Manulife

Annual Report 2020

Manulife Financial Corporation

Our *mission*

Decisions made *easier*.
Lives made *better*.

Our five *strategic priorities*

Portfolio Optimization
We are actively managing our legacy businesses to improve returns and cash generation while reducing risk.

Expense Efficiency
We are getting our cost structure into fighting shape and simplifying and digitizing our processes to position us for efficient growth.

Accelerate Growth
We are accelerating growth in our highest-potential businesses.

Digital, Customer Leader
We are improving our customer experiences, using digitization and innovation to put customers first.

High-Performing Team
We are building a culture that drives our priorities.

Learn more about the progress we are making on our five strategic priorities on page 17.

Our *values*

Our values represent how we operate. They reflect our culture, inform our behaviours, and help define how we work together.

Obsess about customers
We predict their needs and do everything in our power to satisfy them.

Do the right thing
We 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
We feel empowered to make decisions and take action to deliver our mission.

Share your humanity
We build a supportive, diverse, and thriving workplace.

Who *we are*

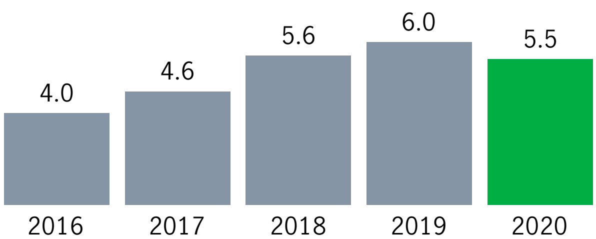
Manulife Financial Corporation is a leading international financial services group that helps people make their decisions easier and lives better. With our global headquarters in Toronto, Canada, we operate as Manulife across our offices in Canada, Asia, and Europe, and primarily as John Hancock in the United States. We provide financial advice, insurance, as well as wealth and asset management solutions for individuals, groups, and institutions. At the end of 2020, we had more than 37,000 employees, over 118,000 agents, and thousands of distribution partners, serving over 30 million customers.

Manulife by the *numbers*

Core Earnings (C$ billions)

$5.5 billion

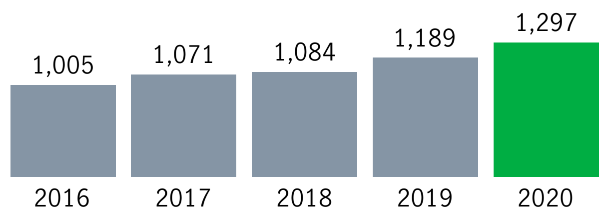
Total company core earnings declined 9% versus 2019.



Assets Under Management and Administration (C$ billions)

$1,297 billion

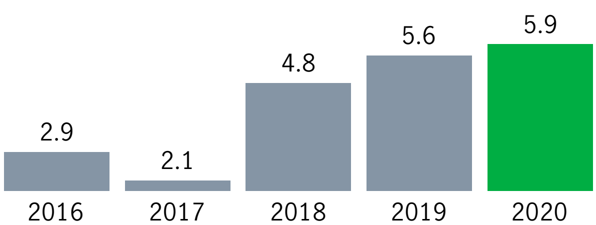
$1.3 trillion in AUMA, a 10% increase versus 2019.



Net Income Attributed to Shareholders (C$ billions)

$5.9 billion

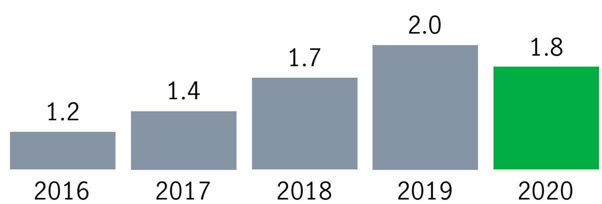
Net income attributed to shareholders increased $0.3 billion from 2019.



New Business Value (C$ billions)

$1.8 billion

New business value declined 13% compared with 2019, due to the challenging sales environment.



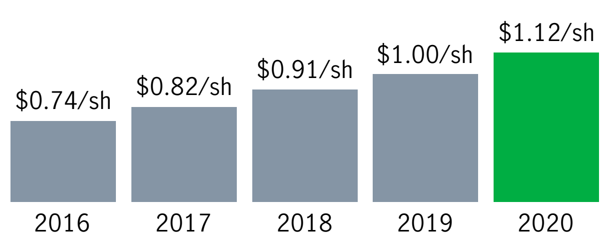
"Our values were on display every day and helped us frame the many decisions we made throughout this challenging time."

Roy Gori
President and Chief Executive Officer

Common Share Dividend (C$)

$1.12/share

Dividend payout ratio[1] of 41% in 2020.



[1] Dividend payout ratio is common share dividends as a percent of diluted core earnings per common share.

Note: Percentage changes are stated on a constant exchange rate basis, a non-GAAP measure. AUMA values are reported as at December 31.

Letter to shareholders from **John Cassaday** *Chairman of the Board*

Fellow shareholders,

Last year in this letter, we highlighted how Manulife was focused on achieving success while always doing the right thing. This year, against the backdrop of the global COVID-19 pandemic, another of Manulife's values serves as a helpful lens through which to reflect on the year that passed: sharing our humanity.

In a year like no other, your Board is proud of Manulife's many accomplishments achieved under the strong and empathetic leadership of Roy Gori, President and CEO, and your company's Executive Leadership Team (ELT). We are also humbled by the resilience, agility, and passion shown by every Manulife employee around the world who continued to serve our company's customers through the uncertainty and upheaval unfolding around them on a daily basis.

Even as our businesses had to adjust quickly and dramatically in response to the pandemic, we ensured that everyone at Manulife understood the importance of human kindness—to our customers, communities, and colleagues alike—and that we never lost sight of a simple but powerful fact: we are all in this together.

We were thrilled to be able to offer a thank you day off to employees, as well as a "pay it forward" grant, through our Act of Kindness program, which enabled employees to make a monetary donation to a charity of their choice in their local communities. We also saw the importance of making a range of mental, physical, and other supports available to our employees. We were gratified to see employee engagement scores rise substantially across the organization in 2020.

Sharing our humanity also encompasses our strong commitment to diversity, equity, and the inclusive culture and workplace we are building. As the fight against racism took on heightened urgency in 2020, Manulife responded with a meaningful financial investment to promote diversity, equity, and inclusion, in addition to establishing concrete leadership and recruitment goals to increase the representation of Black, Indigenous, and People of Colour across its North American businesses.

Manulife also introduced substantial enhancements to our maternity leave program and added parental and adoption leave, leading surrogacy and fertility benefits, and coverage for gender affirmation services.

Your Board's activities in 2020

While the pandemic showed us how a global crisis can upend even the best laid plans, your Board's top priority was ensuring we could continue to provide oversight and guidance to the management team virtually.

We successfully leveraged technology to continue to interact with each other during our Board sessions. We gathered ongoing director feedback to confirm that our effectiveness was not being impacted and that all directors still felt their voices were being heard. While we will eventually meet again in person, once it is safe to do so, we've also learned that there's no need for every meeting to be in person, and that avoiding lengthy travel could make us a more effective group without sacrificing the connectedness that we currently value and enjoy.

As Chairman, it was critically important to maintain personal contact with our independent directors and executive leaders—and we did so with an even greater frequency than is usual. This helped ensure that our directors' voices were heard and that the tone at the top was appropriate. It also signalled to management that there was always a way to be heard by the Board.

As the pandemic unfolded, we set up frequent briefings with management, as well as informal updates with Roy, to ensure that your Board had a clear line of sight into the company's COVID-19 response, its approach for an eventual return to the office, and overall progress on its strategic priorities.

We also continued to leverage your Board's diverse mix of skills to conduct focused deep dives into topics of key importance to Manulife, such as IFRS 17 implementation, customer centricity, macroeconomic trends, and strategy. These sessions were attended by a subset of directors having expertise in the relevant area and who provided context and input into our deliberations with the full Board.

The Board maintained close oversight of Manulife's near- and long-term strategy throughout the year, in particular the large and compelling growth opportunity presented by the company's business in Asia and Global Wealth and Asset Management. We also held a number of virtual in-depth sessions focused on leadership succession and talent to help ensure Manulife maintains an exceptional level of bench strength in terms of management leadership and Board stewardship alike.

Our shareholder outreach and annual meeting also became virtual, but we remained as dedicated as always to discussing what matters to our investors. Among other matters, we held fulsome and robust conversations with shareholders on the topic of executive compensation and our preparations for the adoption of IFRS 17.

Manulife's Board of Directors met virtually in 2020. From top left: Nicole Arnaboldi, Guy Bainbridge, Joseph Caron, John Cassaday, Susan Dabarno, John Palmer, Sheila Fraser, Roy Gori, Julie Dickson, Donald Lindsay, Tsun-yan Hsieh, Andrea Rosen, Jim Prieur, and Leagh Turner.

Your Board continued to take an active role in Manulife's environmental, social, and governance (ESG) performance. The Board's Corporate Governance and Nominating Committee reviewed the progress being made against Manulife's sustainability framework and stayed informed of ESG trends, risks, and opportunities through management reporting.

Two new directors joined the Board in 2020, each with expertise in areas critical to Manulife's ongoing growth. Nicole Arnaboldi, former Vice Chairman, Credit Suisse Asset Management, is an accomplished financial services executive with a depth of critical wealth and asset management knowledge. Leagh Turner, President and Chief Operating Officer at Ceridian HCM Holding Inc., brings extensive experience in leadership, technology, and driving transformational change, and is a passionate supporter of diversity.

We are proud to report that six of our 13 independent directors are women, effectively reaching our aspiration of gender parity in representation among independent directors.

Thank you
In closing, we would like to thank the Honourable Rona Ambrose, who resigned as a director in August 2020 to accept a full-time employment position. We valued the advice and counsel she provided during her three years on the Board.

We would also like to express our appreciation to Roy and the ELT for delivering a year of solid results during the worst global crisis in recent history, all while continuing to go above and beyond for customers and engaging and inspiring the team with values-driven leadership.

We want to send a special thank you to every Manulife employee. Your unwavering commitment to our mission and values, and the passion you've shown in the face of intense adversity, is what makes Manulife's success possible, day in and day out. The Board sends you its unreserved gratitude for your continued service.

And last but certainly not least, we want to thank you, our fellow shareholders, for your trust, support, and candor. While the world continues to grapple with the COVID-19 pandemic, we at Manulife are united by a powerful sense of togetherness and a firm belief that we will come out of this crisis stronger than ever.

Sincerely,

John Cassaday
Chairman of the Board

Letter to shareholders from **Roy Gori** *President and Chief Executive Officer*

Dear fellow shareholders,

When I wrote to you last year, our team was excited about the year ahead. We were focused on implementing plans to build on our positive momentum and to continue our transformation into the most digital, customer-centric global company in our industry. But when the COVID-19 pandemic hit, our focus quickly shifted to two key objectives: ensuring the health and safety of our team and supporting our customers, who needed us more than ever.

The pandemic has tested us all, brought heartbreak and loss to people around the world, and challenged our resilience and determination. At the same time, it has reminded us of the power of community and the importance of gratitude and empathy.

It's why, before talking more specifically about our company, I want to express tremendous gratitude to all those who have been caring for the sick, ensuring the availability of food and supplies, developing and distributing vaccines, keeping our communities running, and doing so much more. On behalf of all of us at Manulife, thank you for your incredible dedication and selflessness. We are in this together, and we remain committed to supporting the communities where we live and work globally, much as we did throughout 2020.

Helping our customers navigate the new reality

From concerns about how to protect their savings and investments, to securing products that would help with their medical needs and well-being, to enduring the devastating loss of a loved one, our customers turned to us in record numbers during this difficult time. In keeping with our mission—decisions made easier, lives made better—we helped customers who were stranded while travelling, we re-allocated business teams to handle increased call volumes, and we proactively extended grace periods for certain premium and mortgage payments.

Understanding it was more important than ever to help our customers improve and protect their health, we grew our behavioural insurance offerings, which support them in taking actions to live healthier lives. We expanded the range of wearable devices offered by John Hancock Vitality in the U.S., increased reward opportunities for Manulife *Vitality* customers in Canada, and added Health Score, a health assessment tool for ManulifeMOVE in Asia.

Fortunately, as part of our digital transformation, we invested heavily in technology and services leading up to 2020. Our digital tools and contact centre teams were ready to help answer customers' questions, process claims, and provide prospective customers with information about products and solutions remotely and quickly. We also accelerated the delivery of new digital capabilities to support virtual sales and to enhance the overall customer and advisor experience, including new eForms and Virtual Assistants.

Since many markets where we operate require meeting in person to complete product purchases, we worked with local regulators to quickly find new ways to safely and simply connect with our distribution partners, agents, and customers. The impact these changes have had on our ability to serve our customers and make lives better has been tremendous, and we are grateful for the openness these regulators showed to new digital approaches. Once customers had the chance to interact with us in these new ways, many told us they welcomed the new speed and flexibility. As a result of these innovative efforts, a large majority of our products are now available via virtual face-to-face methods.

We also took this opportunity to accelerate our digital innovation efforts in many other areas of our business, expanding automatic underwriting, introducing a new claims system for our group benefits customers in Canada, further automating payments, and driving more straight-through processing. We made many other changes in response to customer feedback to enhance their overall experience as well. All these efforts contributed to a four-point increase in 2020 in our net promoter score, the indicator of how likely a customer is to recommend our company to others.

Leveraging our strong foundation

The strategy we embarked on a few years ago gave us a strong foundation to weather the extraordinary headwinds we faced last year. Thanks to the priority we had placed on investing in our technology and digital infrastructure, and strong focus on business continuity planning, when COVID-19 was declared a global pandemic in March, we were able to rapidly pivot to having 95% of our global team working remotely.

Having worked over the past several years to embrace a culture of strong cost stewardship, we achieved $1 billion of sustainable expense efficiencies, reaching our 2022 target two years ahead of schedule. We prioritized optimizing our legacy portfolio, which is reflected in the release of $5.9 billion of capital since 2018 and has further strengthened our capital position.

Thanks to all of these efforts and, most importantly, the continued trust of our customers, we achieved net income attributable to shareholders of $5.9 billion in 2020, up $0.3 billion from 2019. We delivered core earnings of $5.5 billion, a decrease of 9% compared with 2019, a resilient performance that reflects the diversity of our franchise and robust demand for our products. In addition, our assets under management and administration continued to grow, finishing the year at $1.3 trillion, up 10% from last year.

We maintained a focus on Asia and Global Wealth and Asset Management, two of our highest potential businesses. In Asia, we extended our bancassurance agreement with Bank Danamon Indonesia to 2036. We signed an agreement to establish an exclusive, 16-year bancassurance

"From concerns about how to *protect* their savings and investments, to *securing* products that would help with their medical needs and well-being, to enduring the devastating loss of a loved one, our *customers* turned to us in record numbers during this difficult time."

"Throughout the pandemic I have been repeatedly awed by the *incredible heart*, passion, and 'can do' spirit of our team."

partnership with VietinBank, one of Vietnam's largest banks, and agreed to purchase Aviva plc's Vietnam insurance operations, both of which will strengthen our leadership position in this fast-growing market. At the same time, our insurance agency force across Asia grew by 21% and now exceeds 115,000 agents focused on serving our customers in some of Asia's fastest-growing markets. In our Global Wealth and Asset Management business, we completed the formation of our retail and institutional joint venture with Mahindra Finance in India and acquired a minority stake in Albamen Capital Partners, a private equity infrastructure investment manager with a focus on assets in mainland China. In addition, we announced a strategic alliance with Allianz Global Investors, strengthening our position as the largest Hong Kong Mandatory Provident Fund scheme sponsor.

The fundamentals underpinning our global franchise remain strong and we expect future demand for our products and services will remain robust, supported by macroeconomic and demographic megatrends, such as the rise of Asia's middle class and the aging global population. The pandemic has changed many attitudes regarding risk, which led more people to examine or purchase insurance and wealth products to help them prepare for the future and care for loved ones.

An inspired, inclusive, and engaged team

Throughout the pandemic I have been repeatedly awed by the incredible heart, passion, and "can do" spirit of our team. Our values were on display every day and helped us frame the many decisions we made throughout this challenging time. Early on, we knew some members of our team needed to have the support of additional time off to care for family or their own well-being, and we responded with additional paid leave. We recognized that so many of our people were challenged to do their work while caring for their children and adopted flexible schedules to accommodate their needs. Managers were provided with additional support to help coach and lead remotely.

Knowing our teammates' children needed something to look forward to, we launched a virtual summer camp followed by after-school clubs. We also provided a range of speakers, entertainment, and virtual parties for everyone on our team, including their families.

Along the way, we made it a priority to say "thank you" and recognize each other through a new company-wide program in which everyone can celebrate colleagues for their help, hard work, and for living our values. This struck a chord with nearly 400,000 recognition moments in just a few months. To take it one step further, we gave everyone a thank you day off in June and five additional personal paid days off in 2021 to rest, recharge, and have some fun. As 2020 came to an end, we gave every member of our team a grant to fund an "Act of Kindness" to help those in need in their local community.

Besides dealing with the impacts of the pandemic, we also made it a priority to ensure our company is a place where everyone feels they can be authentic, respected for who they are, and included. We committed to invest more than $3.5 million over the next two years to promote diversity, equity, and inclusion through expanded hiring commitments, education, and community support for organizations helping Black, Indigenous, and People of Colour.

Most heartening was how our actions were appreciated by our high-performing team, as we earned outstanding scores on our annual engagement survey and were voted one of the world's best employers by Forbes, ranking in the top 100. Our team and culture have evolved in a very positive and powerful way in 2020, and its growing strength remains critical to our long-term success.

Our commitment to sustainability

Making sustainable business decisions is more than just the right thing to do—it creates long-term value for our stakeholders and communities. For us, this means working towards measuring and evaluating our practices by integrating environmental, social, and governance (ESG) factors across our business, from supporting the transition to a low-carbon economy to investing in the health and well-being of our team and our communities.

We are maintaining our focus on climate change and remain steadfast in our commitment to investing in the transition to a low-carbon economy. As the world's largest institutional timberland investment manager and one of the largest farmland investment managers, we are actively contributing nature-based solutions to this challenge. We have achieved green building certifications for over 80% of our real estate portfolio managed by Global Wealth and Asset Management. Our own portfolio of green investments totalled $29.2 billion at the end of 2020, including renewable energy, energy efficiency, green buildings, and sustainably managed timberland and farmland.

The world's leading proponent of responsible investment, the Principles for Responsible Investment (PRI), included Manulife Investment Management in their PRI Leaders' Group 2020, recognizing our efforts to integrate climate data and analysis into these portfolios. We offer our investment clients "sustainability as standard," considering sustainability in all our investments made on their behalf.

As part of our sustainability journey, we are actively engaging with industry groups and global associations, such as Climate Action 100+ and the Sustainable Markets Initiative, to collaborate with like-minded organizations looking to embed ESG practices and to make significant impacts across industries and geographies.

Thank you

In closing, I am proud of all we were able to accomplish in 2020. The support and excellent guidance of our Board of Directors and our Chairman, John Cassaday, were invaluable as we navigated such an unprecedented time.

I'd also like to thank you, my fellow shareholders and customers, for your ongoing confidence and trust in us.

On a personal level, I am deeply grateful for the partnership and tireless efforts of my colleagues across the senior leadership team. I truly appreciate all their efforts over the past year.

As we embark on the year ahead, I am confident that the energy and optimism of our global team will enable us to continue to build an even stronger Manulife.

Sincerely,

Roy Gori
President and Chief Executive Officer

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 the Company's strategic priorities and 2022 targets for net promoter score, employee engagement, its highest potential businesses, expense efficiency and portfolio optimization, and our business continuity plans and measures implemented in response to the COVID-19 pandemic and its expected impact on our businesses, operations, earnings and results, 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 severity, duration and spread of the COVID-19 outbreak, as well as actions that have been, or may be taken by governmental authorities to contain COVID-19 or to treat its impact; 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 Factors and Risk Management" 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.

Manulife Financial Corporation

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Annual Report **2020**

Management's Discussion and Analysis

This Management's Discussion and Analysis ("MD&A") is current as of February 10, 2021.

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 Canada, Asia, 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 2020, we had more than 37,000 employees, over 118,000 agents, and thousands of distribution partners, serving over 30 million customers. At the end of 2020, we had $1.3 trillion (US$1.0 trillion) in assets under management and administration, and during 2020, we made $31.6 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 fee-based wealth solutions to our retail, retirement and institutional customers around the world.
- 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)

	2020	2019	2018
Net income attributed to shareholders	**$ 5,871**	$ 5,602	$ 4,800
Core earnings[(1)]	**$ 5,516**	$ 6,004	$ 5,610
Diluted earnings per common share ($)	**$ 2.93**	$ 2.77	$ 2.33
Diluted core earnings per common share ($)[(1)]	**$ 2.75**	$ 2.97	$ 2.74
Return on common shareholders' equity ("ROE")	**11.6%**	12.2%	11.6%
Core ROE[(1)]	**10.9%**	13.1%	13.7%
Expense efficiency ratio[(1)]	**52.9%**	52.0%	52.0%

(1) This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.

Our net income attributed to shareholders was $5.9 billion in 2020 compared with $5.6 billion in 2019. Net income attributed to shareholders is comprised of core earnings[1] (consisting of items we believe reflect the underlying earnings capacity of the business), which amounted to $5.5 billion in 2020 compared with $6.0 billion in 2019, and items excluded from core earnings of $0.4 billion of net gains in 2020 compared with $0.4 billion of net charges in 2019.

The $0.3 billion increase in net income attributed to shareholders compared with 2019 was primarily due to gains from the direct impact of interest rates in 2020, including gains from the sale of available-for-sale bonds ("AFS") held in Corporate and Other, (compared with losses in 2019, including a $0.5 billion charge related to updated Ultimate Reinvestment Rate ("URR") assumptions issued by the Canadian Actuarial Standards Board), partially offset by losses on investment-related experience (compared with gains in 2019, including $400 million of core investment gains[1]) and losses from the direct impact of equity markets and variable annuity guarantee liabilities (compared with gains in 2019).

The $0.5 billion decrease in core earnings compared with 2019 reflects the absence of core investment gains in the year (compared with gains in the prior year), lower investment income in Corporate and Other, less favourable impact of markets on seed money investments in new segregated and mutual funds, and lower new business volumes. These items were partially offset by the impact of in-force business growth, favourable policyholder experience, favourable new business product mix in Hong Kong and Asia Other[2], and higher average AUMA in Global Wealth and Asset Management. Core earnings in 2020 included net policyholder experience gains of $83 million post-tax ($76 million pre-tax) compared with a net charge of $17 million post-tax ($55 million pre-tax) in 2019.[3] Actions to improve the capital efficiency of our legacy businesses resulted in $37 million lower core earnings in 2020 compared with 2019.

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

2 Asia Other excludes Hong Kong and Japan.

3 Policyholder experience includes gains of $60 million post-tax in 2020 (2019 – gains of $83 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.

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)	2020	2019	% change[1] 2020 vs 2019	2018
Core earnings by segment [1],[2],[3]				
Asia	**$ 2,110**	$ 2,005	4%	$ 1,766
Canada	**1,174**	1,201	(2)%	1,327
U.S.	**1,995**	1,876	5%	1,789
Global Wealth and Asset Management	**1,100**	1,021	7%	985
Corporate and Other (excluding core investment gains)	**(863)**	(499)	(73)%	(657)
Core investment gains[2],[4]	**–**	400	(100)%	400
Total core earnings	**$ 5,516**	$ 6,004	(9)%	$ 5,610

[1] Percentage change is on a constant exchange rate basis. See "Performance and Non-GAAP Measures" below.
[2] This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.
[3] 2018 comparatives for core earnings in each segment have been updated to reflect the 2019 methodology for allocating capital and interest on surplus to our insurance segments from the Corporate and Other segment.
[4] See note (2) in the table below.

The table below reconciles 2020, 2019 and 2018 net income attributed to shareholders to core earnings and provides further details for each of the items excluded from core earnings.

