,989	245,215
Institutional asset management	111,864	108,567	106,119	102,158	107,395
Total	\$ 855,927	\$ 820,421	\$ 811,117	\$ 768,326	\$ 748,607
Global WAM AUMA by geographic source					
Asia	\$ 104,584	\$ 100,899	\$ 95,510	\$ 91,551	\$ 100,996
Canada	238,798	228,347	224,693	212,441	206,637
U.S.	512,545	494,366	478,327	460,090	445,977
Total	\$ 855,927	\$ 823,612	\$ 798,530	\$ 764,082	\$ 753,610
Global WAM AUMA by geographic source, CER basis⁽¹⁾					
Asia	\$ 104,584	\$ 100,151	\$ 97,365	\$ 92,031	\$ 97,886
Canada	238,798	228,347	224,693	212,441	206,637
U.S.	512,545	491,923	489,059	463,854	444,084
Total	\$ 855,927	\$ 820,421	\$ 811,117	\$ 768,326	\$ 748,607
Global WAM Managed AUMA by business line					
Retirement	\$ 440,831	\$ 426,742	\$ 418,907	\$ 403,576	\$ 397,423
Retail	391,911	373,685	359,520	340,330	327,916
Institutional asset management	269,958	263,983	255,337	249,441	259,046
Total	\$ 1,102,700	\$ 1,064,410	\$ 1,033,764	\$ 993,347	\$ 984,385
Global WAM Managed AUMA by business line, CER basis⁽¹⁾					
Retirement	\$ 440,831	\$ 425,058	\$ 426,263	\$ 406,179	\$ 395,997
Retail	391,911	372,499	364,843	342,189	326,757
Institutional asset management	269,958	262,737	259,415	250,686	255,847
Total	\$ 1,102,700	\$ 1,060,294	\$ 1,050,521	\$ 999,054	\$ 978,601
Global WAM Managed AUMA by geographic source					
Asia	\$ 207,827	\$ 200,976	\$ 191,704	\$ 186,657	\$ 198,716
Canada	293,902	281,523	278,309	262,960	255,374
U.S.	600,971	581,911	563,751	543,730	530,295
Total	\$ 1,102,700	\$ 1,064,410	\$ 1,033,764	\$ 993,347	\$ 984,385
Global WAM Managed AUMA by geographic source, CER basis⁽¹⁾					
Asia	\$ 207,827	\$ 199,736	\$ 195,772	\$ 187,914	\$ 195,183
Canada	293,902	281,523	278,309	262,960	255,374
U.S.	600,971	579,035	576,440	548,180	528,044
Total	\$ 1,102,700	\$ 1,060,294	\$ 1,050,521	\$ 999,054	\$ 978,601

⁽¹⁾ AUMA adjusted to reflect the foreign exchange rates for the Statement of Financial Position in effect for 4Q21.

Average assets under management and administration ("average AUMA") is the average of Global WAM's AUMA during the reporting period. It is a measure used in analyzing and explaining fee income and earnings of our Global WAM segment. It is calculated as the average of the opening balance of AUMA and the ending balance of AUMA using daily balances where available and month-end or quarter-end averages when daily averages are unavailable. Similarly, Global WAM **average managed AUMA** and **average AUA** are the average of Global WAM's managed AUMA and AUA, respectively, and are calculated in a manner consistent with average AUMA.

Manulife Bank net lending assets is a financial measure equal to the sum of Manulife Bank's loans and mortgages, net of allowances. **Manulife Bank average net lending assets** is a financial measure which is calculated as the quarter-end average of the opening and the ending balance of net lending assets. Both of these financial measures are a measure of the size of Manulife Bank's portfolio of loans and mortgages and are used to analyze and explain its earnings.

As at

(\$ millions, and based on actual foreign exchange rates in effect in the applicable reporting period)

	Dec 31, 2021	Sept 30, 2021	Jun 30, 2021	Mar 31, 2021	Dec 31, 2020
Mortgages	\$ 52,014	\$51,001	\$50,309	\$50,134	\$ 50,207
Less mortgages not held by Manulife Bank	31,073	30,202	29,643	29,469	29,420
Total mortgages held by Manulife Bank	20,941	20,799	20,666	20,665	20,787
Loans to bank clients	2,506	2,340	2,218	2,105	1,976
Manulife Bank net lending assets	\$ 23,447	\$23,139	\$22,884	\$22,770	\$ 22,763
Manulife Bank average net lending assets					
Beginning of period	\$ 23,139	\$22,884	\$22,770	\$22,763	\$ 22,827
End of period	23,447	23,139	22,884	22,770	22,763
Manulife Bank average net lending assets by quarter	\$ 23,293	\$23,012	\$22,827	\$22,767	\$ 22,795
Manulife Bank average net lending assets – full year	\$ 23,105				\$ 22,471

Consolidated capital serves as a foundation of our capital management activities at the MFC level. Consolidated capital is calculated as the sum of: (i) total equity excluding accumulated other comprehensive income (“AOCI”) on cash flow hedges; and (ii) certain other capital instruments that qualify as regulatory capital. For regulatory reporting purposes under the LICAT framework, the numbers are further adjusted for various additions or deductions to capital as mandated by the guidelines defined by OSFI.

As at

(\$ millions, and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)

	Dec 31, 2021	Sept 30, 2021	Jun 30, 2021	Mar 31, 2021	Dec 31, 2020
Total Equity	\$ 58,869	\$ 55,951	\$ 54,254	\$ 51,992	\$ 53,006
Exclude AOCI gain/(loss) on cash flow hedges	(156)	(159)	(166)	(117)	(229)
Total equity excluding AOCI on cash flow hedges	59,025	56,110	54,420	52,109	53,235
Qualifying capital instruments	6,980	6,986	6,936	7,432	7,829
Consolidated capital	\$ 66,005	\$ 63,096	\$ 61,356	\$ 59,541	\$ 61,064

Core EBITDA is a financial measure which Manulife uses to better understand the long-term earnings capacity and valuation of our Global WAM business on a basis more comparable to how the profitability of global asset managers is generally measured. Core EBITDA presents core earnings before the impact of interest, taxes, depreciation, and amortization. Core EBITDA excludes certain acquisition expenses related to insurance contracts in our retirement businesses which are deferred and amortized over the expected lifetime of the customer relationship under the CALM. Core EBITDA was selected as a key performance indicator for our Global WAM business, as EBITDA is widely used among asset management peers, and core earnings is a primary profitability metric for the Company overall.

Reconciliation of Global WAM core earnings to core EBITDA and Global WAM core EBITDA by business line and geographic source

(\$ millions, pre-tax and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)