For the years ended December 31, ($ millions)	2020	2019	2018
Core earnings[1]	**$ 5,516**	$ 6,004	$ 5,610
Items to reconcile core earnings to net income (loss) attributed to shareholders:			
Investment-related experience outside of core earnings[2]	**(792)**	366	200
Direct impact of equity markets and interest rates and variable annuity guarantee liabilities	**932**	(778)	(857)
Direct impact of equity markets and variable annuity guarantee liabilities[3]	***(228)***	*456*	*(928)*
Fixed income reinvestment rates assumed in the valuation of policy liabilities[4]	***(1,015)***	*(1,130)*	*354*
Sale of AFS bonds and derivative positions in the Corporate and Other segment	***2,175***	*396*	*(283)*
Changes to the Ultimate Reinvestment Rate[5]	**–**	*(500)*	–
Change in actuarial methods and assumptions[6]	**(198)**	(21)	(51)
Reinsurance transactions[7]	**341**	81	175
Restructuring charge[8]	**–**	–	(263)
Tax-related items and other[9]	**72**	(50)	(14)
Total items excluded from core earnings	**355**	(402)	(810)
Net income attributed to shareholders	**$ 5,871**	$ 5,602	$ 4,800

[1] This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.
[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 "Performance and Non-GAAP 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 2020, the investment-related experience net charge of $792 million reflected lower-than-expected returns (including fair value changes) on alternative long-duration assets ("ALDA") primarily driven by investments in oil & gas and real estate, partially offset by the favourable impact of fixed income reinvestment activities. In 2019, investment-related experience net gains of $766 million were generated, reflecting the favourable impact of fixed income reinvestment activities on the measurement of our policy liabilities, strong returns (including changes in fair value) on ALDA, and strong credit experience.
[3] In 2020, the net charge related to equity markets of $228 million included a charge of $1,641 million from gross equity exposure and a modest charge of $7 million from macro hedge experience partially offset by a gain of $1,420 million from dynamic hedging experience. In 2019, the net gain of $456 million included a gain of $443 million from gross equity exposure and a gain of $45 million from dynamic hedging experience, partially offset by a charge of $32 million from macro hedge experience.
[4] 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. In 2019, the net charge due to fixed income reinvestment rates of $1,130 million was primarily due to the narrowing of corporate spreads, the impact of lower risk-free rates and a steepening of the yield curve.
[5] In 2019, the Actuarial Standards Board ("ASB") issued new assumptions 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 which resulted in a $500 million charge. The long-term URR for risk-free rates in Canada is prescribed at 3.05% and we use the same assumption for the U.S. Our assumption for Japan is 1.6%. The ASB is currently conducting another review of the URR with any changes expected to be announced and implemented in 2021.
[6] See "Critical Actuarial and Accounting Policies – Review of Actuarial Methods and Assumptions" section below for further information on the 2020 and 2019 charges.
[7] In 2020, reinsurance transactions in the U.S., Asia and Canada contributed gains of $262 million, $58 million and $21 million, respectively. The 2019 net gain of $81 million included gains resulting from reinsurance transactions primarily related to our legacy businesses in Canada and the U.S.
[8] The 2018 charge of $263 million primarily related to the voluntary exit program in our Canadian operation transformation program and to our North American voluntary early retirement program as well as costs to optimize our real estate footprint in the U.S. and Canada.
[9] 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. Tax-related items and other charges in 2019 primarily related to a tax rate change in the province of Alberta, Canada.

Diluted earnings per common share was $2.93 in 2020, compared with $2.77 in 2019 primarily related to the increase in net income attributed to common shareholders. Diluted core earnings per common share[1] was $2.75 in 2020, compared with $2.97 in 2019 primarily related to the decrease in core earnings. The diluted weighted average common shares outstanding was 1,943 million in 2020 and 1,962 million in 2019.

[1] This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.

Return on common shareholders' equity ("ROE") for 2020 was 11.6%, compared with 12.2% for 2019 and core return on shareholders' equity ("core ROE")[1] was 10.9% in 2020 compared with 13.1% in 2019. The decrease in 2020 core ROE was predominantly driven by an increase in common shareholders' equity, due to the impact of lower interest rates on AFS debt securities.

Expense efficiency ratio[1] was 52.9% for 2020, compared with 52.0% in 2019. The 0.9 percentage point increase in the ratio compared with 2019 was driven by a 7%[2] decline in 2020 pre-tax core earnings[1], partially offset by a reduction in general expenses included in core earnings ("core general expenses") of 3%.[1] The reduction in core general expenses reflected the results of our efficiency programs, as well as temporary reductions in discretionary and distribution-related expenditures.

Business Performance

Growth metrics

As at and for the years ended December 31, ($ millions, unless otherwise stated)	2020	2019	2018
Asia APE sales	**$ 3,869**	$ 4,278	$ 4,012
Canada APE sales	**1,148**	1,057	975
U.S. APE sales	**609**	702	553
Total APE sales(1)	**5,626**	6,037	5,540
Asia new business value	**1,387**	1,595	1,443
Canada new business value	**255**	237	207
U.S. new business value	**160**	218	98
Total new business value(1)	**1,802**	2,050	1,748
Global Wealth and Asset Management gross flows ($ billions)(1)	**130.2**	114.2	119.0
Global Wealth and Asset Management net flows ($ billions)(1)	**8.9**	(0.9)	1.6
Global Wealth and Asset Management assets under management and administration ($ billions)(1)	**753.6**	681.4	608.8
Total assets under management and administration ($ billions)(1)	**1,297.4**	1,188.9	1,083.5

(1) This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.

Annualized premium equivalent ("APE") sales[1] were $5.6 billion in 2020, a decrease of 8% compared with 2019. In Asia, APE sales decreased 11% compared with 2019 primarily as a result of lower Japan APE sales, which decreased 30% due to accelerated sales of corporate-owned life insurance ("COLI") products in the first quarter of 2019 in advance of a change in tax regulations and the adverse impact of COVID-19. Hong Kong APE sales decreased 10% compared with 2019 driven by the adverse impact of COVID-19 containment measures, and lower sales to mainland Chinese visitors. Asia Other APE sales in 2020 were in-line with 2019, as growth in mainland China and Vietnam was offset by the adverse impact of COVID-19 in other markets. In Canada, APE sales increased 9% compared with 2019, primarily driven by higher large-case group insurance sales, higher sales in our lower risk segregated funds and higher affinity market sales within individual insurance, partially offset by lower retail insurance sales due to the adverse impact of COVID-19. In the U.S., APE sales decreased 14% compared with 2019, as lower international universal life, domestic protection universal life, and variable universal life sales, more than offset higher term life and domestic indexed universal life sales. The decline in U.S. APE sales was driven by higher prior year domestic universal life sales in advance of anticipated regulatory changes, as well as the unfavourable impact of COVID-19.

New business value ("NBV")[1] was $1.8 billion in 2020, a decrease of 13% compared with 2019. In Asia, NBV of $1.4 billion was down 14% compared with 2019, driven by lower sales volumes in Hong Kong and Japan and a decline in market interest rates in Hong Kong and Asia Other, partially offset by favourable product mix in Asia Other. In Canada, NBV of $255 million was up 8% compared with 2019, primarily due to higher margins and higher sales in our insurance businesses. In the U.S., NBV of $160 million was down 27% compared with 2019 primarily driven by lower sales volumes.

Global WAM gross flows[1] of $130.2 billion increased $16.0 billion or 13% compared with 2019, driven by higher gross flows across all geographies. See "Global Wealth and Asset Management" section below for further details.

Global WAM net inflows[1] were $8.9 billion in 2020, compared with net outflows of $0.9 billion in 2019. In Asia, net inflows were $3.9 billion in 2020 compared with net inflows of $4.8 billion in 2019, reflecting lower retail net flows mainly in mainland China and Hong Kong, partially offset by higher net flows in Indonesia Retail and Hong Kong Retirement. In Canada, net inflows were $14.6 billion in 2020 compared with net outflows of $3.6 billion in 2019, driven by improved net inflows in Institutional Asset Management, from the non-recurrence of an $8.5 billion redemption in 2019 and the funding of a $6.9 billion mandate from a new client in the second quarter of 2020 ("2Q20"), and in Retirement, from lower plan redemptions and individual withdrawals. In the U.S., net outflows were $9.6 billion in 2020 compared with net outflows of $2.0 billion in 2019, driven by a $5.0 billion redemption of an equity mandate, and the non-recurrence of several large sales in Institutional Asset Management in 2019, as well as higher redemptions in Retirement, mainly due to member withdrawals under the U.S. CARES Act during the year.

[1] This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.
[2] Percentage growth / declines in core earnings, core general expenses, pre-tax core earnings, APE sales, gross flows, net flows, NBV, assets under management and administration, assets under management, core EBITDA and Global Wealth and Asset Management revenue are stated on a constant exchange rate basis. Constant exchange rate basis is a non-GAAP measure. See "Performance and Non-GAAP measures" below.

Assets under Management and Administration ("AUMA")[1]

AUMA as at December 31, 2020 was $1.3 trillion, an increase of 10%, compared with December 31, 2019, primarily due to the favourable impact of markets and net inflows. The Global Wealth and Asset Management portion of AUMA as at December 31, 2020 was $754 billion, an increase of 12%, compared with December 31, 2019, driven by the favourable impact of markets and net inflows of $8.9 billion.

Assets under Management and Administration

As at December 31, ($ millions)	2020	2019	2018
General fund	**$ 410,977**	$ 378,527	$ 353,664
Segregated funds net assets(1)	**367,436**	343,108	313,209
Mutual funds, institutional asset management and other(1),(2)	**356,335**	321,826	292,200
Total assets under management	**1,134,748**	1,043,461	959,073
Other assets under administration	**162,688**	145,397	124,449
Total assets under management and administration	**$ 1,297,436**	$ 1,188,858	$ 1,083,522

(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 2020, revenue before realized and unrealized investment gains and losses was $59.9 billion compared with $61.4 billion in 2019. The decrease was primarily due to higher ceded premiums in 2020 from the reinsurance of a block of legacy U.S. Bank-Owned Life Insurance ("BOLI") business partially offset by higher investment income.

In 2020, the net realized and unrealized investment gains on assets supporting insurance and investment contract liabilities and on the macro hedging program were $19.0 billion compared with gains of $18.2 billion for 2019. The 2020 and 2019 gains were primarily due to a decrease in interest rates and higher equity markets.

See "Impact of Fair Value Accounting" below.

Revenue

For the years ended December 31, ($ millions)	2020	2019	2018
Gross premiums	**$ 41,408**	$ 41,059	$ 39,150
Premiums ceded to reinsurers	**(8,491)**	(5,481)	(15,138)
Net premium income	**32,917**	35,578	24,012
Investment income	**16,433**	15,393	13,560
Other revenue	**10,591**	10,399	10,428
Revenue before realized and unrealized investment gains and losses	**59,941**	61,370	48,000
Realized and unrealized investment gains and losses on assets supporting insurance and investment contract liabilities and on the macro hedge program	**18,967**	18,200	(9,028)
Total revenue	**$ 78,908**	$ 79,570	$ 38,972

[1] This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.

Financial Strength

Financial strength metrics

As at and for the years ended December 31, ($ millions, unless otherwise stated)	**2020**	2019	2018
MLI's LICAT total ratio(1)	**149%**	140%	143%
Financial leverage ratio	**26.6%**	25.1%	28.6%
Consolidated capital(1)	**$ 61,064**	$ 57,369	$ 56,010
Book value per common share ($)	**$ 25.00**	$ 23.25	$ 21.38
Book value per common share excluding accumulated other comprehensive income ("AOCI") ($)	**$ 21.74**	$ 19.94	$ 18.23

(1) This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.

The Life Insurance Capital Adequacy Test ("LICAT") total ratio for MLI was 149% as at December 31, 2020, compared with 140% as at December 31, 2019. The nine percentage point increase from December 31, 2019 was driven by market movements primarily from lower risk-free interest rates, by net capital issuances[1], and by the reinsurance of a block of legacy U.S. BOLI business, partly offset by several smaller items.

MFC's financial leverage ratio increased to 26.6% as at December 31, 2020 from 25.1% as at December 31, 2019, driven by the impact of net issuance of $2.4 billion of securities, partially offset by the growth in retained earnings.

Consolidated capital[2] was $61.1 billion as at December 31, 2020 compared with $57.4 billion as at December 31, 2019, an increase of $3.7 billion. The increase was primarily driven by growth in retained earnings of $3.4 billion, net capital issuances of $0.7 billion, which does not include MFC senior debt as it does not qualify as regulatory capital,[3] and an increase in unrealized gains of AFS debt securities of $0.4 billion, partially offset by a reduction in participating policyholders' equity of $0.5 billion and the impact of a stronger Canadian dollar of $0.4 billion.

Book value per common share as at December 31, 2020 was $25.00, an increase of 8% compared with $23.25 as at December 31, 2019, and the book value per common share excluding accumulated other comprehensive income ("AOCI") was $21.74 as at December 31, 2020, an increase of 9% compared with $19.94 as at December 31, 2019. The increase in the book value per common share was primarily driven by net income attributed to shareholders net of dividends and a net increase in AOCI. The number of common shares outstanding was 1,940 million as at December 31, 2020 and 1,949 million as at December 31, 2019.

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 $19.0 billion of net realized and unrealized investment gains in investment income in 2020 (2019 – gains of $18.2 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 "Performance and Non-GAAP Measures" below.

Public Equity Risk and Interest Rate Risk

At December 31, 2020, 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 $610 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 neutral. See "Risk Factors and Risk Management" 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.

1 LICAT reflects capital redemptions once the intention to redeem has been announced. As a result, the December 31, 2020 LICAT ratio reflects the impact of the $350 million of MLI subordinated debentures redeemed in January 2021 (announced in November 2020).

2 This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.

3 Consolidated capital does not include MFC senior debt (net issuance of $1.7 billion in 2020) 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.

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 2020 and 2019.

	Quarterly					Full Year	
Exchange rate	**4Q20**	3Q20	2Q20	1Q20	4Q19	**2020**	2019
Average[(1)]							
U.S. dollar	**1.3030**	1.3321	1.3854	1.3449	1.3200	**1.3414**	1.3269
Japanese yen	**0.0125**	0.0126	0.0129	0.0124	0.0122	**0.0126**	0.0122
Hong Kong dollar	**0.1681**	0.1719	0.1787	0.1731	0.1687	**0.1729**	0.1693
Period end							
U.S. dollar	**1.2732**	1.3339	1.3628	1.4187	1.2988	**1.2732**	1.2988
Japanese yen	**0.0124**	0.0126	0.0126	0.0131	0.0120	**0.0124**	0.0120
Hong Kong dollar	**0.1642**	0.1721	0.1758	0.1830	0.1668	**0.1642**	0.1668

(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 exchange rates, primarily due to the weakening of the Canadian dollar compared with the U.S. dollar, increased core earnings by approximately $60 million in 2020 compared with 2019. The impact of foreign currency on items excluded from core earnings does not provide relevant information given the nature of these items.

Strategic priorities progress update

Strategy

Our ambition is to be the most digital, customer-centric global company in our industry. These are our goals for our three important stakeholder groups:

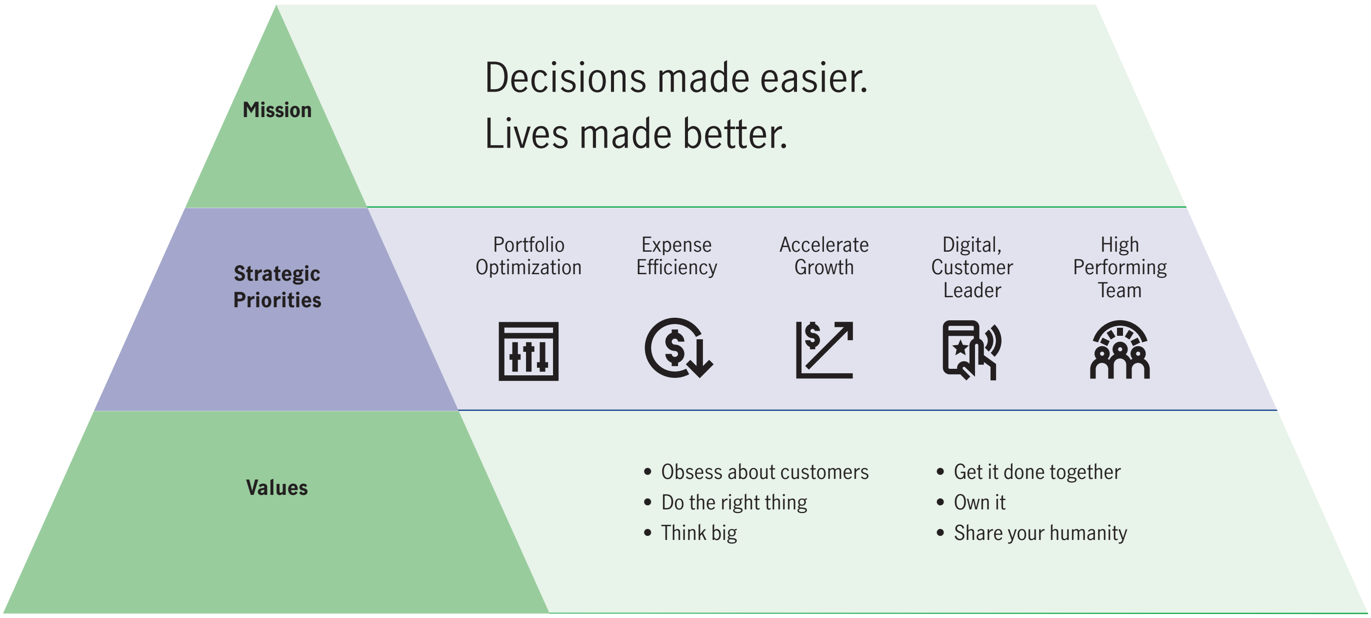
Customers
Improve Net Promoter Score by +30 points and delight customers[1]

Employees
Engage our employees — achieve top quartile engagement[2]

Shareholders
Deliver top quartile returns[3]

1 As compared to a baseline of +1 in 2017.
2 Top quartile employee engagement compared to global financial services companies and insurance peers by 2022.
3 Top quartile shareholder returns compared to our peer group.

Our mission, strategic priorities and values are summarized below:



Strategic Priorities

Our strategy is underpinned by five strategic priorities that were introduced in June 2018. These priorities drive our focus as we strive to be the most digital, customer-centric global company in our industry.

Portfolio Optimization – We are continually optimizing our portfolio and have already surpassed our original target to release $5 billion of capital by 2022, delivering $5.9 billion of cumulative capital benefits through 2020. In 2020, we broadened the portfolio optimization priority to include all of our global in-force insurance and annuity management. 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

Expense Efficiency – We are focused on driving efficient growth, targeting a less than 50% expense efficiency ratio and have already delivered on our original target of $1 billion in expense efficiencies. 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

Accelerate Growth – Our growth ambition seeks to generate two-thirds of core earnings from our high potential businesses. 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 Wealth and Asset Management
- Expand our behavioural insurance offering to provide innovative solutions and support positive health in our customer base
- Drive new business growth through group insurance

Digital, Customer Leader – In line with our mission to become the most digital, customer-centric global company in our industry, we aim to improve Net Promoter Score by 30 points. Focal areas within this pillar are to:

- Invest in digital assets to improve customer experience
- Deploy a globally consistent NPS system
- Utilize a human-centered design approach for the development of new products and services
- Leverage global agile capabilities to drive improvements in our ways of working

High Performing Team – We are committed to enabling a high performing team and achieving top quartile employee engagement. Focal areas within this pillar are to:

- Drive organizational effectiveness and speed of decision making
- Deepen Manulife's diversity and inclusion
- Develop our talent with differentiated capabilities
- Leverage a global recognition program to reward excellence and promote company values

Progress Update

Manulife's mission – Decisions made easier. Lives made better – guided our business throughout 2020. Our focused efforts produced solid results on our five strategic priorities as noted below.

Strategic priorities	2022 Targets[1]	2020 Performance	Highlights on our progress
1. Portfolio Optimization	• Release a total of $5 billion in capital from legacy businesses	• Achieved 3 years ahead of schedule • Delivered $5.9 billion of cumulative capital benefits, including $0.8 billion in 2020	• $3.6 billion from reinsurance and other actions in our North American Legacy businesses including $0.5 billion from reinsuring a block of legacy U.S. BOLI business in 2020 • $2.3 billion from a reduction in the allocation to ALDA in the portfolio asset mix supporting legacy business
2. Expense Efficiency	• Achieve a less than 50% expense efficiency ratio • Deliver $1 billion in expense efficiencies	• Expense efficiency ratio of 52.9% in 2020, compared to 52.0% in 2019 • Cumulative expense efficiencies of $1.0 billion in pre-tax annual savings, achieved 2 years ahead of schedule, including over $300 million of sustainable savings in 2020	• The maturity of our expense efficiency program has played a crucial role throughout the economic downturn and enabled us to be responsive to headwinds. • Core general expenses declined by 3% in 2020 compared to 2019 • Consolidated our real estate footprint • Implemented automation, robotic solutions, and leveraged artificial intelligence to adjudicate less complex transactions • Renegotiated various contracts with third-party vendors • Despite headwinds related to the global pandemic, we are on track to achieve our target expense efficiency ratio of less than 50% by 2022.[1]
3. Accelerate Growth	• Generate two-thirds of core earnings from highest potential businesses[2]	• 66% of our core earnings in 2020 were generated from highest potential businesses, compared to 57% in 2019	• Continued our expansion in bancassurance with an exclusive 16-year partnership with VietinBank[3] to better meet the growing financial and insurance needs of the Vietnamese people and an extension of our agreement with PT Bank Danamon Indonesia to 2036 • Continued our expansion of behavioural-based wellness insurance products through our Manulife Vitality program in Canada, "Vitality for All" strategy in the U.S. and ManulifeMOVE in Asia • Solidified our position as the largest MPF scheme sponsor in Hong Kong through strategic alliance with Allianz Global Investors, expected to close in 2021[1] • Experienced 7% growth in Global WAM core earnings increasing to 20% of total core earnings in 2020 • Normalizing for the absence of core investment gains in the denominator, our highest potential businesses would have contributed 62% of core earnings, which is a 5 percentage point increase versus 2019

1 See "Caution regarding forward-looking statements" above.
2 Asia, Global WAM, group insurance in Canada, and behavioural insurance products.
3 Subject to regulatory approval.

Strategic priorities	2022 Targets[1]	2020 Performance	Highlights on our progress
4. Digital, Customer Leader	• Improve Net Promoter Score by 30 points, as compared to a baseline of +1 in 2017	• rNPS[2] score of +12, an 11 point improvement from the 2017 baseline and a 4 point improvement from 2019 • 2020 scores remain competitive with global benchmarks	• 2020 was a challenging year for many people and in order to make things easier and safer for customers, we responded to the pandemic by reorienting customer experiences through the enhancement and acceleration of our digital capabilities • Launched a new, fully underwritten term life product in the U.S. which enables customers to purchase up to US$1 million in life insurance coverage digitally • Launched a new retirement planner tool in our Global WAM U.S. business to deliver an innovative and engaging way for customers to visualize and plan for their retirement • Introduced facial and video recognition, and intelligent guide script into the sales process in mainland China • Expanded our partnership with Akira Health to provide a broader range of online medical services to insurance customers in Canada • Vast majority of our products are available to prospective customers through virtual face-to-face methods[3]: 97% of APE sales in both Asia and Canada[4], 80% of APE sales in the U.S.[4] and 90% of Global WAM AUMA[5]
5. High Performing Team	• Achieve top quartile employee engagement compared to global financial services and insurance peers	• Ranked in the top quartile amongst our designated peer group on employee engagement in 2020	• Ranked in the 80th percentile amongst global financial services and insurance peers on our 2020 employee engagement survey • Named a World's Best Employer by Forbes, ranked in the top 100 best employers globally • Committed to invest more than $3.5 million over the next two years to promote diversity, equity and inclusion in our workplace and communities we serve.

1 See "Caution regarding forward-looking statements" above.
2 Relationship Net Promoter Score ("rNPS").
3 Virtual face-to-face, includes digital as well as non-digital solutions.
4 Represents the percentage of 2019 APE sales that are currently available for sale via virtual face-to-face methods (applies to Asia, Canada and U.S.).
5 Reflects Global WAM's AUMA available to new and existing retail and retirement customers.

2. Asia

Our Asia segment is a leading provider of insurance products and insurance-based wealth accumulation products, driven by a customer-centric strategy and 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 markets[1]: Japan, Hong Kong, Macau, Singapore, mainland China, Vietnam, Indonesia, the Philippines, Malaysia and Cambodia, and have recently started operations in Myanmar.

We have a diversified multi-channel distribution network, including over 115,000 contracted agents and over 100 bank partnerships. We also work with many independent agents, financial advisors and brokers. Among our bancassurance partnerships we have nine exclusive partnerships, including a long-term partnership with DBS Bank across Singapore, Hong Kong, mainland China and Indonesia, that give us access to over 16 million bank customers.

In 2020, Asia contributed 33% of the Company's core earnings from operating segments and, as at December 31, 2020, accounted for 11% of the Company's assets under management and administration.

Profitability

Asia reported net income attributed to shareholders of $1,762 million in 2020 compared with $1,935 million in 2019. Net income attributed to shareholders is comprised of core earnings, which was $2,110 million in 2020 compared with $2,005 million in 2019, and items excluded from core earnings, which amounted to a net charge of $348 million for 2020 compared with a net charge of $70 million in 2019.

Expressed in U.S. dollars, the presentation currency of the segment, net income attributed to shareholders was US$1,322 million in 2020 compared with US$1,457 million in 2019 and core earnings were US$1,576 million in 2020 compared with US$1,511 million in 2019. Items excluded from core earnings are outlined in the table below and amounted to a net charge of US$254 million in 2020 and a net charge of US$54 million in 2019.

Core earnings in 2020 increased 4% compared with 2019, after adjusting for the impact of changes in foreign currency exchange rates. Core earnings increased by 10% in Hong Kong and 8% in Asia Other and declined by 18% in Japan. Hong Kong and Asia Other core earnings benefited from in-force business growth, favourable new business product mix, and improved policyholder experience, partially offset by lower new business volumes in Hong Kong. Japan core earnings were impacted by lower new business volumes partially offset by in-force business growth and favourable policyholder experience.

The table below reconciles net income attributed to shareholders to core earnings for Asia for 2020, 2019 and 2018.

For the years ended December 31,	Canadian $			US $		
($ millions)	**2020**	2019	2018	**2020**	2019	2018
Core earnings(1),(2)	**$ 2,110**	$ 2,005	$ 1,766	**$ 1,576**	$ 1,511	$ 1,363
Items to reconcile core earnings to net income attributed to shareholders:						
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	**218**	195	284	**167**	147	219
Direct impact of equity markets and interest rates and variable annuity guarantee liabilities(3)	**(583)**	(258)	(375)	**(433)**	(196)	(287)
Change in actuarial methods and assumptions	**(41)**	(7)	27	**(32)**	(5)	21
Reinsurance transactions	**58**	–	5	**44**	–	4
Other	**–**	–	(3)	**–**	–	(3)
Net income attributed to shareholders(2)	**$ 1,762**	$ 1,935	$ 1,704	**$ 1,322**	$ 1,457	$ 1,317

(1) This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.
(2) 2018 comparatives for core earnings and net income attributed to shareholders have been updated to reflect the 2019 methodology for allocating capital and interest on surplus to our insurance segments from the Corporate and Other segment.
(3) 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. The charge in 2019 primarily related to the impact of fixed income reinvestment rates and the URR partially offset by a gain related to equity markets.

Business Performance

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

Annualized premium equivalent ("APE") sales in 2020 were US$2,892 million, representing a decrease of 11% compared with 2019. APE sales were lower in Japan and Hong Kong and consistent with 2019 in Asia Other. In Japan, APE sales in 2020 were US$600 million, a

1 In 2019, we made the decision to exit Thailand, and have reached an agreement to sell the operation. Regulatory approval has been obtained and we expect to complete the transaction in the first half of 2021.

decrease of 30% compared with 2019 due to accelerated sales of COLI products in the first quarter of 2019 in advance of a change in tax regulations and the adverse impact of COVID-19. Hong Kong APE sales in 2020 were US$773 million, a decrease of 10% compared with 2019, driven by the adverse impact of COVID-19 and a decrease in sales to mainland Chinese visitors. Asia Other APE sales in 2020 of US$1,519 million were in-line with 2019 as growth in Vietnam and mainland China was fully offset by the adverse impact of COVID-19 on sales in the other markets.

New business value ("NBV") was US$1,037 million in 2020, a decrease of 14% compared with 2019. We experienced lower NBV in Japan and Hong Kong, partially offset by higher NBV in Asia Other. In Japan, NBV in 2020 was US$131 million, a decrease of 50% compared with 2019 due to lower APE sales and a higher COLI mix. In Hong Kong, NBV in 2020 was US$463 million, a decrease of 14% compared with 2019 driven by lower sales and a decline in market interest rates. Asia Other NBV in 2020 was US$443 million, an increase of 9% compared to 2019, primarily as a result of favourable product mix, partially offset by a decline in market interest rates. The new business value margin ("NBV margin")[1] was 38.8% in 2020, a decrease of 1.0 percentage point compared with 2019.

APE Sales and NBV

For the years ended December 31, ($ millions)	Canadian $ 2020	2019	2018	US $ 2020	2019	2018
Annualized premium equivalent sales(1)	**$ 3,869**	$ 4,278	$ 4,012	**$ 2,892**	$ 3,224	$ 3,094
New business value(1)	**1,387**	1,595	1,443	**1,037**	1,202	1,112

(1) This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.

Assets under Management[1]

Asia's assets under management were US$108.7 billion as at December 31, 2020, an increase of US$15.2 billion or 13% compared with December 31, 2019, driven by net customer inflows of US$9.9 billion and market growth during 2020.

Assets under Management(1)

As at December 31, ($ millions)	Canadian $ 2020	2019	2018	US $ 2020	2019	2018
General fund(2)	**$ 115,430**	$ 100,418	$ 88,776	**$ 90,639**	$ 77,304	$ 65,075
Segregated funds	**22,948**	20,968	19,333	**18,015**	16,138	14,176
Total assets under management	**$ 138,378**	$ 121,386	$ 108,109	**$ 108,654**	$ 93,442	$ 79,251

(1) This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.
(2) The 2018 comparative for general fund assets under management has been updated to reflect the 2019 methodology for allocating capital and interest on surplus to our insurance segments from the Corporate and Other segment.

Revenue

Total revenue of US$21.2 billion in 2020 decreased US$0.4 billion compared with 2019. Revenue before net realized and unrealized investment gains and losses increased US$0.5 billion compared with 2019 due to an increase in net premium income and higher investment income. The net premium income increase was primarily driven by the growth of in-force business, partly offset by a decline in new business.

Revenue

For the years ended December 31, ($ millions)	Canadian $ 2020	2019	2018	US $ 2020	2019	2018
Gross premiums	**$ 21,592**	$ 20,724	$ 18,768	**$ 16,129**	$ 15,620	$ 14,483
Premiums ceded to reinsurers	**(1,113)**	(717)	(656)	**(834)**	(540)	(507)
Net premium income	**20,479**	20,007	18,112	**15,295**	15,080	13,976
Investment income(1)	**2,874**	2,570	2,355	**2,145**	1,938	1,817
Other revenue	**1,346**	1,215	1,296	**1,004**	917	1,000
Revenue before net realized and unrealized investment gains and losses	**24,699**	23,792	21,763	**18,444**	17,935	16,793
Net realized and unrealized investment gains and losses(2)	**3,756**	4,881	(2,053)	**2,783**	3,670	(1,599)
Total revenue	**$ 28,455**	$ 28,673	$ 19,710	**$ 21,227**	$ 21,605	$ 15,194

(1) The 2018 comparative for investment income has been updated to reflect the 2019 methodology for allocating capital and interest on surplus to our insurance segments from the Corporate and Other segment.
(2) See "Financial Performance – Impact of Fair Value Accounting" above.

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

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 with a compelling economic backdrop. We operate in many of the fastest growing markets in the world, and middle-class emergence, combined with an estimated doubling of household wealth in Asia from 2015 to 2025, will continue to drive demand for financial solutions.

We continued to accelerate our growth by expanding our distribution reach and we implemented several changes to enhance customer experience. In 2020, we:

- Increased the number of agents by 21% to over 115,000. Our active number of agents grew by 14% year-on-year. We now have 6,400 Million Dollar Round Table agents compared with 3,700 in 2019;
- Continued our expansion in bancassurance with the signing of an agreement with VietinBank[1] to establish an exclusive 16-year bancassurance partnership to better meet the growing financial and insurance needs of the Vietnamese people. Our nine exclusive bancassurance partnerships, including a major pan-Asia partnership with DBS Bank, give us access to over 16 million bank customers,
- Extended our strategic bancassurance arrangement with PT Bank Danamon Indonesia Tbk in the first quarter of 2020. The new agreement extends the term covered in the original agreement to 2036;
- Grew our customer base to more than 12 million customers and saw positive momentum in rNPS. We sold our first policy in Myanmar, a digitally savvy market with one of the lowest insurance penetration rates in Asia; and
- Received approval from China Banking and Insurance Regulatory Commission to begin preparation work to establish a new branch in Shaanxi Province.

We continued to enhance our digital capabilities and rolled out a number of key customer initiatives and advanced our digital strategy. In 2020, we:

- Expanded our distribution capabilities, with approximately 97%[2] of our product shelf now accessible to customers through virtual face-to-face methods[3];
- Expanded the deployment of e-claims to Malaysia, Philippines and Cambodia;
- Collaborated with Dacadoo, a Swiss-based global digital health platform provider to strengthen our existing health engagement platform, ManulifeMOVE. This initiative will enable customers to more easily understand their health and be guided to develop healthier habits. We ended 2020 with over 1,000,000 policyholders enrolled in ManulifeMOVE, almost doubling the number of policyholders enrolled at the end of 2019; and
- Entered into a partnership with Cong Dong Bau, a community with more than 5 million members that improves access to financial advice and solutions for expectant and new mothers.

We made progress on building our high performing team. Our overall employee engagement score improved, contributing to the year-on-year improvement for the wider group. We continue to develop our talent and secured executives in key leadership roles by appointing an emerging market General Manager and a regional Chief Marketing Officer.

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[1] Pending regulatory approval; not included in the nine exclusive bank arrangements, which includes bancassurance partnership with UAB that received regulatory approval in January 2021.

[2] This represents the percentage of 2019 APE sales that are currently available for sale via virtual face-to-face methods.

[3] Virtual face-to-face, includes digital as well as non-digital solutions.

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 leveraging 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 24,000 Canadian businesses and organizations entrusting their employee benefit programs to Manulife's Group Insurance. We also provide life, health 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, GICs, lines of credit, investment loans, mortgages and other specialized lending programs, offered through financial advisors supported by a broad distribution network.

In 2020, Canada contributed 19% of the Company's core earnings from operating segments and, as at December 31, 2020, accounted for 12% of the Company's assets under management and administration.

Profitability

Canada's full year 2020 net income attributed to shareholders was $195 million compared with $1,122 million in 2019. Net income attributed to shareholders is comprised of core earnings, which was $1,174 million in 2020 compared with $1,201 million in 2019, and items excluded from core earnings, which amounted to a net charge of $979 million for 2020 compared with a net charge of $79 million in 2019. Items excluded from core earnings are outlined in the table below.

The $27 million or 2% decrease in core earnings was driven by the unfavourable impact of travel claims, lower retail sales in our individual insurance business, the non-recurrence of gains from the second phase of our segregated fund transfer program in 2019 and a number of smaller experience-related items, partially offset by favourable policyholder experience in both group and individual insurance.

The table below reconciles net income attributed to shareholders to core earnings for Canada for 2020, 2019 and 2018.

For the years ended December 31, ($ millions)	**2020**	2019	2018
Core earnings(1),(2)	**$ 1,174**	$ 1,201	$ 1,327
Items to reconcile core earnings to net income attributed to shareholders:			
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	**(260)**	477	240
Direct impact of equity markets and interest rates and variable annuity guarantee liabilities(3)	**(817)**	(414)	(307)
Change in actuarial methods and assumptions	**77**	(108)	(370)
Charge related to decision to change portfolio asset mix supporting our legacy businesses	**–**	–	–
Reinsurance transactions	**21**	(30)	102
Tax-related items and other(4)	**–**	(4)	(10)
Net income attributed to shareholders(2)	**$ 195**	$ 1,122	$ 982

(1) This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.

(2) 2018 comparatives for core earnings and net income attributed to shareholders have been updated to reflect the 2019 methodology for allocating capital and interest on surplus to our insurance segments from the Corporate and Other segment.

(3) The direct impact of markets in 2020 was a charge of $817 million and included a charge of $708 million related to fixed income reinvestment rates and a charge of $109 million related to the direct impact of equity markets and variable annuity guarantee liabilities. The charge in 2019 included charges related to fixed income reinvestment rates including a charge related to changes in the URR and were partially offset by the direct impact of equity markets and variable annuity guarantee liabilities.

(4) The 2019 charge of $4 million relates to the impact of tax rate changes in the province of Alberta, Canada.

Business Performance

APE sales were $1,148 million in 2020, an increase of $91 million or 9% compared with 2019. Individual insurance APE sales in 2020 of $409 million increased $13 million or 3% compared with 2019, driven by higher affinity market sales, partially offset by lower retail sales due to the adverse impact of COVID-19. Group insurance APE sales of $493 million in 2020 increased $44 million or 10% compared with 2019 due to higher large-case sales, partially offset by lower small and mid-size business sales. Annuities APE sales in 2020 of $246 million increased $34 million or 16% compared with 2019 due to higher sales of our lower risk segregated fund products.

Sales

For the years ended December 31, ($ millions)	**2020**	2019	2018
APE sales(1)	**$ 1,148**	$ 1,057	$ 975

(1) This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.

Manulife Bank average net lending assets were $22.5 billion in 2020, up $0.6 billion or 3% compared with 2019.

Assets under Management

Assets under management of $159.3 billion as at December 31, 2020 increased by $8.0 billion or 5% from $151.3 billion at December 31, 2019, due to the impact of lower interest rates on asset values.

Assets under Management[1]

As at December 31, ($ millions)	2020	2019	2018
General fund[2]	**$ 121,657**	$ 115,613	$ 108,607
Segregated funds	**37,650**	35,645	33,306
Total assets under management	**$ 159,307**	$ 151,258	$ 141,913

(1) This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.
(2) The 2018 comparative for general fund assets under management has been updated to reflect the 2019 methodology for allocating capital and interest on surplus to our insurance segments from the Corporate and Other segment.

Revenue

Total revenue of $18.6 billion in 2020 decreased $1.0 billion from $19.6 billion in 2019. Revenue before net realized and unrealized investment gains and losses of $13.9 billion in 2020 decreased $0.9 billion from $14.8 billion in 2019 due to lower investment income as a result of declines in oil and gas prices in the first quarter of 2020 ("1Q20") and the impact of lower interest rates.

Revenue

For the years ended December 31, ($ millions)	2020	2019	2018
Gross premiums	**$ 10,756**	$ 10,667	$ 10,974
Premiums ceded to reinsurers	**(1,589)**	(1,592)	(1,547)
Net premium income	**9,167**	9,075	9,427
Investment income[1]	**3,711**	4,597	4,119
Other revenue	**1,013**	1,088	1,446
Revenue before net realized and unrealized investment gains and losses	**13,891**	14,760	14,992
Net realized and unrealized investment gains and losses[2]	**4,747**	4,849	(1,394)
Total revenue	**$ 18,638**	$ 19,609	$ 13,598

(1) The 2018 comparative for investment income has been updated to reflect the 2019 methodology for allocating capital and interest on surplus to our insurance segments from the Corporate and Other segment.
(2) See "Financial Performance – Impact of Fair Value Accounting" above.

Strategic Highlights

In 2020, we took actions to protect the health and well-being of our customers. We have made important progress in advancing our digital capabilities to interact with customers in new and different ways and simplify our processes to make our products more accessible. We continued to modernize our business by developing innovative product solutions and continuing to build a customer-centric digital platform. We continued to successfully execute on our expense reduction strategy to strengthen financial results and improve the risk-return profile in our home market. 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 banking solutions to meet customers' needs and by leveraging the strength of our group franchise.

We continued to grow our business by developing innovative product solutions and modernizing our delivery process. In 2020, we:

- Enhanced our Group Benefits product offering with the introduction of Health by Design, a proactive approach using the latest science, technology and predictive analytics to help our members with their unique health journey;
- Released a new Return to Work Playbook incorporating physical and mental health and safety guidance to support our Group Benefits clients as they return to their workplaces;
- Continued to see growth in our group insurance Vitality program, the first evidence-rich program of its kind in Canada, designed to encourage participants to make healthy choices using proven behavioural science;
- Enhanced our product offerings and provided relief for our customers since the onset of the pandemic, including a temporary extension of emergency out-of-country coverage for our group and individual customers who experienced travel delays; and
- Introduced flexible financial solutions to support our banking clients, such as deferrals and relief programs for residential and commercial mortgages, loans and credit cards.

We have executed on a number of initiatives to expand our digital capabilities focused on non-face-to-face product accessibility and personalized customer service. In 2020, we:

- Continued to focus on acceleration of our digital capabilities to improve the client experience, with approximately 97%[1] of our product shelf accessible to customers through virtual face-to-face methods[2];
- Expanded our partnership with Akira Health to provide a broader range of online medical services to our insurance clients to better support their health and wellness;
- Continued to advance a number of new group insurance digital platforms to simplify the enrolment experience, claims submission and processing as well as communication with group insurance members;
- Introduced a new mortgage creditor tool becoming the first mortgage insurance provider to offer an online mortgage insurance application; and
- Received a Gold dotcom international award for the redesign of manulifebank.ca and launched a refreshed user experience with personalized insights in our top-rated iOS and Android app for Manulife Bank customers.

1 Represents the percentage of 2019 APE sales that are currently available for sale via virtual face-to-face methods.
2 Virtual face-to-face, includes digital as well as non-digital solutions.

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 licenced 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 2020, U.S. contributed 31% of the Company's core earnings from operating segments and, as at December 31, 2020, accounted for 18% of the Company's assets under management and administration.

Profitability

U.S. reported net income attributed to shareholders of $1,269 million in 2020 compared with $1,428 million in 2019. Net income attributed to shareholders is comprised of core earnings, which was $1,995 million in 2020 compared with $1,876 million in 2019, and items excluded from core earnings, which amounted to a net charge of $726 million in 2020 compared with a net charge of $448 million in 2019.

Expressed in U.S. dollars, the functional currency of the segment, 2020 net income attributed to shareholders was US$987 million compared with US$1,074 million in 2019 and core earnings were US$1,485 million in 2020 compared with US$1,414 million in 2019. Items excluded from core earnings are outlined in the table below and amounted to a net charge of US$498 million in 2020 compared with a net charge of US$340 million in 2019.

The US$71 million increase in core earnings was driven by higher in-force earnings and a focus on reduced spending in the current economic environment, partially offset by the non-recurrence of a favourable true-up of prior year tax provisions in 2019. Insurance policyholder experience was consistent with the prior year, as unfavourable life insurance experience, which included COVID-19 related claim losses, was offset by favourable long-term care experience resulting from claim terminations due to the impact of COVID-19.

The table below reconciles net income attributed to shareholders to core earnings for the U.S. for 2020, 2019 and 2018.

For the years ended December 31, ($ millions)	Canadian $			US $		
	2020	2019	2018	**2020**	2019	2018
Core earnings(1),(2)	**$ 1,995**	$ 1,876	$ 1,789	**$ 1,485**	$ 1,414	$ 1,380
Items to reconcile core earnings to net income attributed to shareholders:						
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	**(717)**	66	17	**(515)**	49	10
Direct impact of equity markets and interest rates and variable annuity guarantee liabilities(3)	**30**	(693)	236	**46**	(525)	191
Change in actuarial methods and assumptions	**(301)**	71	286	**(226)**	54	219
Charge related to decision to change portfolio asset mix supporting our legacy businesses	**–**	–	–	**–**	–	–
Reinsurance transactions	**262**	111	68	**197**	84	51
Tax-related items and other(4)	**–**	(3)	(105)	**–**	(2)	(83)
Net income (loss) attributed to shareholders(2)	**$ 1,269**	$ 1,428	$ 2,291	**$ 987**	$ 1,074	$ 1,768

(1) This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.
(2) The 2018 comparatives for core earnings and net income (loss) attributed to shareholders have been updated to reflect the 2019 methodology for allocating capital and interest on surplus to our insurance segments from the Corporate and Other segment.
(3) 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. The charge in 2019 is primarily related to fixed income reinvestment rates and changes to the URR, partially offset by gains from the direct impact of equity markets and variable annuity guarantee liabilities.
(4) Tax-related items and other in 2019 was fees related to legacy transactions. Charges in 2018 primarily relate to U.S. tax reform.

Business Performance

U.S. APE sales in 2020 of US$455 million decreased 14% compared with 2019, as lower international universal life, domestic protection universal life, and variable universal life sales more than offset higher term life and domestic indexed universal life sales. The decline in APE sales was due to higher domestic universal life sales in advance of anticipated regulatory changes in 2019 and the unfavourable impact of COVID-19 in 2020. Sales of products with the John Hancock Vitality PLUS feature in 2020 were US$220 million, an increase of 17% compared with 2019.

Sales

For the years ended December 31, ($ millions)	Canadian $			US $		
	2020	2019	2018	**2020**	2019	2018
APE sales[1]	**$ 609**	$ 702	$ 553	**$ 455**	$ 530	$ 426

[1] This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.

Assets under Management

U.S. assets under management of US$188 billion as at December 31, 2020 increased 6% from December 31, 2019. The increase was driven by the favourable impact of markets partially offset by the continued run-off of our annuities business and the reinsurance of a block of our legacy U.S. BOLI business in the third quarter of 2020 ("3Q20").

Assets under Management[1]

As at December 31, ($ millions)	Canadian $			US $		
	2020	2019	2018	**2020**	2019	2018
General fund[2]	**$ 162,508**	$ 153,731	$ 150,772	**$ 127,638**	$ 118,364	$ 110,520
Segregated funds	**77,053**	76,625	72,874	**60,519**	58,996	53,420
Total assets under management	**$ 239,561**	$ 230,356	$ 223,646	**$ 188,157**	$ 177,360	$ 163,940

[1] This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.
[2] The 2018 comparatives for general fund assets under management have been updated to reflect the 2019 methodology for allocating capital and interest on surplus to our insurance segments from the Corporate and Other segment.

Revenue

Total revenue in 2020 of US$17.3 billion decreased US$1.2 billion compared with 2019. Revenue before net realized and unrealized investment gains and losses was US$9.6 billion, a decrease of US$2.6 billion compared with 2019 primarily due to the net impact of the reinsurance of a block of our legacy U.S. BOLI business in 3Q20 and lower investment income, partially offset by the impact of a one-time ceded premium in 2019 from the reinsurance of legacy annuity business.

Revenue

For the years ended December 31, ($ millions)	Canadian $			US $		
	2020	2019	2018	**2020**	2019	2018
Gross premium income	**$ 8,952**	$ 9,588	$ 9,335	**$ 6,678**	$ 7,227	$ 7,201
Premiums ceded to reinsurers	**(5,821)**	(3,204)	(12,961)	**(4,355)**	(2,414)	(9,878)
Net premium income	**3,131**	6,384	(3,626)	**2,323**	4,813	(2,677)
Investment income[1]	**7,029**	7,140	7,291	**5,254**	5,382	5,624
Other revenue	**2,711**	2,654	2,542	**2,025**	2,000	1,966
Revenue before items noted below	**12,871**	16,178	6,207	**9,602**	12,195	4,913
Net realized and unrealized investment gains and losses[2]	**10,490**	8,416	(5,621)	**7,701**	6,320	(4,423)
Total revenue	**$ 23,361**	$ 24,594	$ 586	**$ 17,303**	$ 18,515	$ 490

[1] The 2018 comparative for investment income has been updated to reflect the 2019 methodology for allocating capital and interest on surplus to our insurance segments from the Corporate and Other segment.
[2] See "Financial Performance – Impact of Fair Value Accounting" above.

Strategic Highlights

At John Hancock, we are focused on building more 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 2020, we:

- Continued to see growth in our "Vitality for All" strategy with two versions of Vitality: Vitality GO and Vitality PLUS, and extending Vitality benefits to all insurance customers;
- Announced a strategic collaboration with Amazon which adds the Halo wellness band to devices supported by John Hancock's Vitality Program;
- Launched numerous digital services, such as chat bots, SMS texts, non-paper apps and digital payment tools, with the goal of improving customer satisfaction and rNPS including a new, fully underwritten term life product in the U.S. which enables customers to purchase up to US$1 million in life insurance coverage digitally;

- Launched an eApplication to be used by brokers to streamline the application process. This online platform is a major step toward offering a fully digital end-to-end application experience;
- Implemented a digital new business/policy issue process that eliminates the reliance on paper applications for International insurance customers; and
- Extended the grace period for our life insurance policyholders to make premium payments and increased the payout limits permitted via phone for our annuity and life customers to accommodate their needs during the COVID-19 pandemic.

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 initiatives despite the current macroenvironmental and COVID-19 challenges. In 2020, we:

- Completed legacy optimization initiatives that contributed over $2.1 billion of cumulative capital benefits through December 31, 2020, including $765 million in 2020;
- Completed an agreement with Global Atlantic Financial Group to reinsure a block of legacy U.S. BOLI business that resulted in a capital benefit of $465 million;
- Continued our Annuity Guaranteed Minimum Withdrawal Benefit offer program that has released $200 million of capital since the start of the program, including $125 million in 2020;
- Reinsured individual and group payout annuity policies and sold the associated ALDA which enabled us to release $90 million of capital. We expanded reinsurance coverage of certain universal life no lapse guarantee products that resulted in the release of $70 million of capital;
- Executed on additional organic initiatives (LTC Claims Management & Wellness program) to optimize the performance of the legacy block that released an additional $15 million of capital in 2020; and
- Continued to make progress in securing long-term care premium rate increases.

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 17 countries and territories[1], including 10 markets and 120 years of on-the-ground experience in Asia. We complement these capabilities by providing access to a network of unaffiliated asset managers from around the world.

In retirement, we provide financial guidance, advice, and investment solutions to nearly 8 million plan participants and members in North America and Asia. In North America, our Canadian retirement business focuses on providing retirement solutions through defined contribution and defined benefit 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 primarily through intermediaries and banks in North America, Europe and Asia and offer investment strategies across the world, through our affiliated and from unaffiliated asset managers. In Canada, we also provide personalized 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 2020, Global WAM contributed 17% of the Company's core earnings from operating segments and, as at December 31, 2020, represented 58% of the Company's total assets under management and administration.

Profitability

Global WAM's 2020 net income attributed to shareholders was $1,100 million compared with $1,022 million in 2019, and core earnings were $1,100 million in 2020 compared with $1,021 million in 2019. Items excluded from core earnings are outlined in the table below and amounted to nil in 2020 compared with a net gain of $1 million in 2019.

Core earnings increased $79 million or 7% on a constant exchange rate basis driven by higher average assets under management and administration and lower general expenses from ongoing efficiency initiatives. The increase was partially offset by unfavorable product mix, lower fee spread in U.S. Retirement, and lower tax benefits.

The table below reconciles net income attributed to shareholders to core earnings for the Global WAM segment for 2020, 2019 and 2018.

For the years ended December 31, ($ millions)	2020	2019	2018
Core earnings(1)			
Asia	**$ 344**	$ 289	$ 257
Canada	**363**	319	266
U.S.	**393**	413	462
Core earnings	**1,100**	1,021	985
Items to reconcile core earnings to net income attributed to shareholders:			
Tax-related items and other(2)	**–**	1	(31)
Net income attributed to shareholders	**$ 1,100**	$ 1,022	$ 954

(1) This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.
(2) The 2018 charge of $31 million primarily relates to the integration of businesses acquired from Standard Chartered.

In 2020, core EBITDA[2] for Global WAM was $1,676 million, $576 million higher than core earnings. In 2019, core EBITDA was $1,536 million, $515 million higher than core earnings. The increase in core EBITDA of $140 million or 8% on a constant exchange rate basis was driven by higher net fee income and lower general expenses. Core EBITDA margin[1] was 29.2% in 2020 compared with 27.5% in 2019. The 170 basis points increase was driven by the factors noted above and reflects our scale and commitment to expense efficiency.