	Quarterly					Full Year	
	4Q21	3Q21	2Q21	1Q21	4Q20	2021	2020
Global WAM core earnings (post-tax)	\$ 387	\$ 351	\$ 356	\$ 312	\$ 304	\$ 1,406	\$ 1,100
Addback taxes, acquisition, other expenses and deferred sales commissions							
Core income tax (expense) recovery (see above)	52	66	64	52	57	234	172
Acquisition costs, other expenses	79	86	79	79	78	323	319
Deferred sales commissions	25	26	22	26	20	99	85
Core EBITDA	\$ 543	\$ 529	\$ 521	\$ 469	\$ 459	\$ 2,062	\$ 1,676
CER adjustment ⁽¹⁾	–	–	2	(8)	(13)	(6)	(73)
Core EBITDA, CER basis	\$ 543	\$ 529	\$ 523	\$ 461	\$ 446	\$ 2,056	\$ 1,603
Core EBITDA by business line							
Retirement	\$ 306	\$ 313	\$ 305	\$ 286	\$ 284	\$ 1,210	\$ 1,009
Retail	220	199	196	175	166	790	622
Institutional asset management	17	17	20	8	9	62	45
Total	\$ 543	\$ 529	\$ 521	\$ 469	\$ 459	\$ 2,062	\$ 1,676
Core EBITDA by geographic source							
Asia	\$ 115	\$ 134	\$ 131	\$ 131	\$ 107	\$ 511	\$ 428
Canada	185	172	169	156	159	682	584
U.S.	243	223	221	182	193	869	664
Total	\$ 543	\$ 529	\$ 521	\$ 469	\$ 459	\$ 2,062	\$ 1,676
Core EBITDA by business line, CER basis							
Retirement	\$ 306	\$ 313	\$ 311	\$ 285	\$ 276	\$ 1,215	\$ 962
Retail	220	199	193	168	160	780	599
Institutional asset management	17	17	19	8	10	61	42
Total, CER basis	\$ 543	\$ 529	\$ 523	\$ 461	\$ 446	\$ 2,056	\$ 1,603
Core EBITDA by geographic source, CER basis							
Asia	\$ 115	\$ 135	\$ 127	\$ 124	\$ 100	\$ 501	\$ 393
Canada	185	171	169	156	159	681	584
U.S.	243	223	227	181	187	874	626
Total, CER basis	\$ 543	\$ 529	\$ 523	\$ 461	\$ 446	\$ 2,056	\$ 1,603

⁽¹⁾ The impact of updating foreign exchange rates to that which was used in 4Q21.

Core EBITDA margin is a financial measure which Manulife uses to better understand the long-term profitability of our Global WAM business on a more comparable basis to how profitability of global asset managers are measured. Core EBITDA margin presents core earnings before the impact of interest, taxes, depreciation, and amortization divided by total revenue from these businesses. Core EBITDA margin was selected as a key performance indicator for our Global WAM business, as EBITDA margin is widely used among asset management peers, and core earnings is a primary profitability metric for the Company overall.

	Quarterly					Full Year	
	4Q21	3Q21	2Q21	1Q21	4Q20	2021	2020
Core EBITDA margin							
Core EBITDA	\$ 543	\$ 529	\$ 521	\$ 469	\$ 459	\$ 2,062	\$ 1,676
Global WAM revenue	\$ 1,727	\$ 1,680	\$ 1,607	\$ 1,527	\$ 1,497	\$ 6,541	\$ 5,749
Core EBITDA margin	31.4%	31.5%	32.4%	30.7%	30.7%	31.5%	29.2%

Expense efficiency ratio is a financial measure which Manulife uses to measure progress towards our target to be more efficient. It is defined as core general expenses divided by the sum of core earnings before income taxes ("pre-tax core earnings") and core general expenses. **Core general expenses** is used to calculate our expense efficiency ratio and is equal to pre-tax general expenses included in core earnings and excludes such items as material legal provisions for settlements, restructuring charges and expenses related to integration and acquisitions.

(\$ millions, pre-tax and based on actual foreign exchange rates in effect in the applicable reporting period, unless otherwise stated)

	Quarterly					Full Year	
	4Q21	3Q21	2Q21	1Q21	4Q20	2021	2020
Expense Efficiency Ratio							
Core general expenses	\$ 1,973	\$ 1,904	\$ 1,794	\$ 1,882	\$ 1,968	\$ 7,553	\$ 7,501
Core earnings (pre-tax)	2,054	1,811	2,036	1,995	1,767	7,896	6,684
Total – Core earnings (pre-tax) and Core general expenses	\$ 4,027	\$ 3,715	\$ 3,830	\$ 3,877	\$ 3,735	\$ 15,449	\$ 14,185
Expense Efficiency Ratio	49.0%	51.3%	46.8%	48.5%	52.7%	48.9%	52.9%
Core general expenses							
General expenses – Financial Statements	\$ 2,000	\$ 1,904	\$ 1,892	\$ 2,032	\$ 1,968	\$ 7,828	\$ 7,510
Less: General expenses included in items excluded from core earnings							
Restructuring charge	–	–	–	150	–	150	–
Legal provisions and Other expenses	27	–	98	–	–	125	9
Total	\$ 27	\$ –	\$ 98	\$ 150	\$ –	\$ 275	\$ 9
Core general expenses	\$ 1,973	\$ 1,904	\$ 1,794	\$ 1,882	\$ 1,968	\$ 7,553	\$ 7,501
Core general expenses	\$ 1,973	\$ 1,904	\$ 1,794	\$ 1,882	\$ 1,968	\$ 7,553	\$ 7,501
CER adjustment	–	(3)	24	(18)	(54)	3	(312)
Core general expenses, CER basis	\$ 1,973	\$ 1,901	\$ 1,818	\$ 1,864	\$ 1,914	\$ 7,556	\$ 7,189