1 United States, Canada, Japan, Hong Kong, Singapore, Taiwan, Indonesia, Vietnam, Malaysia, India, the Philippines, the United Kingdom, Switzerland, and mainland China. In addition, we have timberland/farmland operations in Australia, New Zealand, and Brazil.
2 This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.

Core EBITDA

For the years ended December 31, ($ millions)	2020	2019	2018
Core earnings(1)	$ 1,100	$ 1,021	$ 985
Amortization of deferred acquisition costs and other depreciation	319	311	301
Amortization of deferred sales commissions	85	81	98
Core income tax expense (recovery)	172	123	113
Core EBITDA(1)	$ 1,676	$ 1,536	$ 1,497
Core EBITDA margin(1)	29.2%	27.5%	27.4%

(1) This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.

Business Performance

Gross Flows and Net Flows

In 2020, gross flows of $130.2 billion increased $16.0 billion or 13% compared with 2019, driven by higher gross flows across all geographies. In Asia, gross flows increased $2.4 billion or 10% compared with 2019, primarily driven by higher retail gross flows in Indonesia and higher retirement gross flows in Hong Kong. In Canada, gross flows increased $6.8 billion or 28% compared with 2019, driven by the funding of a $6.9 billion mandate from a new client in Institutional Asset Management in 2Q20. In the U.S., gross flows increased $6.8 billion or 9% compared with 2019, driven by strong intermediary sales and higher institutional model allocations in Retail partially offset by the non-recurrence of several large sales in Institutional Asset Management in 2019.

Net inflows were $8.9 billion in 2020, compared with net outflows of $0.9 billion in 2019. In Asia, net inflows were $3.9 billion in 2020 compared with net inflows of $4.8 billion in 2019 reflecting lower retail net flows mainly in mainland China and Hong Kong, partially offset by higher net flows in Indonesia Retail and Hong Kong Retirement. In Canada, net inflows were $14.6 billion in 2020 compared with net outflows of $3.6 billion in 2019, driven by improved net inflows in Institutional Asset Management from the non-recurrence of an $8.5 billion redemption in 2019 and the funding of a $6.9 billion mandate from a new client in 2Q20, and in Retirement, from lower plan redemptions and individual withdrawals. In the U.S., net outflows were $9.6 billion in 2020 compared with net outflows of $2.0 billion in 2019, driven by a $5.0 billion redemption of an equity mandate, and the non-recurrence of several large sales in Institutional Asset Management in 2019, as well as higher redemptions in Retirement, mainly due to member withdrawals under the U.S. CARES Act during the year.

Asia WAM

- **Gross flows** in Asia in 2020 were $23.4 billion, an increase of 10% compared with 2019, driven by higher gross flows across all business lines. Growth was driven primarily by higher gross flows of retail money market funds in Indonesia, higher retirement gross flows in Hong Kong, and institutional fixed income product launches in mainland China.
- **Net inflows** in 2020 were $3.9 billion compared with net inflows of $4.8 billion in 2019, driven by retail redemptions in Indonesia, Hong Kong, and mainland China and higher redemptions in Hong Kong Retirement. This was partially offset by higher gross flows as mentioned above.

Canada WAM

- **Gross flows** in Canada in 2020 were $30.9 billion, an increase of 28% compared with 2019, driven by the funding of a $6.9 billion mandate from a new client in Institutional Asset Management in Canada in 2Q20 and higher gross flows across our product line-up in Retail. This was partially offset by the lower new plan sales in Retirement.
- **Net inflows** in 2020 were $14.6 billion compared with net outflows of $3.6 billion in 2019, driven by improved net flows in Institutional Asset Management from the non-recurrence of an $8.5 billion redemption in 2019 and the 2Q20 funding of a $6.9 billion mandate mentioned above, and lower plan redemptions and individual withdrawals in Retirement.

U.S. WAM[1]

- **Gross flows** in the U.S. in 2020 were $75.9 billion, an increase of 9% compared with 2019. The increase was driven by strong intermediary sales and higher institutional model allocations in Retail, partially offset by the non-recurrence of several large sales in Institutional Asset Management in 2019.
- **Net outflows** in 2020 were $9.6 billion, compared with net outflows of $2.0 billion in 2019, driven by a $5.0 billion redemption of an equity mandate in Institutional Asset Management in 3Q20, higher redemptions in Retirement mainly due to member withdrawals under the U.S. CARES Act during the year, and higher retail redemptions amid market volatility in the first half of 2020. This was partially offset by higher gross flows as mentioned above.

[1] Includes performance by our operations in Europe.

Gross Flows and Net Flows(1)

For the years ended December 31, ($ millions)	**2020**	2019	2018
Gross flows	**$ 130,212**	$ 114,246	$ 119,002
Net flows	**8,919**	(879)	1,563

(1) This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.

Assets under Management and Administration

In 2020, AUMA for our wealth and asset management businesses were $753.6 billion, 12% higher than December 31, 2019 on a constant exchange rate basis driven by the favourable impact of markets and year-to-date net inflows of $8.9 billion. As of December 31, 2020, Global WAM also managed $212.4 billion in assets for the Company's non-WAM reporting segments. Including those assets, AUMA managed by Global WAM was $966.0 billion compared with $879.2 billion as at December 31, 2019.

Assets under Management and Administration(1)

For the years ended December 31, ($ billions)	**2020**	2019	2018
Balance January 1,	**$ 681**	$ 609	$ 609
Acquisitions/Dispositions	**1**	(1)	1
Net flows	**9**	(1)	2
Impact of markets and other	**63**	74	(3)
Balance December 31,	**$ 754**	$ 681	$ 609
Average assets under management and administration	**$ 698**	$ 651	$ 639

(1) This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.

Revenue

Total revenue in 2020 of $5.7 billion increased 2% compared with 2019, driven by higher average assets under management and administration, partially offset by the impact of changes in product mix and lower fee spread in the U.S. Retirement business.

Revenue

As at December 31, ($ millions)	**2020**	2019	2018
Fee income	**$ 5,710**	$ 5,562	$ 5,472
Investment income	**39**	33	(9)
Total revenue	**$ 5,749**	$ 5,595	$ 5,463

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 becoming a global retirement leader by supporting financial wellness; expanding our presence in regional retail mutual fund distribution across the globe; leveraging a multi-manager model; and providing differentiated active asset management capabilities across high-performing equity and fixed income strategies, outcome-oriented solutions and alternative assets.

We executed on a number of initiatives to accelerate growth in our franchise. In 2020, we:

- Acquired a minority stake in Albamen Capital Partners, a private equity infrastructure investment manager with a focus on renewable energy, data centers and other power-intensive infrastructure assets in mainland China. This deal realizes a strategic goal for an on-the-ground infrastructure private equity capability in the Asia Pacific region and underlines the firm's strong commitment to the China market;
- Completed the formation of our previously announced joint venture with Mahindra Finance, through which we aim to expand fund offerings, drive fund penetration, and achieve long term wealth creation in India;
- Continued to develop innovative products with the launch of Hong Kong's first MPF retirement income fund, aiming to provide regular and stable income in retirement. Additionally, we announced a strategic alliance with Allianz Global Investors, strengthening our position as the largest MPF scheme sponsor;[1] and
- Once again earned top scores in the United Nations-supported Principles for Responsible Investment ("PRI") annual assessment report for integrating environmental, social, and governance ("ESG") considerations into our investment practices across a range of asset classes. Manulife Investment Management was also recognized in the PRI Leaders' Group 2020, a 10-year initiative honouring

1 Market share of assets under management and net cash flows by scheme sponsor as reported in the Mercer MPF Market Share Reports for March 31, June 30, September 30, 2020.

signatories at the cutting edge of responsible investment. In addition, we released our second annual Sustainable and Responsible Investing Report the first that covers both Public and Private Markets.

We continued to make progress on our digital customer leader strategy. In 2020, we:

- Made extensive efforts in all regions to support clients virtually during the pandemic, prioritizing digital initiatives that simplify and enhance client interactions;
- Continued to expand our Asia online investment platform iFunds beyond Hong Kong with the launch of the technology in Malaysia. iFunds provides customers with easily accessible market and fund information to allow enhanced investment decisions;
- Launched a new retirement planner tool in the U.S. that delivers an innovative and engaging way for customers to visualize and plan for their retirement. Over 200,000, or 6% of plan participants, visited the retirement planner since it was launched in May, with 14% of those users increasing their contributions;
- Accelerated our Retail wealth digital transformation in Canada by launching several online tools and automations that make account maintenance, accessing forms and statements easier for advisors to service their customers; and
- Launched our new institutional website, which provides investors with a unified message and an integrated presentation of our global investment solutions across both public and private market asset classes.

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 "Performance and Non-GAAP 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 net income attributed to shareholders of $1,545 million in 2020 compared with a net income attributed to shareholders of $95 million in 2019. Net income (loss) attributed to shareholders was comprised of core loss and items excluded from core loss. Core loss was $863 million in 2020 compared with a core loss of $99 million in 2019. Items excluded from core loss amounted to a net gain of $2,408 million in 2020 compared with a net gain of $194 million in 2019.

The unfavourable variance in the year-to-date core loss of $764 million was primarily attributable to nil core investment gains in 2020 compared with $400 million in the same period of 2019, lower investment income, less favourable impact of markets on seed money investments in new segregated and mutual funds, net losses on AFS equities in 2020 compared to net gains in 2019 and higher Corporate expenses mainly due to impairment of capitalized IT assets, primarily software, partially offset by lower interest on external debt.

The items excluded from core earnings are outlined below.

The table below reconciles net income (loss) attributed to shareholders to core loss for Corporate and Other for 2020, 2019 and 2018.

For the years ended December 31, ($ millions)	**2020**	2019	2018
Core loss excluding core investment gains[1]	**$ (863)**	$ (499)	$ (657)
Core investment gains[2]	**–**	400	400
Total core loss[2]	**(863)**	(99)	(257)
Items to reconcile core loss to net loss attributed to shareholders:			
Direct impact of equity markets and interest rates[3]	**2,302**	588	(411)
Changes in actuarial methods and assumptions	**67**	23	6
Investment-related experience related to mark-to-market items[4]	**(33)**	27	59
Reclassification to core investment gains above	**–**	(400)	(400)
Restructuring charge[5]	**–**	–	(263)
Tax-related items and other[6]	**72**	(44)	135
Net income (loss) attributed to shareholders[1]	**$ 1,545**	$ 95	$ (1,131)

(1) The 2018 comparatives for core loss excluding core investment gains and net loss attributed to shareholders have been updated to reflect the 2019 methodology for allocating capital and interest on surplus to our insurance segments from the Corporate and Other segment.
(2) This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.
(3) The direct impact of markets in 2020 included gains of $2,175 million (2019 – charges of $396 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.
(4) Investment-related experience includes mark-to-market gains or losses on ALDA assets other than gains on AFS equities and seed money investments in new segregated or mutual funds.
(5) Please see "Manulife Financial Corporation – Profitability" above for explanation of the restructuring charge.
(6) 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. Tax-related items and other charges in 2019 are due to a tax rate change in the province of Alberta, Canada.

Revenue

Revenue of $2,705 million in 2020 increased $1,606 million compared with $1,099 million in 2019 primarily related to investment income. The increase in investment income was mainly driven by higher realized gains on AFS bonds, partially offset by lower investment income, lower gains from seed money investments and net losses from AFS equities compared to net gains in the prior year.

Revenue

For the years ended December 31, ($ millions)	2020	2019	2018
Net premium income	$ 140	$ 112	$ 98
Investment income (loss)[1]	2,830	1,073	(211)
Other revenue[2]	(189)	(120)	(328)
Revenue before net realized and unrealized investment gains and losses and on the macro hedge program	2,781	1,065	(441)
Net realized and unrealized investment gains and losses[3] and on the macro hedge program	(76)	34	56
Total revenue	$ 2,705	$ 1,099	$ (385)

(1) The 2018 comparative for investment income has been updated to reflect the 2019 methodology for allocating capital and interest on surplus to our insurance segments from the Corporate and Other segment.
(2) 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).
(3) 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 2021 for a single event to be approximately US$300 million (net of reinstatement premiums) and for multiple events to be approximately US$500 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 Factors and Risk Management" section below.

General Fund Assets

As at December 31, 2020, our General Fund invested assets totaled $411.0 billion compared with $378.5 billion at the end of 2019. The following table shows the asset class composition as at December 31, 2020 and December 31, 2019.

As at December 31,	**2020**			2019		
($ billions)	Carrying value	% of total	Fair value	Carrying value	% of total	Fair value
Cash and short-term securities	**$ 26.2**	**6**	**$ 26.2**	$ 20.3	5	$ 20.3
Debt Securities and Private Placement Debt						
Government bonds	**80.8**	**20**	**80.8**	73.4	20	73.4
Corporate bonds	**134.8**	**33**	**134.8**	121.3	32	121.3
Securitized / asset-backed securities	**3.1**	**1**	**3.1**	3.4	1	3.4
Private placement debt	**40.8**	**10**	**47.9**	38.0	10	41.8
Mortgages	**50.2**	**12**	**54.2**	49.4	14	51.5
Policy loans and loans to bank clients	**8.4**	**2**	**8.4**	8.2	2	8.2
Public equities[(1)]	**23.7**	**6**	**23.7**	22.8	5	22.8
Alternative Long-Duration Assets ("ALDA")						
Real Estate	**12.8**	**3**	**14.0**	12.9	4	14.3
Infrastructure	**9.1**	**2**	**9.4**	8.9	2	9.0
Timberland and Farmland	**4.8**	**1**	**5.4**	4.7	1	5.2
Private Equity	**8.0**	**2**	**8.0**	6.4	2	6.4
Oil & Gas	**2.3**	**1**	**2.3**	3.2	1	3.3
Other ALDA	**2.0**	**0**	**2.0**	1.7	0	1.7
Leveraged Leases and Other	**4.0**	**1**	**4.0**	3.9	1	3.9
Total general fund invested assets	**$ 411.0**	**100**	**$ 424.2**	$ 378.5	100	$ 386.5

(1) Includes $229 million of public equities 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; private equity investments, including power and infrastructure and timber, are accounted for as associates using the equity method, or at fair value; and oil and gas investments are carried at cost using the successful efforts method. 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, 2020, the carrying value of renewable energy assets, including energy efficiency projects, was $13.7 billion (2019 – $14.0 billion).

Shareholders' accumulated other comprehensive pre-tax income (loss) at December 31, 2020 consisted of a $2,056 million gain for bonds (2019 – gain of $1,626 million) and a $255 million gain for public equities (2019 – gain of $350 million). Included in the $2,056 million gain for bonds was a $317 million loss related to the fair value hedge basis adjustments on AFS bonds (2019 – loss of $497 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, 2020, our fixed income portfolio of $259.5 billion (2019 – $236.1 billion) was 97% investment grade (rated BBB or better) and 73% was rated A or higher (2019 – 98% and 75%, 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, 25% is invested in Canada (2019 – 25%), 47% is invested in the U.S. (2019 – 47%), 4% is invested in Europe (2019 – 4%) and the remaining 24% is invested in Asia and other geographic areas (2019 – 24%).

Debt Securities and Private Placement Debt – by Credit Quality[1]

As at December 31, ($ billions)	2020 Debt securities	 Private placement debt	 Total	 % of Total	2019 Debt securities	 Private placement debt	 Total	 % of Total
AAA	**$ 40.7**	**$ 1.1**	**$ 41.8**	**16**	$ 36.1	$ 1.1	$ 37.2	16
AA	**37.1**	**4.8**	**41.9**	**16**	34.3	5.5	39.8	17
A	**89.4**	**15.6**	**105.0**	**41**	84.2	14.3	98.5	42
BBB	**47.2**	**15.8**	**63.0**	**24**	40.6	14.1	54.7	23
BB	**3.0**	**1.2**	**4.2**	**2**	2.0	0.9	2.9	1
B & lower, and unrated	**1.3**	**2.3**	**3.6**	**1**	0.9	2.1	3.0	1
Total carrying value	**$ 218.7**	**$ 40.8**	**$ 259.5**	**100**	$ 198.1	$ 38.0	$ 236.1	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 ("DBRS"), 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 Factors and Risk Management" section below.

Debt Securities and Private Placement Debt – by Sector

As at December 31, Per cent of carrying value	2020 Debt securities	 Private placement debt	 Total	2019 Debt securities	 Private placement debt	 Total
Government and agency	**37**	**12**	**33**	37	12	33
Utilities	**15**	**39**	**18**	15	41	19
Financial	**15**	**8**	**14**	15	6	13
Industrial	**8**	**12**	**9**	8	10	8
Consumer (non-cyclical)	**7**	**14**	**8**	6	14	8
Energy – Oil & Gas	**8**	**5**	**8**	5	5	5
Energy – Other	**0**	**1**	**0**	4	1	4
Consumer (cyclical)	**3**	**6**	**3**	3	7	3
Securitized (MBS/ABS)	**1**	**1**	**1**	2	1	2
Telecommunications	**2**	**0**	**2**	2	1	2
Basic materials	**2**	**2**	**2**	2	2	2
Technology	**1**	**0**	**1**	1	–	1
Media and internet and other	**1**	**0**	**1**	–	–	–
Total per cent	**100**	**100**	**100**	100	100	100
Total carrying value ($ billions)	**$ 218.7**	**$ 40.8**	**$ 259.5**	$ 198.1	$ 38.0	$ 236.1

As at December 31, 2020, gross unrealized losses on our fixed income holdings were $0.6 billion or 0.3% of the amortized cost of these holdings (2019 – $0.6 billion or 0.3%). Of this amount, $16 million (2019 – $71 million) related to debt securities trading below 80% of amortized cost for more than 6 months. Securitized assets represented $10 million of the gross unrealized losses and none of the amounts trade below amortized cost for more than 6 months (2019 – $4 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 $14 million as at December 31, 2020 (2019 – $48 million).

Mortgages

As at December 31, 2020, our mortgage portfolio of $50.2 billion represented 12% of invested assets (2019 – $49.4 billion and 13%, respectively). Geographically, 65% of the portfolio is invested in Canada (2019 – 65%) and 35% is invested in the U.S. (2019 – 35%). As shown below, the overall portfolio is also diversified by geographic region, property type, and borrower. Of the total mortgage portfolio, 14% is insured (2019 – 15%), primarily by the Canada Mortgage and Housing Corporation ("CMHC") – Canada's AAA rated government-backed national housing agency, with 31% of residential mortgages insured (2019 – 33%) and 2% of commercial mortgages insured (2019 – 2%).

As at December 31, ($ billions)	2020 Carrying value	2020 % of total	2019 Carrying value	2019 % of total
Commercial				
Retail	**$ 8.6**	**17**	$ 8.8	18
Office	**8.7**	**17**	8.9	18
Multi-family residential	**5.8**	**11**	5.4	11
Industrial	**2.9**	**6**	2.5	5
Other commercial	**3.5**	**7**	3.2	6
	29.6	**58**	28.8	58
Other mortgages				
Manulife Bank single-family residential	**20.4**	**41**	20.1	41
Agricultural	**0.3**	**1**	0.5	1
Total mortgages	**$ 50.2**	**100**	$ 49.4	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, 2020 there were no loans in arrears. Geographically, of the total commercial mortgage loans, 42% are in Canada and 58% are in the U.S. (2019 – 41% and 59%, 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,	2020 Canada	2020 U.S.	2019 Canada	2019 U.S.
Loan-to-Value ratio(2)	**62%**	**58%**	62%	56%
Debt-Service Coverage ratio(2)	**1.46x**	**1.83x**	1.48x	1.87x
Average duration (years)	**4.9**	**6.8**	4.8	6.5
Average loan size ($ millions)	**$ 17.9**	**$ 18.9**	$ 17.7	$ 18.0
Loans in arrears(3)	**0.00%**	**0.00%**	0.00%	0.00%

(1) Excludes Manulife Bank commercial mortgage loans of $407 million (2019 – $361 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, 2020, public equity holdings of $23.7 billion represented 6% (2019 – $22.8 billion and 6%) of invested assets and, when excluding assets supporting participating policyholder and pass-through products, represented 1% (2019 – 2%) of invested assets. The portfolio is diversified by industry sector and issuer. Geographically, 27% (2019 – 27%) is held in Canada; 36% (2019 – 36%) is held in the U.S.; and the remaining 37% (2019 – 37%) is held in Asia, Europe and other geographic areas.

Public Equities – classified by type of product-line supported

As at December 31, ($ billions)	2020 Carrying value	2020 % of total	2019 Carrying value	2019 % of total
Participating Policyholders	**$ 13.1**	**55**	$ 11.6	51
Pass-through products	**5.8**	**25**	5.4	24
Corporate and Other segment(1)	**3.2**	**14**	4.6	20
Non-participating products	**1.6**	**7**	1.2	5
Total public equities(2)	**$ 23.7**	**100**	$ 22.8	100

(1) Includes $1.8 billion of AFS equities and $1.4 billion of seed money investments in new segregated and mutual funds.
(2) Includes $229 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, 2020, carrying value of ALDA of $39.0 billion represented 9% (2019 – $37.8 billion and 10%) of invested assets. The fair value of total ALDA was $41.0 billion at December 31, 2020 (2019 – $39.9 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, 40% is located in the U.S., 43% in Canada, and 17% in Asia as at December 31, 2020 (2019 – 43%, 43%, and 14%, 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 92% (2019 – 94%) and an average lease term of 6.2 years (2019 – 5.7 years). During 2020, we executed 5 acquisitions representing $0.3 billion market value of commercial real estate assets (2019 – 1 acquisition and $0.1 billion). As part of ongoing portfolio management initiatives, $0.6 billion of commercial real estate assets were sold during 2020.

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

As at December 31, ($ billions)	**2020**		2019	
	Fair value	% of total	Fair value	% of total
Company Own-Use	**$ 3.0**	**21**	$ 3.3	23
Office – Downtown	**5.3**	**38**	5.6	39
Office – Suburban	**1.5**	**11**	1.7	12
Industrial	**1.6**	**11**	1.0	7
Residential	**1.9**	**14**	1.9	13
Retail	**0.4**	**3**	0.4	3
Other	**0.3**	**2**	0.4	3
Total real estate(1)	**$ 14.0**	**100**	$ 14.3	100

(1) These figures represent the fair value of the real estate portfolio. The carrying value of the portfolio was $12.8 billion and $12.9 billion at December 31, 2020 and December 31, 2019, 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 almost 400 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)	**2020**		2019	
	Carrying value	% of total	Carrying value	% of total
Power generation	**$ 4.1**	**45**	$ 3.9	44
Transportation (including roads, ports)	**2.5**	**27**	2.1	24
Electric and gas regulated utilities	**0.4**	**5**	1.0	12
Electricity transmission	**0.1**	**1**	0.1	1
Water distribution	**0.1**	**1**	0.1	1
Midstream gas infrastructure	**0.6**	**7**	0.5	6
Maintenance service, efficiency and social infrastructure	**0.2**	**2**	0.2	2
Telecommunications/Tower	**1.0**	**11**	0.7	8
Other infrastructure	**0.1**	**1**	0.3	2
Total infrastructure	**$ 9.1**	**100**	$ 8.9	100

Timberland & Farmland

Our timberland and farmland assets are managed by a proprietary entity, Hancock Natural Resources Group ("HNRG"). In addition to being the world's largest timberland investment manager for institutional investors,[1] with timberland properties in the U.S., New Zealand, Australia, Chile and Canada, HNRG also manages farmland properties in the U.S., Australia and Canada. The General Fund's timberland portfolio comprised 23% of HNRG's total timberland assets under management ("AUM") (2019 – 22%). The farmland portfolio includes annual (row) crops, fruit crops, wine grapes, and nut crops. The General Fund's holdings comprised 42% of HNRG's total farmland AUM (2019 – 40%).

Private Equities

Our private equity portfolio of $8.0 billion (2019 – $6.4 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 $0.6 billion (2019 – $1.0 billion) in our conventional Canadian oil and gas properties managed by our subsidiary, NAL Resources, and various other oil and gas private equity interests of $1.7 billion (2019 – $2.2 billion). The sale of NAL Resources to Whitecap Resources Inc. closed on January 4, 2021, in exchange for publicly traded shares in Whitecap Resources Inc. Production mix for conventional oil and gas assets in 2020 was approximately 35% crude oil, 45% natural gas, and 20% natural gas liquids (2019 – 36%, 47%, and 17%, respectively). Private equity interests are a combination of both producing and mid-streaming assets.

In 2020, the carrying value of our oil and gas holdings decreased by $1.0 billion and the fair value decreased by $1.0 billion.

Investment Income

For the years ended December 31, ($ millions, unless otherwise stated)	2020	2019
Interest income	**$ 11,813**	$ 11,488
Dividend, rental and other income[1]	**2,458**	2,988
Impairments	**(703)**	56
Other, including gains and losses on sale of AFS debt securities	**2,865**	861
Investment income before realized and unrealized gains on assets supporting insurance and investment contract liabilities and on macro equity hedges	**16,433**	15,393
Realized and unrealized gains and losses on assets supporting insurance and investment contract liabilities and on macro equity hedges		
Debt securities	**10,748**	11,528
Public equities	**1,917**	2,870
Mortgages and private placements	**39**	(36)
Alternative long-duration assets and other investments	**(214)**	1,262
Derivatives, including macro equity hedging program	**6,477**	2,576
	18,967	18,200
Total investment income	**$ 35,400**	$ 33,593

[1] Rental income from investment properties is net of direct operating expenses.

In 2020, the $35.4 billion of investment income (2019 – $33.6 billion) consisted of:

- $16.4 billion of investment income before net realized and unrealized gains on assets supporting insurance and investment contract liabilities and on macro equity hedges (2019 – $15.4 billion); and
- $19.0 billion of net realized and unrealized gains on assets supporting insurance and investment contract liabilities and on macro equity hedges (2019 – gains of $18.2 billion).

The $1.0 billion increase in net investment income before unrealized and realized gains was due to gains of $2.9 billion on surplus assets mainly from the sale of government bonds (compared to $0.9 billion gains in 2019); partially offset by an increase of $0.8 billion in impairments mainly due to investments in oil and gas.

Net realized and unrealized gains on assets supporting insurance and investment contract liabilities and on the macro hedge program was a gain of $19.0 billion for full year 2020 compared with a gain of $18.2 billion for full year 2019. The full year 2020 gain largely resulted from interest rate decreases in U.S., Canada and Asia. The 10 year government bonds for the U.S., Canada, and Hong Kong decreased 100 bps, 103 bps and 104 bps, respectively. Additional gains were driven by positive equity market performance as all major indices were up during the year. The S&P 500 increased 16.3% and S&P/TSX 2.2%.

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)	2020	2019	2018
Profitability:			
Net income attributed to shareholders	**$ 1,780**	$ 1,228	$ 593
Core earnings[(1),(2)]	**$ 1,474**	$ 1,477	$ 1,337
Diluted earnings per common share ($)	**$ 0.89**	$ 0.61	$ 0.28
Diluted core earnings per common share ($)[(1)]	**$ 0.74**	$ 0.73	$ 0.65
Return on common shareholders' equity ("ROE")	**14.1%**	10.3%	5.3%
Core ROE[(1)]	**11.6%**	12.5%	12.5%

(1) This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" above.

(2) Impact of currency movement on the fourth quarter of 2020 ("4Q20") core earnings compared with the fourth quarter of 2019 ("4Q19") was a $10 million unfavourable variance.

Manulife's 4Q20 net income attributed to shareholders was $1,780 million compared with $1,228 million in 4Q19. 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 $1,474 million in 4Q20 compared with $1,477 million in 4Q19, and items excluded from core earnings, which amounted to a net gain of $306 million in 4Q20 compared with charges of $249 million in 4Q19. Net income attributed to shareholders in 4Q20 increased compared with 4Q19 primarily driven by higher investment-related experience gains, gains from reinsurance transactions compared with losses in 4Q19, and a lower charge from the direct impact of markets.

The $3 million decrease in core earnings compared with 4Q19 reflects the absence of core investment gains in the quarter (compared with gains in 4Q19) and lower investment income in Corporate and Other offset by the favourable impact of in-force business growth in Asia and the U.S., higher average AUMA in Global Wealth and Asset Management, favourable experience in our P&C Reinsurance business, and lower general expenses. Core earnings in 4Q20 included net policyholder experience losses of $27 million post-tax ($40 million pre-tax) compared with losses of $22 million post-tax ($38 million pre-tax) in 4Q19.[1] Actions to improve the capital efficiency of our legacy businesses resulted in $5 million of lower core earnings in 4Q20 compared with 4Q19.

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

For the quarters ended December 31, ($ millions)	2020	2019
Core earnings[(1)]		
Asia	**$ 571**	$ 494
Canada	**316**	288
U.S.	**479**	489
Global Wealth and Asset Management	**304**	265
Corporate and Other (excluding core investment gains)	**(196)**	(159)
Core investment gains[(1)]	**–**	100
Core earnings	**$ 1,474**	$ 1,477

(1) This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" above.

In Asia, core earnings were $571 million in 4Q20 compared with $494 million in 4Q19, an increase of 16%, after adjusting for the impact of changes in foreign currency exchange rates. The increase in core earnings was driven by in-force business growth across Asia, favourable new business primarily from product mix in Hong Kong and Vietnam and disciplined expense management, partially offset by lower new business volumes in Hong Kong.

In Canada, core earnings were $316 million in 4Q20 compared with $288 million in 4Q19. The 10% increase primarily reflected favourable policyholder experience in our insurance businesses, partially offset by a number of smaller experience-related items.

In the U.S., core earnings were $479 million in 4Q20 compared with $489 million in 4Q19. The 1% decrease was driven by unfavourable life insurance policyholder experience, which included modest COVID-19 related claim losses and the non-recurrence of tax benefits in 4Q19 from the closure of prior year tax audits. These items were largely offset by favourable long-term care policyholder experience, resulting from claim terminations due to the impact of COVID-19, higher in-force earnings, and a focus on reduced spending in the current economic environment.

Global Wealth and Asset Management core earnings were $304 million in 4Q20 compared with $265 million in 4Q19. The 15% increase was driven primarily by higher average assets under management and administration and lower general expenses from ongoing efficiency initiatives, partially offset by unfavourable impacts from changes in product mix, lower fee spread in the U.S. Retirement business, and lower tax benefits.

[1] Policyholder experience includes gains of $13 million in 2020 from customers who have opted to change their existing medical coverage to the VHIS products in Hong Kong (4Q19 – gains of $20 million). These gains did not have a material impact on core earnings as they were offset by new business strain.

Corporate and Other core loss excluding core investment gains was $196 million in 4Q20 compared with $159 million in 4Q19. The $37 million increase in core loss was primarily driven by lower investment income and higher Corporate expenses due to impairment of capitalized IT assets, primarily software, partially offset by the favourable impact of markets on seed money investments in segregated funds and mutual funds and favourable experience in our P&C Reinsurance business in 4Q20.

The table below reconciles net income attributed to shareholders to core earnings for the periods presented and provides further details for each of the items excluded from core earnings.

For the quarters ended December 31, ($ millions)	2020	2019
Core earnings[1]	$ 1,474	$ 1,477
Items excluded from core earnings		
Investment-related experience outside of core earnings[2]	585	182
Direct impact of equity markets and interest rates and variable annuity guarantee liabilities (see table below)	(323)	(389)
Direct impact of equity markets and variable annuity guarantee liabilities[3]	*351*	*125*
Fixed income reinvestment rates assumed in the valuation of policy liabilities[4]	*(846)*	*(583)*
Sale of AFS bonds and derivative positions in the Corporate and Other segment	*172*	*69*
Reinsurance transactions[5]	44	(34)
Tax-related items and other[6]	–	(8)
Total items excluded from core earnings	306	(249)
Net income (loss) attributed to shareholders	$ 1,780	$ 1,228

(1) This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" above.

(2) Total investment-related experience in 4Q20 was a net gain of $585 million, compared with a net gain of $282 million in 4Q19, and in accordance with our definition of core earnings, we included no investment-related experience gains in core earnings and a $585 million gain in items excluded from core earnings in 4Q20 (gains of $100 million and $182 million, respectively, in 4Q19). 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. The sale of NAL to Whitecap Resources Inc. closed on January 4, 2021, in exchange for publicly traded shares in Whitecap Resources Inc. Investment-related experience gains in 4Q19 reflected favourable impact of fixed income reinvestment activities and higher-than-expected returns (including fair value changes) on ALDA.

(3) 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. In 4Q19, the net gains of $125 million included a gain of $1,354 million from gross equity exposure partially offset by a charge of $1,226 million from dynamic hedging experience and a modest charge of $3 million from macro hedge experience.

(4) The $846 million charge in 4Q20 was driven by narrowing corporate spreads, primarily in the U.S. The $583 million charge in 4Q19 primarily relates to lower corporate spreads and a decrease in the fair value of interest rate derivatives which more than offset the decrease in liabilities arising from a steepening of the yield curve in the U.S. and Canada.

(5) In 4Q20, reinsurance transactions in Asia and Canada contributed gains of $29 million and $15 million, respectively. In 4Q19, the reinsurance transactions in Canada was a charge of $34 million.

(6) Tax-related items and other charges in 4Q19 related to legacy transaction fees.

Business Performance

As at and for the quarters ended December 31, ($ millions, unless otherwise stated)	2020	2019	2018
Asia APE sales	$ 996	$ 975	$ 1,040
Canada APE sales	245	271	277
U.S. APE sales	178	249	152
Total APE sales[1]	1,419	1,495	1,469
Asia new business value	368	390	402
Canada new business value	65	59	51
U.S. new business value	56	77	48
Total new business value[1]	489	526	501
Global Wealth and Asset Management gross flows ($ billions)[1]	31.5	32.9	26.3
Global Wealth and Asset Management net flows ($ billions)[1]	2.8	4.9	(9.0)
Global Wealth and Asset Management assets under management and administration ($ billions)[1]	753.6	681.2	608.8

(1) This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" above.

Sales

APE sales were $1.4 billion in 4Q20, a decrease of 5% compared with 4Q19. In Asia, APE sales increased 2% compared with 4Q19 as growth in sales in Japan from COLI and higher Asia Other sales from Vietnam and Singapore, were partially offset by lower sales in Hong Kong, due to the tightening of COVID-19 containment measures. In Canada, APE sales decreased 10% compared with 4Q19 primarily driven by lower small and mid-size group insurance and individual insurance sales due to the adverse impact of COVID-19, partially offset by higher sales in our lower risk segregated funds. In the U.S., APE sales decreased 28% compared with 4Q19, as international universal life sales were unfavourably impacted by COVID-19 and domestic universal life sales decreased compared with a strong 4Q19, which benefited from higher sales in advance of anticipated regulatory changes.

New Business Value was $489 million in 4Q20, a decrease of 7% compared with 4Q19. In Asia, NBV of $368 million was down 5% compared with 4Q19, due to lower sales volumes in Hong Kong and less favourable product mix in Japan, partially offset by higher sales and more favourable product mix in Asia Other. In Canada, NBV of $65 million increased 10% compared with 4Q19, primarily driven by higher margins across all business lines, partially offset by lower volumes in small and mid-size group insurance and individual insurance. In the U.S., NBV of $56 million was down 26% compared with 4Q19, driven primarily by lower international universal life sales volumes.

Global Wealth and Asset Management net inflows were $2.8 billion in 4Q20 compared with net inflows of $4.9 billion in 4Q19. Net inflows in Asia were $2.2 billion in 4Q20 compared with net inflows of $0.2 billion in 4Q19, driven by lower redemptions in Institutional Asset Management and higher gross flows of retail money market funds in Indonesia. Net inflows in Canada were $2.2 billion in 4Q20 compared with net inflows of $1.0 billion in 4Q19, driven by lower plan redemptions in Retirement and higher gross flows across the product line-up in Retail. Net outflows in the U.S. were $1.6 billion in 4Q20 compared with net inflows of $3.7 billion in 4Q19, driven by higher redemptions across all business lines and lower new plan sales in Retirement and the non-recurrence of several large sales in Institutional Asset Management in 4Q19, partially offset by higher net inflows in Retail from strong intermediary sales.

Global Wealth and Asset Management gross flows were $31.5 billion in 4Q20 compared with $32.9 billion in 4Q19. In Asia, gross flows were 15% higher compared with 4Q19, driven by higher gross flows of retail money market funds in Indonesia and higher retirement gross flows in Hong Kong. In Canada, gross flows were in line with 4Q19 as higher gross flows across the product line-up in Retail offset the non-recurrence of several large fixed income sales in Institutional Asset Management in 4Q19. In the U.S., gross flows were 11% lower compared with 4Q19, driven by lower new plan sales in Retirement and the non-recurrence of several large sales in Institutional Asset Management in 4Q19, partially offset by strong intermediary sales in Retail.

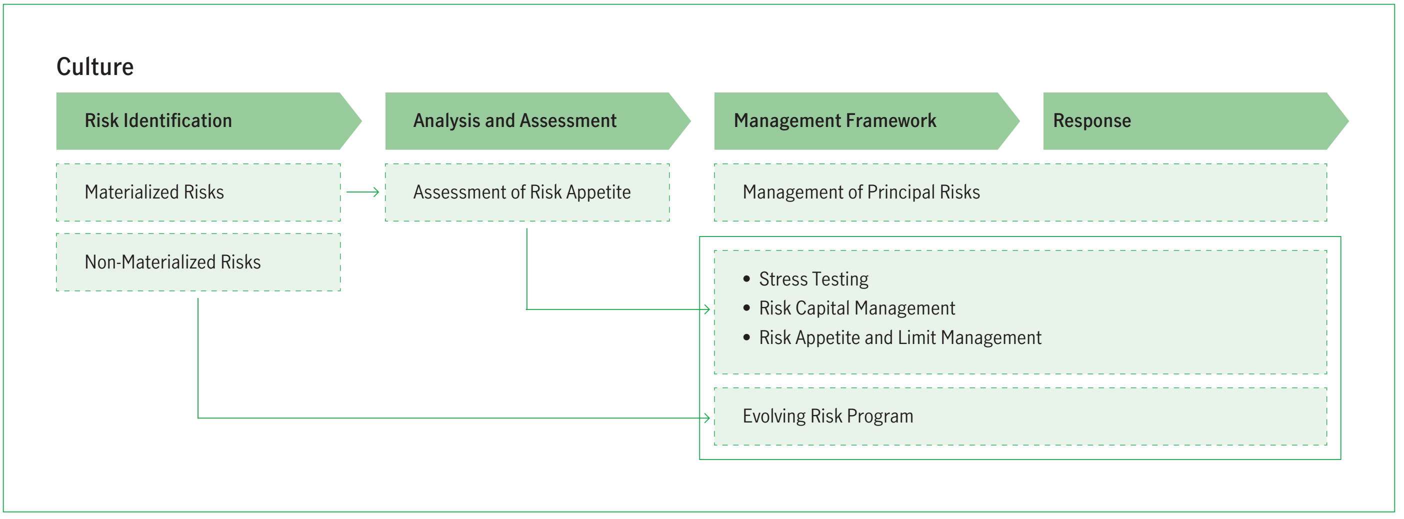
9. Risk Factors and Risk Management

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 to bring exposures back to desired levels and achieve higher levels of operational excellence.

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 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. We establish appropriate limits and associated delegated authority so we can confidently execute our strategy within our risk appetite.
- **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 planning our reaction and maintaining a supportive environment to ensure appropriate incentives for continued transparency and lessons learned.

Risk Governance

The Board of Directors oversees our culture of integrity and ethics, strategic planning, risk management, and corporate governance, among other things. The Board of Directors 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, practices and procedures, among other activities.

The CEO is directly accountable to the Board of Directors 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 of Directors 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, while safeguarding the wellbeing of our employees;
- 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 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.

Our Chief Actuary presents the results of the Financial Condition Test (formerly: Dynamic Capital Adequacy Test) to the Board of Directors annually. Our Chief Auditor reports the results of internal audits of risk controls and risk management programs to the Audit Committee and the Board Risk Committee annually. Management reviews the implementation of key risk management strategies, and their effectiveness, with the Board Risk Committee annually.

Risk Control and Mitigation

Risk control activities are in place throughout the Company to seek 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 you may lose all or part of your 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 of Directors, Executive Leadership Team, and the ERC;
- Performance and risk reviews of all key businesses with the CEO and annual reviews with the Board of Directors;
- 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 of Directors.

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 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.

The Board's Corporate Governance and Nominating Committee ("CGNC") oversees Manulife's ESG framework. Manulife's Executive Sustainability Council, which consists of members of the Executive Leadership Team and the Chief Sustainability Officer, is responsible for ESG-related strategy and disclosures. It meets monthly and provides quarterly updates to the CGNC. The Council is supported by a Sustainability Centre of Expertise that consists of representatives from multiple businesses and functional areas and includes a Climate Change Taskforce.

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

Climate Risk

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.

Consistent with TCFD, Manulife defines climate-related risk as the risk of loss, either directly through financial loss or indirectly through reputational damage, resulting from the inability or failure to adequately prepare for the impacts from climate change or the transition to a lower-carbon economy.

Climate-related risks can manifest through two dimensions – physical and transition risks. Physical risks include acute risks that are event-driven, such as extreme heat or cold, catastrophic storms, and floods. It also includes chronic risks which are longer-term shifts in climate patterns, such as rising global temperatures and sea levels. Transition risks include risks associated with transitioning to a lower-carbon economy and may entail extensive changes in policies, regulations, technologies, markets or consumer preferences to address mitigation and adaptation efforts.

We view climate-related risk as a transverse risk, since the broad range of actual or potential risks can impact any of our key risks (e.g. market, credit, product, operational, legal, and reputational) through the manifestation of physical and transition climate-related risks.

- **Governance** – The Board's CGNC oversees matters related to climate change as part of the oversight of the Manulife ESG framework. The Board Risk Committee also considers climate-related risks and opportunities through the ongoing monitoring and reporting of emerging risks.

Manulife's Executive Sustainability Council is responsible for the climate strategy, risk management, and disclosures. The Manulife Climate Change Taskforce which consists of representatives from multiple businesses and functional areas and is led by the Chief Sustainability Officer, drives the development of the climate strategy, risk management activities on climate-related matters, performance tracking, and disclosures.

- **Strategy** – Manulife is a long-term oriented underwriter and investor. Therefore, long-term climate-related risks and opportunities, including changes in the physical environment and policy and technological changes associated with the transition to a lower-carbon economy, are strategically relevant.

  In 2020, we continued the climate-related risk identification process across businesses, geographies, and time horizons.

  We performed a series of 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 that models the immediate and sudden impact of disorderly economic transition to constraining the rise in temperature to less than +2°Celsius. Having stressed the general account assets with market value shocks ranging from +15% to -65% for various industrial sub-sectors, our capital levels remained well above the minimum regulatory capital requirements.

  As of November 2020, Manulife is a founding participant in the joint Bank of Canada / Office of the Superintendent of Financial Institutions' pilot project that deploys climate-change scenarios to understand the risks to the financial system that stem from the transition to a low-carbon economy.

  As part of Manulife's support for the transition to a lower carbon economy, as at December 31, 2019, $14 billion, or 3.7% of General Account assets were invested into renewable energy and energy efficiency projects; 25.7 million square feet, or greater than 70% of our $14.3 billion real estate portfolio was certified to sustainable building standards such as LEED, BOMA, and Energy Star; and the entire $3.4 billion timberland portfolio was managed to third-party sustainability standards, including Forest Stewardship Council ("FSC") and Programme for the Endorsement of Forest Certification ("PEFC").

  During 2020, our product and insurance risk management teams laid the foundational framework for research and analysis of the impacts of climate change, such as on vector-borne diseases (such as 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.

  The Property and Casualty Reinsurance business is annually priced and forms a smaller part of our underwriting portfolio. It may experience business risks associated with the increased frequency and severity of catastrophic weather events.

  Finally, for our third-party asset management business, MIM tested a climate scenario risk tool jointly with industry peers convened by the United Nations' Environment Programme – Finance Initiative. We have identified this as a business opportunity in enabling clients to invest in decarbonization and we offer diversified investment funds with exposure to low-carbon opportunities.

- **Risk Management** – The identification and assessment of climate-related risks is communicated through an Environmental Risk Policy updated in 2020, which sets out an enterprise-wide framework for the management of environmental risks within our business activities. ESG Guidelines for the General Account assets and MIM's ESG Engagement Policy cover climate change risk factors in investment decision-making. For example, MIM's public markets team directly engages some of the world's largest emitters on climate-related risks and opportunities, as well as through the collaborative industry program Climate Action 100+.

  We continue to enhance the integration of climate-related risk into our ERM 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).

- **Metrics** – Manulife reports its greenhouse gas emissions in our Annual Sustainability Report and to Carbon Disclosure Project ("CDP" – a global database of corporate carbon emissions). Disclosures include scope 1 and 2 emissions from businesses where Manulife has operational control, scope 3 emissions from business travel, cloud services, and landfill waste, and carbon removals from timberland and agriculture business. Emissions are calculated according to the Greenhouse Gas Protocol and are reviewed by a third-party using a limited assurance procedure.

  In 2020, Manulife assessed the carbon emission profile of public equities, public corporate bonds, and sovereign bonds within the General Account investment portfolio. Using the carbon data and estimations available for 2019 and 2018 for individual equity securities from the third-party provider Trucost, the weighted average carbon intensity of the public equity portfolio was 216 tons of carbon dioxide equivalent per million Canadian dollars revenue.

  As part of the ongoing refinements of Manulife's ESG framework, we are assessing other relevant climate risk-related metrics and targets.

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 we operate. Actual economic growth can be significantly impacted by the macro-economic environment and can deviate significantly from forecast, 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.

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 10, 2021 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 Factors and Risk Management – Regulatory Updates" section below, which could impact our net income attributed to shareholders and/or capital position are provided below.

- At its annual meeting in November 2019, the International Association of Insurance Supervisors ("IAIS") adopted its first global frameworks for supervision of internationally active insurance groups ("IAIGs") and mitigation of systemic risk in the insurance sector. The frameworks was composed of three elements:
    - A Common Framework ("ComFrame") provides supervisory standards and guidance focusing on the effective group-wide supervision of IAIGs. ComFrame builds on the revised set of Insurance Core Principles, that are applicable to the supervision of all insurers, and which were adopted after extensive review.
    - A risk based global Insurance Capital Standard ("ICS") is being further developed over a five-year monitoring period which began in 2020. While broadly supportive of the goals of ICS, OSFI stated that they did not support the ICS design for 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, was used beginning January 2020. At the same time, the Financial Standards Board announced it would be suspending 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 is not designated as a G-SII. Though the overall frameworks were adopted by the IAIS in 2019, much of the necessary details were expected to be developed in 2020 and beyond. In 2020, COVID-19 resulted in reprioritization of activities by regulators. This included pivoting review and data collection exercises under the Holistic Framework with IAIGs to focus on targeted assessment of COVID-19 impacts to the insurance sector and delayed other regulatory developments. 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. Though the NAIC has adopted model laws and regulations, it remains up to individual states to enact their own specific laws and regulations.

- The 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 Wealth and Asset Management 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.
- 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 10, 2021 and note 18 of the 2020 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.
- 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 change 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, and macroeconomic 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 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.
- 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 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 direction 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 2021 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 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 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. We may have to litigate 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 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.

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, 2020 and December 31, 2019. 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 Factors and Risk Management" 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				
	Publicly Traded Equity Performance Risk	Interest Rate and Spread Risk	Alternative Long-Duration Asset Performance 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					✓

Publicly Traded Equity Performance Risk – To manage publicly traded equity performance 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.

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 Performance 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 deposit funded 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, 2020, the Company held $262.9 billion in 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, compared with $236.7 billion as at December 31, 2019 as noted in the table below.

As at December 31, ($ millions, unless otherwise stated)	2020	2019
Cash and cash equivalents	**$ 26,167**	$ 20,300
Marketable assets		
Government bonds (investment grade)	**79,511**	72,125
Corporate bonds (investment grade)	**131,930**	119,648
Securitized — ABS, CMBS, RMBS (investment grade)	**2,989**	3,437
Public equities	**22,294**	21,190
Total marketable assets	**236,724**	216,400
Total cash and cash equivalents and marketable assets[1]	**$ 262,891**	$ 236,700

[1] Including $6.8 billion encumbered cash and cash equivalents and marketable assets as at December 31, 2020 (compared to $5.1 billion as at December 31, 2019).

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, a US$500 million committed unsecured revolving credit facility with certain U.S. banks available for MFC and certain of its U.S. subsidiaries, and the Contingent Term Repo Facility with the Bank of Canada. There were no outstanding borrowings under these facilities as of December 31, 2020. 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, 2020, JHUSA had an estimated maximum borrowing capacity of US$4.8 billion based on regulatory limitations with an outstanding balance of 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, 2020 ($ millions)	Less than 1 year	1 to 3 years	3 to 5 years	Over 5 years	Total
Long-term debt	$ –	$ –	$ –	$ 6,164	$ 6,164
Capital instruments	350	–	584	6,895	7,829
Derivatives	386	250	555	13,771	14,962
Deposits from bank clients(2)	16,783	2,591	1,515	–	20,889
Lease liabilities	116	115	47	75	353

(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, 2020 was $20,889 million and $21,085 million, respectively (2019 – $21,488 million and $21,563 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 (2019 – 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 $496.8 billion as at December 31, 2020 (2019 – $455.2 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 2021 to 2041.

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

As at December 31, ($ millions)	2020 Guarantee value	2020 Fund value	2020 Amount at risk(3),(4)	2019 Guarantee value	2019 Fund value	2019 Amount at risk(3),(4)
Guaranteed minimum income benefit	$ 4,277	$ 3,642	$ 837	$ 4,629	$ 3,696	$ 998
Guaranteed minimum withdrawal benefit	49,698	44,831	5,962	53,355	48,031	6,030
Guaranteed minimum accumulation benefit	18,436	18,918	8	17,994	18,362	10
Gross living benefits(1)	72,411	67,391	6,807	75,978	70,089	7,038
Gross death benefits(2)	8,968	18,819	689	9,555	17,186	802
Total gross of reinsurance	81,379	86,210	7,496	85,533	87,275	7,840
Living benefits reinsured	3,672	3,157	694	3,977	3,199	832
Death benefits reinsured	677	534	282	718	500	318
Total reinsured	4,349	3,691	976	4,695	3,699	1,150
Total, net of reinsurance	$ 77,030	$ 82,519	$ 6,520	$ 80,838	$ 83,576	$ 6,690

(1) 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 2.
(2) Death benefits include standalone guarantees and guarantees in excess of living benefit guarantees where both death and living benefits are provided on a policy.
(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 and assumes that all claims are immediately payable. 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. 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 simplistically assumes that the benefit is paid as a lump sum based on the withdrawal benefit guarantee value and does not recognize that actual claims on this business will instead be paid as a lifetime annuity stream. Adjusting for the time value of money, the net amount at risk will be lower than presented. 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, 2020 was $6,520 million (2019 – $6,690 million) of which: US$4,182 million (2019 – US$3,995 million) was on our U.S. business, $964 million (2019 – $1,178 million) was on our Canadian business, US$71 million (2019 – US$104 million) was on our Japan business and US$111 million (2019 – US$145 million) was related to Asia (other than Japan) and our run-off reinsurance business.