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. The adjusted net worth is the IFRS shareholders’ equity adjusted for goodwill and intangibles, fair value of surplus assets, the carrying value of debt and preferred shares, and local statutory balance sheet, regulatory reserve, and capital for Manulife’s Asian business. The value of in-force business in Canada and the U.S. is the present value of expected future IFRS earnings on in-force business less the present value of the cost of holding capital to support the in-force business under the LICAT framework. The value of in-force business in Asia reflects local statutory earnings and capital requirements. The value of in-force business excludes our Global WAM, Manulife Bank and Property and Casualty Reinsurance businesses.

Net annualized fee income yield on average AUMA (“Net fee income yield”) is a financial measure that represents the net annualized fee income from Global WAM channels over average AUMA. This measure provides information on Global WAM’s adjusted return generated from managing AUMA.

Net annualized fee income is a financial measure that represents Global WAM income before income taxes, adjusted to exclude items unrelated to net fee income, including general expenses, investment income, non-AUMA related net benefits and claims, and net premium taxes. It also excludes the components of Global WAM net fee income from managing assets on behalf of other segments. This measure is annualized based on the number of days in the year divided the number of days in the reporting period.

Reconciliation of Income before income taxes to Net fee income yield

(\$ millions, pre-tax and based on actual foreign exchange rates in effect in the applicable reporting period)

	Quarterly					Full Year	
	4Q21	3Q21	2Q21	1Q21	4Q20	2021	2020
Income before income taxes	\$ 2,481	\$ 1,480	\$ 3,292	\$ 872	\$ 2,065	\$ 8,125	\$ 6,771
Less: Income before income taxes for segments other than Global WAM	2,043	1,062	2,873	506	1,704	6,484	5,499
Global WAM income before income taxes	438	418	419	366	361	1,641	1,272
Items unrelated to net fee income	616	599	548	561	560	2,324	2,225
Global WAM net fee income	1,054	1,017	967	927	921	3,965	3,497
Less: Net fee income from other segments	122	118	109	109	109	458	421
Global WAM net fee income excluding net fee income from other segments	932	899	858	818	812	3,507	3,076
Net annualized fee income	\$ 3,698	\$ 3,565	\$ 3,441	\$ 3,318	\$ 3,232	\$ 3,507	\$ 3,076
Average Assets under Management and Administration	\$ 835,494	\$ 815,927	\$ 775,849	\$ 765,033	\$ 732,710	\$ 798,022	\$ 698,147
Net fee income yield (bps)	44.3	43.7	44.4	43.4	44.1	43.9	44.1

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, 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 excluding non-controlling interests. APE is calculated as 100% of annualized first year premiums for recurring premium products, and as 10% of single premiums for single premium products. Both NBV and APE used in the NBV margin calculation are after non-controlling interests and exclude our Global WAM, Manulife Bank and P&C Reinsurance businesses. NBV margin is a useful metric to help understand the profitability of our new business.

Sales are measured according to product type:

For individual insurance, sales include 100% of new annualized premiums and 10% of both excess and single premiums. For individual insurance, new annualized premiums reflect the annualized premium expected in the first year of a policy that requires premium payments for more than one year. Single premium is the lump sum premium from the sale of a single premium product, e.g. travel insurance. Sales are reported gross before the impact of reinsurance.