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	2020	2019
Equity funds	**$ 47,348**	$ 47,489
Balanced funds	**42,414**	42,448
Bond funds	**11,944**	11,967
Money market funds	**2,113**	1,732
Other fixed interest rate investments	**1,992**	1,975
Total	**$ 105,811**	$ 105,611

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 total 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 hedged 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, 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**

As at December 31, 2019 ($ millions)	-30%	-20%	-10%	+10%	+20%	+30%
Underlying sensitivity to net income attributed to shareholders[(4)]						
Variable annuity guarantees	$ (3,270)	$ (1,930)	$ (860)	$ 620	$ 1,060	$ 1,360
General fund equity investments[(5)]	(1,140)	(720)	(330)	340	680	1,020
Total underlying sensitivity before hedging	(4,410)	(2,650)	(1,190)	960	1,740	2,380
Impact of macro and dynamic hedge assets[(6)]	2,690	1,580	670	(580)	(1,020)	(1,340)
Net potential impact on net income attributed to shareholders after impact of hedging	$ (1,720)	$ (1,070)	$ (520)	$ 380	$ 720	$ 1,040

(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).

Changes in equity markets impact our available and required components of the LICAT total ratio. The following table shows the potential impact to MLI's LICAT total ratio resulting from changes in public equity market values.

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

	Impact on MLI's LICAT total ratio					
Percentage points	-30%	-20%	-10%	+10%	+20%	+30%
December 31, 2020	**(3)**	**(1)**	**(1)**	**–**	**–**	**(1)**
December 31, 2019	(5)	(3)	(1)	1	4	5

(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, 2020, we estimated the sensitivity of our net income attributed to shareholders to a 50 basis point parallel decline in interest rates to be neutral, and to a 50 basis point parallel increase in interest rates to be a charge of $100 million.

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, 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 Canadian Actuarial Standards Board. 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. At December 31, 2020, 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 3.05% and we use the same assumption for the U.S. Our assumption for Japan is 1.6%. The ASB is currently conducting another review of the URR with any changes expected to be announced and implemented in 2021.

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 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 total ratios and vice-versa.

The following table shows the potential impact on net income attributed to shareholders including 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 total ratio of an immediate parallel change in interest rates relative to rates assumed in the valuation of policy liabilities(1),(2),(3),(4)

	2020		2019	
As at December 31,	-50bp	+50bp	-50bp	+50bp
Net income attributed to shareholders ($ millions)				
Excluding change in market value of AFS fixed income assets held in the Corporate and Other segment	**$ nil**	**$ (100)**	$ (100)	$ (100)
From fair value changes in AFS fixed income assets held in the Corporate and Other segment, if realized	**2,100**	**(1,900)**	1,700	(1,600)
MLI's LICAT total ratio (Percentage points)				
LICAT total ratio change in percentage points(5)	**8**	**(7)**	4	(4)

(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 total 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)	**2020**		2019	
As at December 31,	-50bp	+50bp	-50bp	+50bp
Net income attributed to shareholders ($ millions)	**$ (1,000)**	**$ 900**	$ (800)	$ 800
MLI's LICAT total ratio (change in percentage points)(6)	**(4)**	**4**	(7)	5

Swap spreads	**2020**		2019	
As at December 31,	-20bp	+20bp	-20bp	+20bp
Net income attributed to shareholders ($ millions)	**$ nil**	**$ nil**	$ 100	$ (100)
MLI's LICAT total ratio (change in percentage points)(6)	**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) 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 capital 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 region[1] 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 six percentage point decrease in MLI's total 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, oil and gas direct holdings, 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 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)	2020 -10%	2020 +10%	2019 -10%	2019 +10%
Net income attributed to shareholders				
Real estate, agriculture and timber assets	**$ (1,600)**	**$ 1,400**	$ (1,300)	$ 1,200
Private equities and other ALDA	**(2,000)**	**1,900**	(1,800)	1,700
Total	**$ (3,600)**	**$ 3,300**	$ (3,100)	$ 2,900
MLI's LICAT total ratio (change in percentage points)	**(5)**	**4**	(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, 2020, 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)	2020 +10% strengthening	2020 -10% weakening	2019 +10% strengthening	2019 -10% weakening
10% change in the Canadian dollar relative to the U.S. dollar and the Hong Kong dollar	**$ (390)**	**$ 390**	$ (360)	$ 360
10% change in the Canadian dollar relative to the Japanese yen	**(40)**	**40**	(50)	50

(1) This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" below.
(2) See "Caution Related to Sensitivities" above.

LICAT regulatory capital 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 Wealth and Asset Management 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 mutual funds and 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 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 properties, 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 lower 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 the COVID-19 pandemic, 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 assets 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 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 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 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.

With the global interest rate benchmark reform where LIBOR / IBORs are expected to be discontinued beyond 2021 to mid- 2023 or reformed, the transition to alternative reference rates may adversely impact the valuation 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). A number of IBORs are either being reformed to be more robust and reliable or are being discontinued. As previously announced by the U.K. Financial Conduct Authority (FCA), the FCA will no longer compel panel banks to submit rate information used to determine LIBOR post 2021. Further to that announcement, on November 30, 2020, the ICE Benchmark Administration, the LIBOR's Administrator, proposed plans to extend the cessation of the most widely used USD LIBOR tenors (overnight, 1-month, 3-month, 6-month, 12-month) to mid-2023 from year end 2021. To address the increased risk that LIBOR may not exist beyond 2021 to mid-2023, regulatory authorities and public and private sector working groups in different jurisdictions have been considering alternative reference rates to replace or be used alongside certain IBORs. For example, the Secured Overnight Financing Rate (SOFR) has been identified to replace USD LIBOR and is being published by the Federal Reserve Bank of New York, while an enhanced Canadian Overnight Repo Rate Average (CORRA) published by the Bank of Canada has been chosen to exist alongside certain tenors of the Canadian Dollar Offered Rate (CDOR).
- At this time, we cannot predict how markets will respond to these new rates, and we cannot predict the effect of any changes to or discontinuation of LIBOR / IBORs on new or existing financial instruments to which we have exposure.
- 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. We monitor regulatory guidance and keep pace with developments such as the transition to SOFR discounting by clearing houses in early 4Q20. The extension of specific USD LIBOR tenors to mid-2023 allows more time for Manulife to address LIBOR legacy contracts with inadequate fallback language. In addition, the deferral provides an opportunity to ensure required updates to key items such as IT systems and business processes are addressed before the end of 2021 for certain IBOR transition initiatives.
- 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 from other aspects of the business, including product design, pricing and models. Any change to or discontinuation of similar benchmark rates could have similar effects.

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, variation margin rules for non-cleared derivatives (including eligible collateral restrictions) have further increased our liquidity risk. Initial margin rules for non-cleared derivatives taking effect in September 2021 are also expected to increase our collateral pledging requirement.
- 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, 2020, letters of credit for which third parties are beneficiaries, in the amount of $103 million, were outstanding. There were no assets pledged against these outstanding letters of credit as at December 31, 2020.

- 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, 2020, total pledged assets were $10,362 million, compared with $5,844 million in 2019.
- 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 of Directors of MFC, 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 Directors 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 Directors 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 Directors 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 10, 2021 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 and the addition of this asset class allows us to better diversify our overall credit 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 of Directors.

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 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, 2020 was $4,387 million compared to $3,959 million as at December 31, 2019. This provision represents 1.7% of our fixed income assets[1] supporting policy liabilities reported on our Consolidated Statements of Financial Position as at December 31, 2020.

As at December 31, 2020 and December 31, 2019, 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 $80 million and $69 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-notch[2] 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 $350 million post-tax. This ratings downgrade would result in a one percentage point reduction to our LICAT ratio.

Approximately 60% of the impact on our policy liabilities and net income attributed to shareholders relates to fixed income assets rated BBB and below.

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)	**2020**	2019
Net impaired fixed income assets	**$ 295**	$ 234
Net impaired fixed income assets as a % of total invested assets	**0.072%**	0.062%
Allowance for loan losses	**$ 107**	$ 20

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

[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+.

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.

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 $295 million, representing 0.07% of total general fund invested assets as at December 31, 2020, compared with $234 million, representing 0.06% of total general fund invested assets as at December 31, 2019.

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, 2020, the largest single counterparty exposure, without taking into account the impact of master netting agreements or the benefit of collateral held, was $4,110 million (2019 – $3,047 million). The net exposure to this counterparty, after taking into account master netting agreements and the fair value of collateral held, was nil (2019 – nil). As at December 31, 2020, 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 $28,685 million (2019 – $20,144 million) compared with $119 million after taking into account master netting agreements and the benefit of fair value of collateral held (2019 – $67 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, 2020, the Company had loaned securities (which are included in invested assets) valued at approximately $889 million, compared with $558 million as at December 31, 2019.

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 Factors and Risk Management – 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 Wealth and Asset Management ("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 the COVID-19 pandemic 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 10, 2021 and note 18 of the 2020 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 backup facilities and failover capability designed to minimize downtime and accelerate system recovery.

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 annual 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, 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 Wealth and Asset Management 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 2020 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 through the COVID-19 pandemic 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, result in unauthorized disclosures of personal or confidential information, 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.

- Policies and procedures are in place to prevent and detect fraud incidents; however, our existing system of internal controls may not be able to mitigate all possible incidents, which could adversely impact our business, results of operations, financial condition, and reputation. We continue to enhance our capabilities to better protect against ever-evolving fraud threats, but we may nevertheless not be able to mitigate all possible 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 contaminates 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

In the first quarter of 2020, the viral outbreak known as COVID-19 rapidly developed into a global pandemic and has continued to spread. In response, worldwide emergency measures were taken, and continue to be taken, to combat the spread of the virus, including the imposition of travel restrictions, business closure orders, and regional quarantines and physical distancing requirements. In addition, governments have implemented unprecedented monetary and fiscal policy changes aimed to help stabilize economies and capital markets. We cannot predict future legal and regulatory responses to concerns about the COVID-19 pandemic and related public health issues and how these responses may impact our business. The COVID-19 pandemic, actions taken globally in response to it, and the ensuing economic downturn have caused significant disruption to global supply chains, business activities and economies. The depth, breadth and duration of these disruptions continue to remain highly uncertain. While the pandemic continues, with local or regional resurgences, as well as the outbreak of mutated variations of the initial COVID-19 virus, governments continue to apply a variety of measures to concurrently mitigate further strains on public health systems and help stabilize economies. As a result, it is difficult to predict how significant the longer-term impact of the COVID-19 pandemic, including any responses to it, will be on the global economy and our business. These disruptions, if they continue, could have a significant adverse impact on our global businesses and operations and on our financial results.

We have outlined these risks in more detail in two parts. Those risk factors related specifically to the COVID-19 pandemic are described in this section and those related to the broader economic uncertainty are described below (see "Global outlook and economic uncertainties" below). These risks should be read in conjunction with the other risks and risk mitigation strategies outlined in this "Risk Factors and Risk Management" section.

Implications on strategic risk factors

- The ongoing COVID-19 pandemic 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 expected duration of the pandemic and the measures put in place by governments to respond to it could further depress business activity and financial markets, which could lead to lower net income attributed to shareholders. 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 as emergency measures to combat the virus significantly restrict direct human interactions and movement. Although we expect that our digital capabilities and tools should enable us to reasonably conduct business while emergency measures are in place, there can be no assurance these or other strategies taken to address adverse impacts related to the COVID-19 pandemic will be successful.
- We have experienced ongoing disruptions to our underwriting processes 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 took steps to temporarily adjust our underwriting processes to allow us to accept certain low risk applications. We will 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

- 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 the pandemic 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 the spread of COVID-19 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

- The pandemic has resulted in the imposition of government measures to restrict the movement of people, including travel bans and physical distancing requirements and other containment measures. These measures have led to disruptions to business operations across our global offices. While our business continuity plans have been executed across the organization with the vast majority of employees 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.
- In the first and second quarters of 2020, our global processing centres' operational capacity was temporarily impacted due to strict government measures to lock down businesses and limit the movement of people within their jurisdictions, which resulted in slower processing times and lower than expected customer experience. This reduction in operating capacity required us to reallocate capacity to less impacted geographies, expand the use of remote work capabilities, and deprioritize non-essential business activities. While the capacity of our global processing centres has been restored, there can be no assurance that strategies taken to mitigate COVID-19 related pandemic 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 increases 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 workplaces.

Global outlook and economic uncertainties

The COVID-19 pandemic and actions taken in response to it have resulted in a significant economic downturn and significant disruptions in supply chains and business activity globally. Updates to specific risk factors are noted below:

Implications on market risk factors

- The pandemic and resulting economic downturn has 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. The pandemic 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 the COVID-19 pandemic 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. The COVID-19 pandemic 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 COVID-19 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.
- On March 13, 2020, OSFI announced measures to support the resilience of financial institutions including their expectation for all federally regulated financial institutions that dividend increases and share buybacks should be halted for the time being. Accordingly, the Company has not repurchased its shares since March 13, 2020.

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 downturn. 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 the COVID-19 pandemic 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.

In November 2020, OSFI released an advisory to the LICAT guideline effective January 2021. These amendments are not expected to have a material impact. No material changes in LICAT requirements are currently anticipated in 2022, as OSFI is focusing its efforts on aligning the regulatory capital framework with the IFRS17 accounting changes effective January 2023, and updating the capital rules for Segregated Fund Guarantees, also expected to be effective in January 2023.

At its annual meeting in November 2019, the International Association of Insurance Supervisors ("IAIS") adopted a risk based global Insurance Capital Standard ("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, 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 were made to ICS in 2020. 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 discussion.

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 and IFRS 9 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 and therefore equity. Furthermore, the requirements of the new standard are complex and will necessitate significant enhancements to finance infrastructure and processes and could impact business strategy. IFRS 9 will impact the measurement and timing of investment income.

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 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. To achieve this outcome, we anticipate that OSFI will amend LICAT guidelines for IFRS 17 and is in the process of consulting directly with affected stakeholders.
- **The impact on our business strategy as a result of temporary volatility.** The treatment of the discount rate and new business gains under IFRS 17 could create material temporary volatility in our financial results and depending on the LICAT treatment, on our capital position. The Company's capital position and income for accounting purposes could be significantly 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 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 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 from insurers to integrate it into their financial reporting environment, perform impact studies, and educate and socialize the potential impacts with stakeholders.
- **The impact of inconsistencies in timing of adoption between various jurisdictions**. As a global insurer with subsidiaries in Asia, regional differences in effective dates will require us to maintain more than one set of financial records to support consolidated financial statements and for local entity reporting. Although early adoption is permitted, our local subsidiaries would be required to choose between alignment with the consolidated financial statements of the Canadian parent resulting in deviation with local competitors, in order to avoid maintaining two sets of financial records.

  The Canadian Life and Health Insurance Association as well as Manulife and other Canadian and international insurers have highlighted the risk related to key jurisdictions adopting IFRS 17 on different timelines. Adoption of the standard in Canada before it is adopted by Europe and the UK increases the risk of potential changes to the interpretation and application of IFRS 17 during or subsequent to our adoption. This could result in significant revisions to our actuarial and accounting policies and estimates and potential systems changes.

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; 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 of Directors 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 2020 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 Own Risk and Solvency Assessment 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 2020, we raised a total of $4.3 billion of debt securities in Canada, the U.S. and Asia; and $1.9 billion of debt securities matured or were redeemed at par.

($ millions)	Issued	Redeemed/Matured
2.237% MFC Subordinated debentures, issued on May 12, 2020	**$ 996**	**$ –**
2.818% MFC Subordinated debentures, issued on May 12, 2020	**995**	**–**
2.484% MFC US Senior notes, issued on May 19, 2020	**632**	**–**
2.396% MFC US Senior notes, issued on Jun 1, 2020	**254**	**–**
3.050% MFC US Senior notes, issued on Aug 27, 2020	**1,460**	**–**
2.640% MLI Subordinated debentures, redeemed on Jan 15, 2020	**–**	**500**
2.100% MLI Subordinated debentures, redeemed on Jun 1, 2020	**–**	**750**
4.900% MFC US Senior debenture notes, matured on Sept 17, 2020	**–**	**649**
Total	**$ 4,337**	**$ 1,899**

In addition, following the announcement during the fourth quarter of 2020, MLI redeemed in full its 2.389% subordinated debentures at par, on January 5, 2021.

Normal Course Issuer Bid

On March 13, 2020, the Office of the Superintendent of Financial Institutions ("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. Accordingly, the Company has not repurchased its shares since March 13, 2020.

MFC's normal course issuer bid ("NCIB") expired on November 13, 2020. Under this NCIB that commenced on November 14, 2019, MFC purchased for cancellation 16.5 million of its common shares at an average price of $25.26 per share for a total cost of $0.42 billion.

During 2020, MFC purchased and subsequently cancelled 10.2 million of its common shares at an average price of $24.86 per common share for a total cost of $0.25 billion.

Consolidated capital

As at December 31, ($ millions)	**2020**	2019	2018
Non-controlling interests	**$ 1,455**	$ 1,211	$ 1,093
Participating policyholders' equity	**(784)**	(243)	94
Preferred shares	**3,822**	3,822	3,822
Common shareholders' equity[1]	**48,513**	45,316	42,142
Total equity	**53,006**	50,106	47,151
Adjusted for accumulated other comprehensive loss on cash flow hedges	**(229)**	(143)	(127)
Total equity excluding accumulated other comprehensive loss on cash flow hedges	**53,235**	50,249	47,278
Qualifying capital instruments	**7,829**	7,120	8,732
Consolidated capital[2]	**$ 61,064**	$ 57,369	$ 56,010

(1) Common shareholders' equity is equal to total shareholders' equity less preferred shares.
(2) Consolidated capital does not include $6.2 billion (2019 – $4.5 billion, 2018 – $4.8 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.

Consolidated capital was $61.1 billion as at December 31, 2020 compared with $57.4 billion as at December 31, 2019, an increase of $3.7 billion. The increase was primarily driven by growth in retained earnings of $3.4 billion, net capital issuances of $0.7 billion, which does not include MFC senior debt as it does not qualify as regulatory capital,[1] and an increase in unrealized gains of AFS debt securities of $0.4 billion, partially offset by a reduction in participating policyholders' equity of $0.5 billion and the impact of a stronger Canadian dollar of $0.4 billion.

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. Cash remittance is defined as the cash remitted or payable to the 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 2020, MFC subsidiaries delivered $1.6 billion in remittances compared with $2.8 billion in 2019. The $1.2 billion reduction was due to capital injections to our Asia operations in response to the low interest-rate environment partially offset by stronger remittances from US and Canada.

Financial Leverage Ratio

MFC's financial leverage ratio increased to 26.6% as at December 31, 2020 from 25.1% as at December 31, 2019, driven by the impact of net issuance of $2.4 billion of securities, partially offset by the growth in retained earnings.

Common Shareholder Dividends

The declaration and payment of shareholder dividends and the amount thereof are at the discretion of the Board of Directors and depend upon various factors, including the results of operations, financial condition, 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 for the time being.

Common Shareholder Dividends Paid

The Company increased the quarterly dividend paid on its common shares beginning with the dividend paid in the first quarter of 2020[2], from $0.25 per common share to $0.28 per common share, bringing total common shareholder dividends to $1.12 in 2020, an increase of 12% from 2019.

For the years ended December 31, $ per share	**2020**	2019	2018
Dividends paid	**$ 1.12**	$ 1.00	$ 0.91

1 Consolidated capital does not include MFC senior debt (net issuance of $1.7 billion in 2020) 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.
2 Declared February 12, 2020.

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 of Directors' discretion.

During 2020, the required common shares in connection with the DRIP were purchased on the open market with no applicable discount.

Regulatory Capital Position[1]

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 purposes, LICAT available capital is based on the consolidated capital, adjusted for certain deductions, limits and restrictions, as mandated by the LICAT guideline.

Manulife's operating activities are conducted within MLI and its subsidiaries. MLI's LICAT total ratio was 149% as at December 31, 2020, compared with 140% as at December 31, 2019. The nine percentage point increase from December 31, 2019 was driven by market movements primarily from lower risk-free interest rates, by net capital issuances[2] and by the reinsurance of a block of legacy U.S. BOLI business, partly offset by several smaller items.

MFC's LICAT total ratio was 135% as at December 31, 2020 compared with 129% as at December 31, 2019, with the increase driven by similar factors that impacted the movement in MLI's LICAT total ratio. The difference between the MLI and MFC ratios is largely due to the $6.2 billion (2019 – $4.5 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 total ratios as at December 31, 2020 resulted in excess capital of $29.1 billion over OSFI's supervisory target ratio of 100% for MLI, and $27.0 billion over OSFI's regulatory minimum target ratio of 90% for MFC (no supervisory target is applicable to MFC). As at December 31, 2020, 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 2020, S&P, Moody's, Fitch and AM Best Company ("AM Best") maintained their assigned ratings of MFC and its primary insurance operating companies, while DBRS upgraded their rating of the Manulife group in September 2020.

The following table summarizes the financial strength ratings of MLI and certain of its subsidiaries as at January 31, 2021.

Financial Strength Ratings

Subsidiary	Jurisdiction	S&P	Moody's	DBRS	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, 2021, S&P, Moody's, Fitch, DBRS and AM Best had a stable outlook on these ratings. The DBRS ratings upgrade resolved the positive outlook placed on the group in 2019. 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 Factors and Risk Management" section of the MD&A outlines a number of regulatory capital risks.
2 LICAT reflects capital redemptions once the intention to redeem has been announced. As a result, the December 31, 2020 LICAT ratio reflects the impact of the $350 million of MLI subordinated debentures redeemed in January 2021 (announced in November 2020).

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 2020 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 Actuarial Standards Board. 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 2020 experience was unfavourable (2019 – 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 2020 experience was favourable (2019 – unfavourable) 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 2020 experience was unfavourable (2019 – 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 2020 were unfavourable (2019 – 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 Factors and Risk Management – 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 2020, actual investment returns were unfavourable (2019 – 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 Factors and Risk Management – 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)	2020	2019
Best estimate actuarial liability	**$ 268,147**	$ 246,105
Provision for adverse deviation ("PfAD")		
Insurance risks (mortality/morbidity)	**$ 19,549**	$ 18,147
Policyholder behaviour (lapse/surrender/premium persistency)	**6,757**	6,010
Expenses	**1,950**	1,688
Investment risks (non-credit)	**33,531**	29,650
Investment risks (credit)	**1,121**	1,061
Segregated funds guarantees	**2,178**	1,940
Total PfAD(1)	**65,086**	58,496
Segregated funds – additional margins	**16,388**	13,680
Total of PfAD and additional segregated fund margins	**$ 81,474**	$ 72,176

(1) Reported net actuarial liabilities (excluding the $4,720 million (2019 – $5,031 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, 2020 of $333,233 million (2019 – $304,601 million) are comprised of $268,147 million (2019 – $246,105 million) of best estimate actuarial liabilities and $65,086 million (2019 – $58,496 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 increase in PfADs for insurance risks was primarily due to the impact of lower interest rates in the U.S. and Canada, the annual review of actuarial valuation methods and assumptions as well as the expected PfAD growth from in-force and new business, partially offset by the appreciation of the Canadian dollar relative to the U.S. dollar and Hong Kong dollar. The overall increase in PfADs for policyholder behaviour and expense was driven by the impact of lower interest rates in the U.S. and Canada and the expected PfAD growth from in-force and new business, partially offset by the appreciation of the Canadian dollar. The overall increase in PfADs for non-credit investment risks was driven by the expected PfAD growth from in-force and new business, lower interest rates in the U.S. and Canada, and the annual review of actuarial valuation methods and assumptions, partially offset by the appreciation of the Canadian dollar. The increase in the additional segregated fund margins was primarily due to increases in equity market and the annual review of actuarial valuation methods and assumptions.

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, 2020 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 2020	2019
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	**(600)**	(500)
5% adverse change in future morbidity rates (incidence and termination)[3],[4],[5]	**(5,700)**	(5,100)
10% adverse change in future policy termination rates[4]	**(2,600)**	(2,400)
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 partial 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 2020	2019
Policy related assumptions		
2% adverse change in future mortality rates[2],[3]	**$ (300)**	$ (300)
5% adverse change in future morbidity incidence rates[2],[3],[4]	**(2,100)**	(1,900)
5% adverse change in future morbidity claims termination rates[2],[3],[4]	**(3,100)**	(2,800)
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 1.2732 for 2020.
(2) The impacts of the sensitivities on LTC for morbidity, mortality and lapse do not assume any partial 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.
(4) The comparatives for 2019 have been updated to reflect refinements between incidence and termination impacts implemented in 2020.

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 2020 Increase	2020 Decrease	2019 Increase	2019 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]	**4,200**	**(5,200)**	3,800	(4,400)
100 basis point change in equity volatility assumption for stochastic segregated fund modelling[3]	**(200)**	**200**	(300)	300

(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, 2020, the growth rates inclusive of dividends in the major markets used in the stochastic valuation models for valuing segregated fund guarantees are 9.2% (9.2% – December 31, 2019) per annum in Canada, 9.6% (9.6% – December 31, 2019) per annum in the U.S. and 6.2% (6.2% – December 31, 2019) 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, direct oil and gas properties, 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 11.65%, with an average of 9.3% (9.3% – December 31, 2019) based on the current asset mix backing our guaranteed insurance and annuity business as of December 31, 2020. 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 6.1% (6.1% – December 31, 2019) based on the asset mix backing our guaranteed insurance and annuity business as of December 31, 2020.
(3) Volatility assumptions for public equities are based on long-term historical observed experience and compliance with actuarial standards. 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.

2020 Review of Actuarial Methods and Assumptions

The completion of the 2020 annual 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.

	Change in insurance contract liabilities, net of reinsurance			
For the year ended December 31, 2020 ($ millions)	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-related updates	**(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.

2019 Review of Actuarial Methods and Assumptions

The 2019 full year review of actuarial methods and assumptions resulted in an increase in insurance contract liabilities of $74 million, net of reinsurance, and a decrease in net income attributed to shareholders of $21 million post-tax.

For the year ended December 31, 2019 ($ millions)	Change in insurance contract liabilities, net of reinsurance: Total	Attributed to participating policyholders' account	Attributed to shareholders' account	Change in net income attributed to shareholders (post-tax)
Long-term care triennial review	$ 11	$ –	$ 11	$ (8)
Mortality and morbidity updates	25	47	(22)	14
Lapses and policyholder behaviour	135	17	118	(75)
Investment return assumptions	12	81	(69)	70
Other updates	(109)	(163)	54	(22)
Net impact	$ 74	$ (18)	$ 92	$ (21)

Long-term care triennial review

U.S. Insurance completed a comprehensive long-term care ("LTC") experience study in 2019. The review included all aspects of claim assumptions, the impact of policyholder benefit reductions as well as the progress on future premium rate increases and a review of margins on the business. The impact of the LTC review was approximately net neutral to net income attributed to shareholders.

The experience study showed lower termination rates than expected during the elimination or "qualifying" period (which is the period between when a claim is filed and when benefit payments begin), and favourable incidence as policyholders are filing claims at a lower rate than expected. In addition, policyholders are electing to reduce their benefits in lieu of paying increased premiums. The overall claims experience review led to a post-tax charge to net income attributed to shareholders of approximately $1.9 billion (US$1.4 billion), which includes a gain of approximately $0.2 billion (US$0.16 billion) for the impact of benefit reductions.

The experience study included additional claims data due to the natural aging of the block of business. As a result, we reduced certain margins for adverse deviations, which resulted in a post-tax gain to net income attributed to shareholders of approximately $0.7 billion (US$0.5 billion).

While the study continued to support the assumptions of both future morbidity and mortality improvement, we reduced our morbidity improvement assumption, which resulted in a post-tax charge to net income attributed to shareholders of approximately $0.7 billion (US$0.5 billion).[1]

The review of premium increases assumed in the policy liabilities resulted in a post-tax gain to net income attributed to shareholders of approximately $2.0 billion (US$1.5 billion) related to the expected timing and amount of premium increases that are subject to state approval and reflects a 30% provision for adverse deviation. The expected premium increases are informed by past approval rates applied to prior state filings that remain outstanding and estimated new requests based on our 2019 review of morbidity, mortality and lapse assumptions. Our actual experience in obtaining premium increases could be materially different than what we have assumed, resulting in further increases or decreases in policy liabilities, which could be material.[2]

[1] The padded morbidity assumption is 0.25% for 25 years (down from 0.45%) and unpadded morbidity improvement assumption is 0.50% to age 100 (down from 0.75%).
[2] See "Caution regarding forward-looking statements" above.

Updates to mortality and morbidity assumptions

Mortality and morbidity updates resulted in a $14 million post-tax gain to net income attributed to shareholders. This included a review of our Canada Individual Insurance mortality and reinsurance arrangements.

Updates to lapses and policyholder behaviour

Updates to lapses and policyholder behaviour assumptions resulted in a $75 million post-tax charge to net income attributed to shareholders.

The primary driver of the charge was an update to our lapse assumptions across several term and whole life product lines within our Canada Individual Insurance business, partially offset by several updates to lapse and premium persistency assumptions in other geographies.

Updates to investment return assumptions

Updates to investment return assumptions resulted in a $70 million post-tax gain to net income attributed to shareholders.

The primary driver of the gain was an update to our senior secured loan default rates to reflect recent experience, as well as our investment and crediting rate strategy for certain universal life products. This was partially offset by updates to certain private equity investment assumptions in Canada.

Other updates

Other updates resulted in a $22 million post-tax charge to net income attributed to shareholders.

Impact of changes in actuarial methods and assumptions by segment

The impact of changes in actuarial methods and assumptions in Canada was a post-tax charge to net income attributed to shareholders of $108 million. This charge was driven by updates to lapse rates for certain products within Canada Individual Insurance and updates to certain private equity investment assumptions. In the U.S., we recorded a post-tax gain to net income attributed to shareholders of $71 million, driven primarily by updates to senior secured loan default rates. In addition, several modelling refinements netted to a positive impact. Updates to assumptions in Asia segment and Corporate and Other segment (which includes our Reinsurance business) resulted in a post-tax gain of $16 million.

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:

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.

2019 Net Insurance Contract Liability Movement Analysis

For the year ended December 31, 2019 ($ millions)	Asia	Canada	U.S.	Corporate and Other	Total
Balance, January 1	$ 76,127	$ 76,628	$ 133,142	$ (168)	$ 285,729
New business[(1),(2)]	2,996	(227)	482	–	3,251
In-force movement[(1),(3)]	12,079	6,770	12,163	(91)	30,921
Changes in methods and assumptions[(1)]	60	133	(84)	(35)	74
Currency impact[(4)]	(3,325)	(7)	(6,844)	9	(10,167)
Balance, December 31	$ 87,937	$ 83,297	$ 138,859	$ (285)	$ 309,808

(1) The $32,458 million increase reported as the change in insurance contract liabilities and change in reinsurance assets on the 2019 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 result in an increase of $34,246 million, of which $33,496 million is included in the Consolidated Statements of Income as an increase in insurance contract liabilities and change in reinsurance assets, with the remaining $750 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 $30,921 million, primarily reflecting the impact of interest rate declines and expected growth in insurance contract liabilities in all three geographic segments.

(4) The decrease in policy liabilities from currency impact reflects the appreciation of the Canadian dollar relative to the U.S. dollar, Hong Kong dollar and Japanese yen. To the extent assets are currency matched to liabilities, the increase in insurance contract liabilities due to currency impact is offset by a corresponding increase 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 2020 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 9 to the 2020 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 2020 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 2020 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 2020 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 2020, the amount recorded in OCI was a gain of $47 million (2019 – gain of $113 million) for the defined benefit pension plans and a gain of $10 million (2019 – loss of $21 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 2020, the Company contributed $6 million (2019 – $13 million) to these plans. As at December 31, 2020, the difference between the fair value of assets and the defined benefit obligation for these plans was a surplus of $446 million (2019 – surplus of $394 million). For 2021, the contributions to the plans are expected to be approximately $2 million.[1]

The Company's supplemental pension plans for executives are not funded; benefits under these plans are paid as they become due. During 2020, the Company paid benefits of $65 million (2019 – $62 million) under these plans. As at December 31, 2020, the defined benefit obligation for these plans, which is reflected as a liability in the balance sheet, amounted to $752 million (2019 – $758 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, 2020, the difference between the fair value of plan assets and the defined benefit obligation for these plans was a deficit of $32 million (2019 – deficit of $47 million).

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

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 carry forward 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, 2020, we had $4,842 million of deferred tax assets (December 31, 2019 – $4,574 million). Factors in management's determination include, among other things, the following:

- Future taxable income exclusive of reversing temporary differences and carry forwards;
- 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, 2020, under IFRS we had $5,714 million of goodwill and $4,215 million of intangible assets ($1,560 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 2020 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.

Impairment charges could occur in the future as a result of changes in economic conditions. The goodwill testing for 2021 will be updated based on the conditions that exist in 2021 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 2020 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 amendments to IFRS 4 "Insurance Contracts". The Company is assessing the impact of this standard.

IFRS 17 "Insurance Contracts"

The original IFRS 17 standard was issued in May 2017 and the effective date was set 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.

The principles underlying IFRS 17 differ from the CALM as permitted by IFRS 4. While there are many differences, the following outlines two 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 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 new business gains (and losses) are recognized in income immediately.

The treatment of the discount rate and new business gains under IFRS 17 could create additional volatility in our financial results and depending on the LICAT treatment, on our capital position. This may require the introduction of new non-GAAP measures to explain our results.

In addition, in certain jurisdictions, including Canada, it could have a material effect on tax and regulatory capital positions and other financial metrics that are dependent upon IFRS accounting values. 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 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, 2020, 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, 2020.

MFC's Audit Committee has reviewed this MD&A and the 2020 Consolidated Financial Statements and MFC's Board of Directors 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 of Directors 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 due to manual controls. 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, 2020 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, 2020, 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, 2020 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, 2020. Their report expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting as of December 31, 2020.

Changes in Internal Control over Financial Reporting

No changes were made in our internal control over financial reporting during the year ended December 31, 2020 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

13. Performance and Non-GAAP Measures

We use a number of non-GAAP financial measures to measure overall performance and to assess each of our businesses. A financial measure is considered a non-GAAP measure for Canadian securities law purposes if it is presented other than in accordance with generally accepted accounting principles used for the Company's audited financial statements. Non-GAAP measures include: core earnings (loss); core ROE; diluted core earnings per common share; pre-tax core earnings; core earnings before income taxes, depreciation and amortization ("core EBITDA"); core EBITDA margin; core investment gains; core general expenses, constant exchange rate basis (measures that are reported on a constant exchange rate basis include percentage growth/decline in core earnings, core general expenses, pre-tax core earnings, sales, APE sales, gross flows, net flows, core EBITDA, new business value ("NBV"), assets under management, assets under management and administration ("AUMA"), average assets under management and administration ("average AUMA") and Global Wealth and Asset Management revenue); assets under administration; expense efficiency ratio; assets under management and administration; assets under management; average AUMA, consolidated capital; embedded value; new business value; new business value margin ("NBV margin"); sales; APE sales; gross flows; and net flows. Non-GAAP financial measures are not defined terms under GAAP and, therefore, are unlikely to be comparable to similar terms used 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 non-GAAP 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.

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 "Quarterly Financial Information" below for reconciliation of core earnings to net income (loss) attributed to shareholders.

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 calculated from the introduction of core earnings in 2012 to the end of 2020 was $380 million a decrease from the average of $527 million (2012-2019) due to losses on investment-related experience (compared with average gains in prior years, including the core investment gains).

- 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.

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. Impact of enacted or substantially enacted income tax rate changes.

Core return on common shareholders' equity ("core ROE") is a non-GAAP profitability measure that presents 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.

Diluted core earnings per common share is core earnings available to common shareholders expressed per diluted weighted average common share outstanding.

The Company also uses financial performance measures that are prepared on a **constant exchange rate basis**, which are non-GAAP measures that 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). Amounts stated on a constant exchange rate basis in this report are calculated, as appropriate, using the income statement and balance sheet exchange rates effective for the fourth quarter of 2020. Measures that are reported on a constant exchange rate basis include growth in core earnings, core general expenses, pre-tax core earnings, sales, APE sales, gross flows, net flows, core EBITDA, new business value, new business value margin, assets under management, assets under management and administration, average assets under management and administration and Global Wealth and Asset Management revenue.

Assets under management and administration ("AUMA") is a non-GAAP measure of the size of the Company. It is comprised of the non-GAAP measures assets under management ("AUM"), which includes both assets of general account and external client assets for which we provide investment management services, and assets under administration, which includes assets for which we provide administrative services only. Assets under management and administration is a common industry metric for WAM businesses.

Assets under management and administration

As at December 31,
($ millions)

	2020	2019
Total invested assets	$ 410,977	$ 378,527
Segregated funds net assets	367,436	343,108
Assets under management per financial statements	778,413	721,635
Mutual funds	238,068	217,015
Institutional advisory accounts (excluding segregated funds)	107,387	95,410
Other funds	10,880	9,401
Total assets under management	1,134,748	1,043,461
Other assets under administration	162,688	145,397
Currency impact	–	(12,039)
AUMA at constant exchange rates	$ 1,297,436	$ 1,176,819

Average assets under management and administration ("average AUMA") is a non-GAAP measure of 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 Wealth and Asset Management 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.

Consolidated capital

The definition we use for consolidated capital, a non-GAAP measure, serves as a foundation of our capital management activities at the MFC level. For regulatory reporting purposes, the numbers are further adjusted for various additions or deductions to capital as mandated by the guidelines used by OSFI. Consolidated capital is calculated as the sum of: (i) total equity excluding accumulated other comprehensive income ("AOCI") on cash flow hedges; and (ii) liabilities for capital instruments.

Consolidated capital

As at December 31,
($ millions)

	2020	2019
Total equity	$ 53,005	$ 50,106
Add AOCI loss on cash flow hedges	230	143
Add qualifying capital instruments	7,829	7,120
Consolidated capital	$ 61,064	$ 57,369

Core EBITDA is a non-GAAP 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.

Core EBITDA margin is a non-GAAP 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.

Global Wealth and Asset Management

For the years ended December 31, ($ millions)	2020	2019
Core EBITDA	**$ 1,680**	$ 1,536
Amortization of deferred acquisition costs and other depreciation	**(320)**	(311)
Amortization of deferred sales commissions	**(85)**	(81)
Core earnings before income taxes	**1,275**	1,144
Core income tax (expense) recovery	**(172)**	(123)
Core earnings	**$ 1,103**	$ 1,021

Core EBITDA	**$ 1,680**	$ 1,536
Revenue	**5,749**	5,595
Core EBITDA Margin	**29.2%**	27.5%

Expense efficiency ratio is a non-GAAP measure which Manulife uses to measure progress towards our target to be more efficient. Efficiency ratio is defined as pre-tax general expenses included in core earnings ("core general expenses") divided by the sum of core earnings before income taxes ("pre-tax core earnings") and core general expenses.

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 excludes our Global WAM, Manulife Bank and Property and Casualty Reinsurance businesses.

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 short-term Property and Casualty 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 Property and Casualty 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.

APE sales are comprised of 100% of regular premiums/deposits and 10% of single premiums/deposits for both insurance and insurance-based wealth accumulation products.

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.

Bank new lending volumes include bank loans and mortgages authorized in the period.

Gross flows is a new business measure presented for our Global WAM business and includes all deposits into mutual funds, college savings 529 plans, 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, college savings 529 plans, group pension/retirement savings products, private wealth and institutional asset management products. 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 gross flows exceed redemptions, net flows will be positive and will be referred to as net inflows. Conversely, when redemptions exceed gross flows, net flows will be negative and will be referred to as net outflows.

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, 2020, 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]	$ 11,342	$ 243	$ 486	$ 486	$ 10,127
Liabilities for capital instruments[1]	9,611	598	463	924	7,626
Investment commitments	9,937	3,272	3,401	2,759	505
Lease liabilities	353	116	115	47	75
Insurance contract liabilities[2]	827,727	10,672	9,859	15,416	791,780
Investment contract liabilities[1]	5,551	297	514	520	4,220
Deposits from bank clients	20,889	16,783	2,591	1,515	–
Other	1,126	300	615	203	8
Total contractual obligations	$ 886,536	$ 32,281	$ 18,044	$ 21,870	$ 814,341

(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, 2021 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, 2020 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. We redeemed $0.35 billion of 2.389% Fixed/Floating Subordinated Debentures on January 5, 2021. This redemption has been reflected in the contractual payments.

(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 2020 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, 2020	Sept 30, 2020	Jun 30, 2020	Mar 31, 2020	Dec 31, 2019	Sept 30, 2019	Jun 30, 2019	Mar 31, 2019
Revenue								
Premium income								
Life and health insurance[1]	**$ 8,651**	$ 5,302	$ 7,560	$ 8,454	$ 8,373	$ 8,309	$ 7,696	$ 8,077
Annuities and pensions	**672**	704	673	901	865	1,026	995	237
Net premium income	**9,323**	6,006	8,233	9,355	9,238	9,335	8,691	8,314
Investment income	**4,366**	3,521	5,262	3,284	4,004	3,932	3,710	3,747
Realized and unrealized gains and losses on assets supporting insurance and investment contract liabilities[2]	**1,683**	1,100	11,626	4,558	(4,503)	6,592	7,185	8,926
Other revenue	**2,497**	2,749	2,365	2,980	2,433	2,770	2,634	2,562
Total revenue	**$ 17,869**	$ 13,376	$ 27,486	$ 20,177	$ 11,172	$ 22,629	$ 22,220	$ 23,549
Income (loss) before income taxes	**$ 2,065**	$ 2,170	$ 832	$ 1,704	$ 1,225	$ 715	$ 1,756	$ 2,524
Income tax (expense) recovery	**(224)**	(381)	7	(597)	(89)	(100)	(240)	(289)
Net income (loss)	**$ 1,841**	$ 1,789	$ 839	$ 1,107	$ 1,136	$ 615	$ 1,516	$ 2,235
Net income (loss) attributed to shareholders	**$ 1,780**	$ 2,068	$ 727	$ 1,296	$ 1,228	$ 723	$ 1,475	$ 2,176
Reconciliation of core earnings to net income attributed to shareholders								
Total core earnings[3]	**$ 1,474**	$ 1,453	$ 1,561	$ 1,028	$ 1,477	$ 1,527	$ 1,452	$ 1,548
Other items to reconcile net income attributed to shareholders to core earnings:								
Investment-related experience outside of core earnings	**585**	147	(916)	(608)	182	(289)	146	327
Direct impact of equity markets, interest rates and variable annuity guarantee liabilities	**(323)**	390	73	792	(389)	(494)	(144)	249
Change in actuarial methods and assumptions	**–**	(198)	–	–	–	(21)	–	–
Reinsurance transactions	**44**	276	9	12	(34)	–	63	52
Tax-related items and other	**–**	–	–	72	(8)	–	(42)	–
Net income (loss) attributed to shareholders	**$ 1,780**	$ 2,068	$ 727	$ 1,296	$ 1,228	$ 723	$ 1,475	$ 2,176
Basic earnings (loss) per common share	**$ 0.90**	$ 1.04	$ 0.35	$ 0.64	$ 0.61	$ 0.35	$ 0.73	$ 1.09
Diluted earnings (loss) per common share	**$ 0.89**	$ 1.04	$ 0.35	$ 0.64	$ 0.61	$ 0.35	$ 0.73	$ 1.08
Segregated funds deposits	**$ 9,741**	$ 9,158	$ 8,784	$ 11,215	$ 9,417	$ 9,160	$ 9,398	$ 10,586
Total assets (in billions)	**$ 880**	$ 876	$ 866	$ 831	$ 809	$ 812	$ 790	$ 780
Weighted average common shares (in millions)	**1,940**	1,940	1,939	1,943	1,948	1,961	1,965	1,965
Diluted weighted average common shares (in millions)	**1,943**	1,942	1,941	1,947	1,953	1,965	1,969	1,969
Dividends per common share	**$ 0.280**	$ 0.280	$ 0.280	$ 0.280	$ 0.250	$ 0.250	$ 0.250	$ 0.250
CDN$ to US$1 — Statement of Financial Position	**1.2732**	1.3339	1.3628	1.4187	1.2988	1.3243	1.3087	1.3363
CDN$ to US$1 — Statement of Income	**1.3030**	1.3321	1.3854	1.3449	1.3200	1.3204	1.3377	1.3295

(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.

(3) This item is a non-GAAP measure. See "Performance and Non-GAAP Measures" above.

Selected Annual Financial Information

As at and for the years ended December 31, ($ millions, except per share amounts)	2020	2019	2018
Revenue			
Asia	**$ 28,455**	$ 28,673	$ 19,710
Canada	**18,638**	19,609	13,598
U.S.	**23,361**	24,594	586
Global Wealth and Asset Management	**5,749**	5,595	5,463
Corporate and Other	**2,705**	1,099	(385)
Total revenue	**$ 78,908**	$ 79,570	$ 38,972
Total assets	**$ 880,349**	$ 809,130	$ 750,271
Long-term financial liabilities			
Long-term debt	**$ 6,164**	$ 4,543	$ 4,769
Capital instruments	**7,829**	7,120	8,732
Total financial liabilities	**$ 13,993**	$ 11,663	$ 13,501
Dividend per common share	**$ 1.12**	$ 1.00	$ 0.91
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	**0.5445**	0.5445	0.5445
Cash dividend per Class 1 Share, Series 4	**0.587**	0.7713	0.6536
Cash dividend per Class 1 Share, Series 5	**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	1.1371
Cash dividend per Class 1 Share, Series 13	**1.1035**	1.1035	0.9884
Cash dividend per Class 1 Share, Series 15	**0.9465**	0.9608	0.975
Cash dividend per Class 1 Share, Series 17	**0.950**	0.975	0.975
Cash dividend per Class 1 Share, Series 19	**0.9266**	0.95	0.95
Cash dividend per Class 1 Share, Series 21	**1.400**	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)]	**1.175**	1.175	0.9706

[(1)] On February 20, 2018, MFC issued 10 million of Non-cumulative Rate Reset Class 1 Shares Series 25.

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, 2020, 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, 2021, MFC had 1,940,458,689 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.

Responsibility for Financial Reporting

The accompanying consolidated financial statements of Manulife Financial Corporation are the responsibility of management and have been approved by the Board of Directors. It is also the responsibility of management to ensure that all information in the annual report to shareholders is consistent with these consolidated financial statements.

The consolidated financial statements have been prepared by management in accordance with International Financial Reporting Standards and the accounting requirements of the Office of the Superintendent of Financial Institutions, Canada. When alternative accounting methods exist, or when estimates and judgment are required, management has selected those amounts that present the Company's financial position and results of operations in a manner most appropriate to the circumstances.

Appropriate systems of internal control, policies and procedures have been maintained to ensure that financial information is both relevant and reliable. The systems of internal control are assessed on an ongoing basis by management and the Company's internal audit department.

The actuary appointed by the Board of Directors (the "Appointed Actuary") is responsible for ensuring that assumptions and methods used in the determination of policy liabilities are appropriate to the circumstances and that reserves will be adequate to meet the Company's future obligations under insurance and annuity contracts.

The Board of Directors is responsible for ensuring that management fulfills its responsibility for financial reporting and is ultimately responsible for reviewing and approving the consolidated financial statements. These responsibilities are carried out primarily through an Audit Committee of unrelated and independent directors appointed by the Board of Directors.

The Audit Committee meets periodically with management, the internal auditors, the peer reviewers, the external auditors and the Appointed Actuary to discuss internal control over the financial reporting process, auditing matters and financial reporting issues. The Audit Committee reviews the consolidated financial statements prepared by management and then recommends them to the Board of Directors for approval. The Audit Committee also recommends to the Board of Directors and shareholders the appointment of external auditors and approval of their fees.

The consolidated financial statements have been audited by the Company's external auditors, Ernst & Young LLP, in accordance with Canadian generally accepted auditing standards and the standards of the Public Company Accounting Oversight Board (United States). Ernst & Young LLP has full and free access to management and the Audit Committee.

Roy Gori
President and Chief Executive Officer

Philip Witherington
Chief Financial Officer

Toronto, Canada
February 10, 2021

Appointed Actuary's Report to the Shareholders

I have valued the policy liabilities and reinsurance recoverables of Manulife Financial Corporation for its Consolidated Statements of Financial Position as at December 31, 2020 and 2019 and their change in the Consolidated Statements of Income for the years then ended in accordance with actuarial practice generally accepted in Canada, including selection of appropriate assumptions and methods.

In my opinion, the amount of policy liabilities net of reinsurance recoverables makes appropriate provision for all policyholder obligations and the consolidated financial statements fairly present the results of the valuation.

Steven Finch
Appointed Actuary

Toronto, Canada
February 10, 2021

Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors of Manulife Financial Corporation

Opinion on the Consolidated Financial Statements

We have audited the consolidated financial statements of Manulife Financial Corporation (the "Company"), which comprise the Consolidated Statements of Financial Position as at December 31, 2020 and 2019, and the Consolidated Statements of Income, Consolidated Statements of Comprehensive Income, Consolidated Statements of Changes in Equity and Consolidated Statements of Cash Flows for the years then ended, and notes to the consolidated financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Company as at December 31, 2020 and 2019, and its consolidated financial performance and its consolidated cash flows for the years then ended in accordance with International Financial Reporting Standards as issued by the International Accounting Standards Board.

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Consolidated Financial Statements* section of our report. We are independent of the Company in accordance with the ethical requirements that are relevant to our audit of the consolidated financial statements in Canada, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Key Audit Matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements of the current period. These matters were addressed in the context of the audit of the consolidated financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters. For each matter below, our description of how our audit addressed the matter is provided in that context.

We have fulfilled the responsibilities described in the *Auditor's Responsibilities for the Audit of the Consolidated Financial Statements* section of our report, including in relation to these matters. Accordingly, our audit included the performance of procedures designed to respond to our assessment of the risks of material misstatement of the consolidated financial statements. The results of our audit procedures, including the procedures performed to address the matters below, provide the basis for our audit opinion on the accompanying consolidated financial statements.