For group insurance, sales include new annualized premiums and administrative services only premium equivalents on new cases, as well as the addition of new coverages and amendments to contracts, excluding rate increases.

Insurance-based wealth accumulation product sales include all new deposits into variable and fixed annuity contracts. As we discontinued sales of new variable annuity contracts in the U.S. in 1Q13, subsequent deposits into existing U.S. variable annuity contracts are not reported as sales. Asia variable annuity deposits are included in APE sales.

APE sales are comprised of 100% of regular premiums/deposits and 10% of excess and single premiums/deposits for both insurance and insurance-based wealth accumulation products.

Gross flows is a new business measure presented for our Global WAM business and includes all deposits into mutual funds, group pension/retirement savings products, private wealth and institutional asset management products. Gross flows is a common industry metric for WAM businesses as it provides a measure of how successful the businesses are at attracting assets.

Net flows is presented for our Global WAM business and includes gross flows less redemptions for mutual funds, group pension/retirement savings products, private wealth and institutional asset management products. In addition, net flows include the net flows of exchange traded funds and non-proprietary product sold by Manulife Securities. Net flows is a common industry metric for WAM businesses as it provides a measure of how successful the businesses are at attracting and retaining assets. When net flows are positive, they are referred to as net inflows. Conversely, negative net flows are referred to as net outflows.

Market value to book value ratio is calculated as the market value of one common share of the Company divided by the book value of a common share. It is a key valuation measure used by the market for our common shares.

Remittances is defined as the cash remitted or available for distribution to the Manulife Group from operating subsidiaries and excess capital generated by standalone Canadian operations. It is one of the key metrics used by management to evaluate our financial flexibility.

14. Additional Disclosures

Contractual Obligations

In the normal course of business, the Company enters into contracts that give rise to obligations fixed by agreement as to the timing and dollar amount of payment.

As at December 31, 2021, the Company's contractual obligations and commitments were as follows:

Payments due by period (\$ millions)	Total	Less than 1 year	1 to 3 years	3 to 5 years	After 5 years
Long-term debt ⁽¹⁾	\$ 8,324	\$ 182	\$ 365	\$ 1,948	\$ 5,829
Liabilities for capital instruments ⁽¹⁾	8,538	228	968	294	7,048
Investment commitments	12,234	4,163	4,195	3,246	630
Lease liabilities	325	89	116	50	70
Insurance contract liabilities ⁽²⁾	909,610	12,793	10,977	17,091	868,749
Investment contract liabilities ⁽¹⁾	4,809	292	486	489	3,542
Deposits from bank clients	20,720	16,091	2,593	2,036	-
Other	3,204	985	1,202	798	219
Total contractual obligations	\$ 967,764	\$ 34,823	\$ 20,902	\$ 25,952	\$ 886,087

⁽¹⁾ The contractual payments include principal, interest and distributions; and reflect the amounts payable up to and including the final contractual maturity date. The contractual payments reflect the amounts payable from January 1, 2022 up to and including the final contractual maturity date. In the case of floating rate obligations, the floating rate index is based on the interest rates as at December 31, 2021 and is assumed to remain constant to the final contractual maturity date. The Company may have the contractual right to redeem or repay obligations prior to maturity and if such right is exercised, total contractual obligations paid and the timing of payment could vary significantly from the amounts and timing included in the table.

⁽²⁾ Insurance contract liabilities cash flows include estimates related to the timing and payment of death and disability claims, policy surrenders, policy maturities, annuity payments, minimum guarantees on segregated fund products, policyholder dividends, commissions and premium taxes offset by contractual future premiums on in-force contracts. These estimated cash flows are based on the best estimate assumptions used in the determination of insurance contract liabilities. These amounts are undiscounted and reflect recoveries from reinsurance agreements. Due to the use of assumptions, actual cash flows may differ from these estimates (see "Policy Liabilities"). Cash flows include embedded derivatives measured separately at fair value.

Legal and Regulatory Proceedings

We are regularly involved in legal actions, both as a defendant and as a plaintiff. Information on legal and regulatory proceedings can be found in note 18 of the 2021 Annual Consolidated Financial Statements.

Quarterly Financial Information

The following table provides summary information related to our eight most recently completed quarters:

As at and for the three months ended

(\$ millions, except per share amounts or otherwise stated)

	Dec 31, 2021	Sept 30, 2021	Jun 30, 2021	Mar 31, 2021	Dec 31, 2020	Sept 30, 2020	Jun 30, 2020	Mar 31, 2020
Revenue								
Premium income								
Life and health insurance ⁽¹⁾	\$ 9,159	\$ 9,269	\$ 8,716	\$ 8,986	\$ 8,651	\$ 5,302	\$ 7,560	\$ 8,454
Annuities and pensions	901	714	698	622	672	704	673	901
Net premium income	10,060	9,983	9,414	9,608	9,323	6,006	8,233	9,355
Investment income	4,350	3,964	4,099	3,214	4,366	3,521	5,262	3,284
Realized and unrealized gains and losses on assets supporting insurance and investment contract liabilities ⁽²⁾	4,460	(958)	9,551	(17,056)	1,683	1,100	11,626	4,558
Other revenue	2,741	2,994	2,760	2,637	2,497	2,749	2,365	2,980
Total revenue	\$ 21,611	\$ 15,983	\$ 25,824	\$ (1,597)	\$ 17,869	\$ 13,376	\$ 27,486	\$ 20,177
Income (loss) before income taxes	\$ 2,481	\$ 1,480	\$ 3,292	\$ 872	\$ 2,065	\$ 2,170	\$ 832	\$ 1,704
Income tax (expense) recovery	(430)	(166)	(610)	(7)	(224)	(381)	7	(597)
Net income (loss)	\$ 2,051	\$ 1,314	\$ 2,682	\$ 865	\$ 1,841	\$ 1,789	\$ 839	\$ 1,107
Net income (loss) attributed to shareholders	\$ 2,084	\$ 1,592	\$ 2,646	\$ 783	\$ 1,780	\$ 2,068	\$ 727	\$ 1,296
Basic earnings (loss) per common share	\$ 1.04	\$ 0.80	\$ 1.33	\$ 0.38	\$ 0.90	\$ 1.04	\$ 0.35	\$ 0.64
Diluted earnings (loss) per common share	\$ 1.03	\$ 0.80	\$ 1.33	\$ 0.38	\$ 0.89	\$ 1.04	\$ 0.35	\$ 0.64
Segregated funds deposits	\$ 10,920	\$ 10,929	\$ 10,301	\$ 12,395	\$ 9,741	\$ 9,158	\$ 8,784	\$ 11,215
Total assets (in billions)	\$ 918	\$ 898	\$ 879	\$ 859	\$ 880	\$ 876	\$ 866	\$ 831
Weighted average common shares (in millions)	1,943	1,942	1,942	1,941	1,940	1,940	1,939	1,943
Diluted weighted average common shares (in millions)	1,946	1,946	1,946	1,945	1,943	1,942	1,941	1,947
Dividends per common share	\$ 0.330	\$ 0.280	\$ 0.280	\$ 0.280	\$ 0.280	\$ 0.280	\$ 0.280	\$ 0.280
CDN\$ to US\$1 – Statement of Financial Position	1.2678	1.2741	1.2394	1.2575	1.2732	1.3339	1.3628	1.4187
CDN\$ to US\$1 – Statement of Income	1.2601	1.2602	1.2282	1.2660	1.3030	1.3321	1.3854	1.3449

⁽¹⁾ Includes ceded premiums related to the reinsurance of a block of our legacy U.S. Bank-Owned Life Insurance of US\$2.4 billion in 3Q20.

⁽²⁾ For fixed income assets supporting insurance and investment contract liabilities and for equities supporting pass-through products and derivatives related to variable hedging programs, the impact of realized and unrealized gains (losses) on the assets is largely offset in the change in insurance and investment contract liabilities.

Selected Annual Financial Information

As at and for the years ended December 31,
(\$ millions, except per share amounts)

	2021	2020	2019
Revenue			
Asia	\$ 29,571	\$ 28,455	\$ 28,673
Canada	12,366	18,638	19,609
U.S.	13,256	23,361	24,594
Global Wealth and Asset Management	6,541	5,749	5,595
Corporate and Other	87	2,705	1,099
Total revenue	\$ 61,821	\$ 78,908	\$ 79,570
Total assets	\$ 917,643	\$ 880,349	\$ 809,130
Long-term financial liabilities			
Long-term debt	\$ 4,882	\$ 6,164	\$ 4,543
Capital instruments	6,980	7,829	7,120
Total financial liabilities	\$ 11,862	\$ 13,993	\$ 11,663
Dividend per common share	\$ 1.17	\$ 1.12	\$ 1.00
Cash dividend per Class A Share, Series 2	1.1625	1.1625	1.1625
Cash dividend per Class A Share, Series 3	1.125	1.125	1.125
Cash dividend per Class 1 Share, Series 3	0.5658	0.5445	0.5445
Cash dividend per Class 1 Share, Series 4	0.3814	0.587	0.7713
Cash dividend per Class 1 Share, Series 5 ⁽¹⁾	0.9728	0.9728	0.9728
Cash dividend per Class 1 Share, Series 7	1.078	1.078	1.078
Cash dividend per Class 1 Share, Series 9	1.0878	1.0878	1.0878
Cash dividend per Class 1 Share, Series 11	1.1828	1.1828	1.1828
Cash dividend per Class 1 Share, Series 13	1.1035	1.1035	1.1035
Cash dividend per Class 1 Share, Series 15	0.9465	0.9465	0.9608
Cash dividend per Class 1 Share, Series 17	0.950	0.950	0.975
Cash dividend per Class 1 Share, Series 19	0.9188	0.9266	0.95
Cash dividend per Class 1 Share, Series 21 ⁽²⁾	0.70	1.40	1.40
Cash dividend per Class 1 Share, Series 23	1.2125	1.2125	1.2125
Cash dividend per Class 1 Share, Series 25	1.175	1.175	1.175

⁽¹⁾ MFC redeemed in full the Class 1 Series 5 preferred shares at par, on December 19, 2021, the earliest redemption date.

⁽²⁾ MFC redeemed in full the Class 1 Series 21 preferred shares at par, on June 19, 2021, the earliest redemption date.

Differences between IFRS and Hong Kong Financial Reporting Standards

Manulife's Consolidated Financial Statements are presented in accordance with IFRS. IFRS differs in certain respects from Hong Kong Financial Reporting Standards ("HKFRS"). Until IFRS 17 "Insurance Contracts" becomes effective, IFRS 4 "Insurance Contracts" permits the use of the insurance standard in effect at the time an issuer adopts IFRS. IFRS insurance contract liabilities are valued in Canada under standards established by the Canadian Actuarial Standards Board. In certain interest rate environments, insurance contract liabilities determined in accordance with HKFRS may be higher than those computed in accordance with current IFRS.

IFRS and Hong Kong Regulatory Requirements

Insurers in Hong Kong are required by the Insurance Authority to meet minimum solvency requirements. As at December 31, 2021, the Company's business that falls within the scope of these requirements has sufficient assets to meet the minimum solvency requirements under both Hong Kong regulatory requirements and IFRS.

Outstanding Common Shares

As at January 31, 2022, MFC had 1,942,706,408 common shares outstanding.

Additional Information Available

Additional information relating to Manulife, including MFC's Annual Information Form, is available on the Company's website at www.manulife.com and on SEDAR at www.sedar.com.