	Valuation of Insurance Contract Liabilities
Key Audit Matter	The Company recorded insurance contract liabilities of $385.6 billion at December 31, 2020 on its consolidated statement of financial position. Insurance contract liabilities are reported gross of reinsurance ceded and represent management's estimate of the amount which, together with estimated future premiums and net investment income, will be sufficient to pay estimated future benefits, policyholder dividends and refunds, taxes (other than income taxes) and expenses on insurance policies in-force. Insurance contract liabilities are determined using the Canadian Asset Liability Method (CALM), as required by the Canadian Institute of Actuaries (CIA). The valuation of insurance contract liabilities is based on an explicit projection of cash flows using current assumptions for each material cash flow item. Cash flows related to insurance contract liabilities have two major components: a best estimate assumption and a provision for adverse deviation. Best estimates are made with respect to key assumptions including mortality, morbidity, investment returns, policy termination rates, premium persistency, expenses, and taxes. A provision for adverse deviation is recorded to reflect the inherent uncertainty related to the timing and amount of the best estimate assumptions and is determined by including a margin of conservatism for each assumption. Disclosures on this matter are found in Note 1 'Nature of Operations and Significant Accounting Policies' and Note 6 'Insurance Contract Liabilities and Reinsurance Assets' of the consolidated financial statements. Auditing the valuation of insurance contract liabilities was complex and required the application of significant auditor judgement due to the complexity of the cash flow models, the selection and use of assumptions, and the interrelationship of these variables in measuring insurance contract liabilities. The audit effort involved professionals with specialized skill and knowledge to assist in evaluating the audit evidence obtained.

	Valuation of Insurance Contract Liabilities
How Our Audit Addressed the Key Audit Matter	We obtained an understanding, evaluated the design, and tested the operating effectiveness of management's controls over the valuation of insurance contract liabilities. The controls we tested related to, among other areas, actuarial methodology, integrity of data used, controls over relevant information technology, and the assumption setting and implementation processes used by management. To test the valuation of insurance contract liabilities, our audit procedures included, among other procedures, involving our actuarial specialists to assess the methodology and assumptions with respect to compliance with the Company's policies. We performed audit procedures over key assumptions, including the implementation of those assumptions into the models. These procedures included testing underlying support and documentation, including reviewing a sample of experience studies supporting specific assumptions, challenging the nature, timing, and completeness of changes recorded, assessing whether individual changes were errors or refinements of estimates, and comparing the level of margins for adverse deviation to suggested ranges established by the CIA. We also performed independent recalculation procedures on a sample of insurance policies to evaluate management's recorded reserves. In addition, we assessed the adequacy of the disclosures provided in the notes to the consolidated financial statements.
	Valuation of Invested Assets with Significant Non-Observable Market Inputs
Key Audit Matter	The Company recorded invested assets of $17.5 billion at December 31, 2020 on its consolidated statement of financial position which are both (a) measured at fair value and (b) subject to a valuation estimate that includes significant non-observable market inputs. These invested assets are classified as level 3 within the Company's hierarchy of fair value measurements and include real estate, timber and agriculture, high estimation uncertainty bonds, and private equities which are valued using internal models. There is increased measurement uncertainty associated with these invested assets due to market disruption associated with COVID-19. These assets are valued based on internal models or third-party pricing sources that incorporate assumptions with a high-level of subjectivity. Examples of such assumptions include interest rates, yield curves, credit ratings and related spreads, expected future cash flows and transaction prices of comparable assets. Disclosures on this matter are found in Note 1 'Nature of Operations and Significant Accounting Policies' and Note 3 'Invested Assets and Investment Income' of the consolidated financial statements. Auditing the valuation of these invested assets was complex and required the application of significant auditor judgment in assessing the valuation methodologies and non-observable inputs used. The valuation of these assets is sensitive to the significant non-observable market inputs described above, which are inherently forward-looking and could be affected by future economic and market conditions. The audit effort involved professionals with specialized skill and knowledge to assist in evaluating the audit evidence obtained.
How Our Audit Addressed the Key Audit Matter	We obtained an understanding, evaluated the design, and tested the operating effectiveness of management's controls over the investment valuation process. The controls we tested related to, among other areas, management's determination and approval of assumptions and methodologies used in model-based valuations and management's review of valuations provided by third-party pricing sources. To test the valuation of these invested assets, our audit procedures included, among other procedures, involving our valuation specialists to assess the methodologies and significant assumptions used by management. These procedures included assessing the valuation methodologies used with respect to the Company's policies, valuation guidelines, and industry practice and comparing a sample of valuation assumptions used against benchmarks, including comparable transactions and independent pricing sources where available. We also performed independent investment valuations on a sample of investments with high estimation uncertainty to evaluate management's recorded values. In addition, we assessed the adequacy of the disclosures provided in the notes to the consolidated financial statements.

Other Information

Management is responsible for the other information. The other information comprises:

- Management's Discussion and Analysis; and
- The information, other than the consolidated financial statements and our auditor's report thereon, in the 2020 Annual Report.

Our opinion on the consolidated financial statements does not cover the other information and we do not express any form of assurance conclusion thereon.

In connection with our audit of the consolidated financial statements, our responsibility is to read the other information, and in doing so, consider whether the other information is materially inconsistent with the consolidated financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated.

We obtained Management's Discussion and Analysis prior to the date of this auditor's report. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact in this auditor's report. We have nothing to report in this regard.

The 2020 Annual Report is expected to be made available to us after the date of the auditor's report. If based on the work we will perform on this other information, we conclude there is a material misstatement of other information, we are required to report that fact to those charged with governance.

Responsibilities of Management and Those Charged with Governance for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with International Financial Reporting Standards, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is responsible for assessing the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Company or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Company's financial reporting process.

Auditor's Responsibilities for the Audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Company's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Company to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Company to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our report of independent registered public accounting firm unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

The engagement partner on the audit resulting in this report of independent registered public accounting firm is Sean Musselman.

Ernst & Young LLP

Chartered Professional Accountants
Licensed Public Accountants

Toronto, Canada

February 10, 2021

Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors of Manulife Financial Corporation

Opinion on the Consolidated Financial Statements

We have audited the accompanying Consolidated Statements of Financial Position of Manulife Financial Corporation (the "Company") as of December 31, 2020 and 2019, the related Consolidated Statements of Income, Consolidated Statements of Comprehensive Income, Consolidated Statements of Changes in Equity and Consolidated Statements of Cash Flows for the years then ended, and the related notes (collectively referred to as the "consolidated financial statements").

In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2020 and 2019, and the results of its operations and its cash flows for the years then ended in accordance with International Financial Reporting Standards as issued by the International Accounting Standards Board.

Report on Internal Control over Financial Reporting

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the Company's internal control over financial reporting as of December 31, 2020, based on criteria established in Internal Control – Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated February 10, 2021, expressed an unqualified opinion thereon.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's consolidated financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

	Valuation of Insurance Contract Liabilities
Description of the Matter	The Company recorded insurance contract liabilities of $385.6 billion at December 31, 2020 on its consolidated statement of financial position. Insurance contract liabilities are reported gross of reinsurance ceded and represent management's estimate of the amount which, together with estimated future premiums and net investment income, will be sufficient to pay estimated future benefits, policyholder dividends and refunds, taxes (other than income taxes) and expenses on insurance policies in-force. Insurance contract liabilities are determined using the Canadian Asset Liability Method (CALM), as required by the Canadian Institute of Actuaries (CIA). The valuation of insurance contract liabilities is based on an explicit projection of cash flows using current assumptions for each material cash flow item. Cash flows related to insurance contract liabilities have two major components: a best estimate assumption and a provision for adverse deviation. Best estimates are made with respect to key assumptions including mortality, morbidity, investment returns, policy termination rates, premium persistency, expenses, and taxes. A provision for adverse deviation is recorded to reflect the inherent uncertainty related to the timing and amount of the best estimate assumptions and is determined by including a margin of conservatism for each assumption. Disclosures on this matter are found in Note 1 'Nature of Operations and Significant Accounting Policies' and Note 6 'Insurance Contract Liabilities and Reinsurance Assets' of the consolidated financial statements. Auditing the valuation of insurance contract liabilities was complex and required the application of significant auditor judgement due to the complexity of the cash flow models, the selection and use of assumptions, and the interrelationship of these variables in measuring insurance contract liabilities. The audit effort involved professionals with specialized skill and knowledge to assist in evaluating the audit evidence obtained.

	Valuation of Insurance Contract Liabilities
How We Addressed the Matter in Our Audit	We obtained an understanding, evaluated the design, and tested the operating effectiveness of management's controls over the valuation of insurance contract liabilities. The controls we tested related to, among other areas, actuarial methodology, integrity of data used, controls over relevant information technology, and the assumption setting and implementation processes used by management. To test the valuation of insurance contract liabilities, our audit procedures included, among other procedures, involving our actuarial specialists to assess the methodology and assumptions with respect to compliance with the Company's policies. We performed audit procedures over key assumptions, including the implementation of those assumptions into the models. These procedures included testing underlying support and documentation, including reviewing a sample of experience studies supporting specific assumptions, challenging the nature, timing, and completeness of changes recorded, assessing whether individual changes were errors or refinements of estimates, and comparing the level of margins for adverse deviation to suggested ranges established by the CIA. We also performed independent recalculation procedures on a sample of insurance policies to evaluate management's recorded reserves. In addition, we assessed the adequacy of the disclosures provided in the notes to the consolidated financial statements.
	Valuation of Invested Assets with Significant Non-Observable Market Inputs
Description of the Matter	The Company recorded invested assets of $17.5 billion at December 31, 2020 on its consolidated statement of financial position which are both (a) measured at fair value and (b) subject to a valuation estimate that includes significant non-observable market inputs. These invested assets are classified as level 3 within the Company's hierarchy of fair value measurements and include real estate, timber and agriculture, high estimation uncertainty bonds, and private equities which are valued using internal models. There is increased measurement uncertainty associated with these invested assets due to market disruption associated with COVID-19. These assets are valued based on internal models or third-party pricing sources that incorporate assumptions with a high-level of subjectivity. Examples of such assumptions include interest rates, yield curves, credit ratings and related spreads, expected future cash flows and transaction prices of comparable assets. Disclosures on this matter are found in Note 1 'Nature of Operations and Significant Accounting Policies' and Note 3 'Invested Assets and Investment Income' of the consolidated financial statements. Auditing the valuation of these invested assets was complex and required the application of significant auditor judgment in assessing the valuation methodologies and non-observable inputs used. The valuation of these assets is sensitive to the significant non-observable market inputs described above, which are inherently forward-looking and could be affected by future economic and market conditions. The audit effort involved professionals with specialized skill and knowledge to assist in evaluating the audit evidence obtained.
How We Addressed the Matter in Our Audit	We obtained an understanding, evaluated the design, and tested the operating effectiveness of management's controls over the investment valuation process. The controls we tested related to, among other areas, management's determination and approval of assumptions and methodologies used in model-based valuations and management's review of valuations provided by third-party pricing sources. To test the valuation of these invested assets, our audit procedures included, among other procedures, involving our valuation specialists to assess the methodologies and significant assumptions used by management. These procedures included assessing the valuation methodologies used with respect to the Company's policies, valuation guidelines, and industry practice and comparing a sample of valuation assumptions used against benchmarks, including comparable transactions and independent pricing sources where available. We also performed independent investment valuations on a sample of investments with high estimation uncertainty to evaluate management's recorded values. In addition, we assessed the adequacy of the disclosures provided in the notes to the consolidated financial statements.

Ernst & Young LLP

Chartered Professional Accountants
Licensed Public Accountants

We have served as Manulife Financial Corporation's auditors since 1905.

Toronto, Canada

February 10, 2021

Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors of Manulife Financial Corporation

Opinion on Internal Control over Financial Reporting

We have audited Manulife Financial Corporation's internal control over financial reporting as of December 31, 2020, based on criteria established in Internal Control – Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the "COSO criteria"). In our opinion, Manulife Financial Corporation (the "Company") maintained, in all material respects, effective internal control over financial reporting as of December 31, 2020, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the Consolidated Statements of Financial Position of the Company as of December 31, 2020 and 2019, and the related Consolidated Statements of Income, Consolidated Statements of Comprehensive Income, Consolidated Statements of Changes in Equity and Consolidated Statements of Cash Flows for the years then ended, and the related notes and our report dated February 10, 2021, expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in Management's Report on Internal Control Over Financial Reporting contained in the Management's Discussion and Analysis. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with International Financial Reporting Standards as issued by the International Accounting Standards Board. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with International Financial Reporting Standards as issued by the International Accounting Standards Board, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Ernst & Young LLP

Chartered Professional Accountants
Licensed Public Accountants

Toronto, Canada

February 10, 2021

Consolidated Statements of Financial Position

As at December 31, (Canadian $ in millions)	2020	2019
Assets		
Cash and short-term securities	**$ 26,167**	$ 20,300
Debt securities	**218,724**	198,122
Public equities	**23,722**	22,851
Mortgages	**50,207**	49,376
Private placements	**40,756**	37,979
Policy loans	**6,398**	6,471
Loans to bank clients	**1,976**	1,740
Real estate	**12,832**	12,928
Other invested assets	**30,195**	28,760
Total invested assets (note 3)	**410,977**	378,527
Other assets		
Accrued investment income	**2,523**	2,416
Outstanding premiums	**1,444**	1,385
Derivatives (note 4)	**27,793**	19,449
Reinsurance assets (notes 6 and 7)	**45,836**	41,446
Deferred tax assets (note 16)	**4,842**	4,574
Goodwill and intangible assets (note 5)	**9,929**	9,975
Miscellaneous	**9,569**	8,250
Total other assets	**101,936**	87,495
Segregated funds net assets (note 22)	**367,436**	343,108
Total assets	**$ 880,349**	$ 809,130
Liabilities and Equity		
Liabilities		
Insurance contract liabilities (note 6)	**$ 385,554**	$ 351,161
Investment contract liabilities (note 7)	**3,288**	3,104
Deposits from bank clients	**20,889**	21,488
Derivatives (note 4)	**14,962**	10,284
Deferred tax liabilities (note 16)	**2,614**	1,972
Other liabilities	**18,607**	16,244
	445,914	404,253
Long-term debt (note 9)	**6,164**	4,543
Capital instruments (note 10)	**7,829**	7,120
Segregated funds net liabilities (note 22)	**367,436**	343,108
Total liabilities	**827,343**	759,024
Equity		
Preferred shares (note 11)	**3,822**	3,822
Common shares (note 11)	**23,042**	23,127
Contributed surplus	**261**	254
Shareholders' retained earnings	**18,887**	15,488
Shareholders' accumulated other comprehensive income (loss):		
Pension and other post-employment plans	**(313)**	(350)
Available-for-sale securities	**1,838**	1,511
Cash flow hedges	**(229)**	(143)
Real estate revaluation reserve	**34**	31
Translation of foreign operations	**4,993**	5,398
Total shareholders' equity	**52,335**	49,138
Participating policyholders' equity	**(784)**	(243)
Non-controlling interests	**1,455**	1,211
Total equity	**53,006**	50,106
Total liabilities and equity	**$ 880,349**	$ 809,130

The accompanying notes are an integral part of these Consolidated Financial Statements.

Roy Gori
President and Chief Executive Officer

John Cassaday
Chairman of the Board of Directors

Consolidated Statements of Income

For the years ended December 31, (Canadian $ in millions except per share amounts)	2020	2019
Revenue		
Premium income		
Gross premiums	**$ 41,408**	$ 41,059
Premiums ceded to reinsurers	**(8,491)**	(5,481)
Net premiums	**32,917**	35,578
Investment income (note 3)		
Investment income	**16,433**	15,393
Realized and unrealized gains (losses) on assets supporting insurance and investment contract liabilities and on the macro hedge program	**18,967**	18,200
Net investment income	**35,400**	33,593
Other revenue (note 13)	**10,591**	10,399
Total revenue	**78,908**	79,570
Contract benefits and expenses		
To contract holders and beneficiaries		
Gross claims and benefits (note 6)	**30,133**	28,660
Increase (decrease) in insurance contract liabilities (note 6)	**36,982**	33,727
Increase (decrease) in investment contract liabilities (note 7)	**178**	170
Benefits and expenses ceded to reinsurers	**(6,795)**	(5,373)
(Increase) decrease in reinsurance assets (note 6)	**(5,263)**	(1,269)
Net benefits and claims	**55,235**	55,915
General expenses	**7,510**	7,686
Investment expenses (note 3)	**1,787**	1,748
Commissions	**6,043**	6,293
Interest expense	**1,181**	1,319
Net premium taxes	**381**	389
Total contract benefits and expenses	**72,137**	73,350
Income before income taxes	**6,771**	6,220
Income tax expense (note 16)	**(1,195)**	(718)
Net income	**$ 5,576**	$ 5,502
Net income (loss) attributed to:		
Non-controlling interests	**$ 250**	$ 233
Participating policyholders	**(545)**	(333)
Shareholders	**5,871**	5,602
	$ 5,576	$ 5,502
Net income attributed to shareholders	**5,871**	5,602
Preferred share dividends	**(171)**	(172)
Common shareholders' net income	**$ 5,700**	$ 5,430
Earnings per sharea		
Basic earnings per common share (note 11)	**$ 2.94**	$ 2.77
Diluted earnings per common share (note 11)	**2.93**	2.77
Dividends per common share	**1.12**	1.00

The accompanying notes are an integral part of these Consolidated Financial Statements.

Consolidated Statements of Comprehensive Income

For the years ended December 31,
(Canadian $ in millions)

	2020	2019
Net income	**$ 5,576**	$ 5,502
Other comprehensive income (loss) ("OCI"), net of tax:		
Items that may be subsequently reclassified to net income:		
Foreign exchange gains (losses) on:		
Translation of foreign operations	**(505)**	(1,933)
Net investment hedges	**100**	320
Available-for-sale financial securities:		
Unrealized gains (losses) arising during the year	**2,506**	2,212
Reclassification of net realized (gains) losses and impairments to net income	**(2,175)**	(433)
Cash flow hedges:		
Unrealized gains (losses) arising during the year	**(81)**	(28)
Reclassification of realized losses to net income	**(5)**	12
Share of other comprehensive income (losses) of associates	**2**	1
Total items that may be subsequently reclassified to net income	**(158)**	151
Items that will not be reclassified to net income:		
Change in pension and other post-employment plans	**37**	76
Real estate revaluation reserve	**5**	11
Total items that will not be reclassified to net income	**42**	87
Other comprehensive income (loss), net of tax	**(116)**	238
Total comprehensive income (loss), net of tax	**$ 5,460**	$ 5,740
Total comprehensive income (loss) attributed to:		
Non-controlling interests	**$ 254**	$ 237
Participating policyholders	**(541)**	(334)
Shareholders	**5,747**	5,837

Income Taxes included in Other Comprehensive Income

For the years ended December 31,
(Canadian $ in millions)

	2020	2019
Income tax expense (recovery) on:		
Unrealized gains/losses on available-for-sale financial securities	**$ 574**	$ 558
Reclassification of realized gains/losses and recoveries/impairments to net income on available-for-sale financial securities	**(576)**	(140)
Unrealized gains/losses on cash flow hedges	**(19)**	(20)
Reclassification of realized gains/losses to net income on cash flow hedges	**(2)**	4
Unrealized foreign exchange gains/losses on translation of foreign operations	**–**	(1)
Unrealized foreign exchange gains/losses on net investment hedges	**8**	39
Change in pension and other post-employment plans	**9**	18
Real estate revaluation reserve	**2**	–
Share of other comprehensive income (loss) of associates	**(1)**	–
Total income tax expense (recovery)	**$ (5)**	$ 458

The accompanying notes are an integral part of these Consolidated Financial Statements.

Consolidated Statements of Changes in Equity

For the years ended December 31, (Canadian $ in millions)	2020	2019
Preferred shares		
Balance, beginning of year	**$ 3,822**	$ 3,822
Balance, end of year	**3,822**	3,822
Common shares		
Balance, beginning of year	**23,127**	22,961
Repurchased (note 11)	**(121)**	(677)
Issued on exercise of stock options and deferred share units	**36**	104
Issued under dividend reinvestment and share purchase plans	**–**	739
Balance, end of year	**23,042**	23,127
Contributed surplus		
Balance, beginning of year	**254**	265
Exercise of stock options and deferred share units	**(7)**	(20)
Stock option expense	**14**	11
Impact of deferred tax asset rate change	**–**	(2)
Balance, end of year	**261**	254
Shareholders' retained earnings		
Balance, beginning of year	**15,488**	12,704
Opening adjustment at adoption of IFRS 16	**–**	(19)
Net income attributed to shareholders	**5,871**	5,602
Common shares repurchased (note 11)	**(132)**	(662)
Preferred share dividends	**(171)**	(172)
Common share dividends	**(2,169)**	(1,965)
Balance, end of year	**18,887**	15,488
Shareholders' accumulated other comprehensive income (loss) ("AOCI")		
Balance, beginning of year	**6,447**	6,212
Change in unrealized foreign exchange gains (losses) of net foreign operations	**(405)**	(1,612)
Change in actuarial gains (losses) on pension and other post-employment plans	**37**	76
Change in unrealized gains (losses) on available-for-sale financial securities	**325**	1,775
Change in unrealized gains (losses) on derivative instruments designated as cash flow hedges	**(86)**	(16)
Change in real estate revaluation reserve	**3**	11
Share of other comprehensive income (losses) of associates	**2**	1
Balance, end of year	**6,323**	6,447
Total shareholders' equity, end of year	**52,335**	49,138
Participating policyholders' equity		
Balance, beginning of year	**(243)**	94
Opening adjustment at adoption of IFRS 16	**–**	(3)
Net income (loss) attributed to participating policyholders	**(545)**	(333)
Other comprehensive income attributed to policyholders	**4**	(1)
Balance, end of year	**(784)**	(243)
Non-controlling interests		
Balance, beginning of year	**1,211**	1,093
Net income attributed to non-controlling interests	**250**	233
Other comprehensive income (loss) attributed to non-controlling interests	**4**	4
Contributions (distributions/disposal), net	**(10)**	(119)
Balance, end of year	**1,455**	1,211
Total equity, end of year	**$ 53,006**	$ 50,106

The accompanying notes are an integral part of these Consolidated Financial Statements.

Consolidated Statements of Cash Flows

For the years ended December 31, (Canadian $ in millions)	2020	2019
Operating activities		
Net income	$ 5,576	$ 5,502
Adjustments:		
Increase in insurance contract liabilities	36,982	33,727
Increase in investment contract liabilities	178	170
(Increase) decrease in reinsurance assets excluding coinsurance transactions (note 6)	(2,374)	(557)
Amortization of (premium) discount on invested assets	154	117
Other amortization	656	626
Net realized and unrealized (gains) losses and impairment on assets	(22,521)	(20,265)
Deferred income tax expense (recovery)	280	(454)
Stock option expense	14	11
Cash provided by operating activities before undernoted items	18,945	18,877
Changes in policy related and operating receivables and payables	1,103	1,665
Cash provided by (used in) operating activities	20,048	20,542
Investing activities		
Purchases and mortgage advances	(111,981)	(80,610)
Disposals and repayments	98,850	65,333
Change in investment broker net receivables and payables	(1,017)	1,159
Net cash flows from acquisition and disposal of subsidiaries and businesses	–	288
Cash provided by (used in) investing activities	(14,148)	(13,830)
Financing activities		
Issue of long-term debt, net (note 9)	2,455	–
Redemption of long-term debt (note 9)	(652)	–
Issue of capital instruments, net (note 10)	1,990	–
Redemption of capital instruments (note 10)	(1,250)	(1,500)
Secured borrowings (note 3 (f))	1,376	107
Change in repurchase agreements and securities sold but not yet purchased	24	266
Changes in deposits from Bank clients, net	(579)	1,819
Lease payments	(134)	(117)
Shareholders' dividends paid in cash	(2,340)	(1,398)
Common shares repurchased (note 11)	(253)	(1,339)
Common shares issued, net (note 11)	36	104
Contributions from (distributions to) non-controlling interests, net	(10)	(22)
Cash provided by (used in) financing activities	663	(2,080)
Cash and short-term securities		
Increase (decrease) during the year	6,563	4,632
Effect of foreign exchange rate changes on cash and short-term securities	(528)	(466)
Balance, beginning of year	19,548	15,382
Balance, December 31	25,583	19,548
Cash and short-term securities		
Beginning of year		
Gross cash and short-term securities	20,300	16,215
Net payments in transit, included in other liabilities	(752)	(833)
Net cash and short-term securities, January 1	19,548	15,382
End of year		
Gross cash and short-term securities	26,167	20,300
Net payments in transit, included in other liabilities	(584)	(752)
Net cash and short-term securities, December 31	$ 25,583	$ 19,548
Supplemental disclosures on cash flow information		
Interest received	$ 11,736	$ 11,549
Interest paid	1,188	1,299
Income taxes paid	1,358	104

The accompanying notes are an integral part of these Consolidated Financial Statements.

Notes to Consolidated Financial Statements

Notes to Consolidated Financial Statements

(Canadian $ in millions except per share amounts or unless otherwise stated)

Note 1 Nature of Operations and Significant Accounting Policies

(a) Reporting entity

Manulife Financial Corporation ("MFC") is a publicly traded company and the holding company of The Manufacturers Life Insurance Company ("MLI"), a Canadian life insurance company. MFC and its subsidiaries (collectively, "Manulife" or the "Company") is a leading financial services group with principal operations in Asia, Canada and the United States. Manulife's international network of employees, agents and distribution partners offers financial protection and wealth management products and services to personal and business clients as well as asset management services to institutional customers. The Company operates as Manulife in Canada and Asia and as John Hancock in the United States.

MFC is domiciled in Canada and incorporated under the Insurance Companies Act (Canada) ("ICA"). These Consolidated Financial Statements have been prepared in accordance with International Financial Reporting Standards ("IFRS") as issued by the International Accounting Standards Board ("IASB").

These Consolidated Financial Statements should be read in conjunction with "Risk Management" in the 2020 Management's Discussion and Analysis ("MD&A") dealing with IFRS 7 "Financial Instruments: Disclosures" as the discussion on market risk and liquidity risk includes certain disclosures that are considered an integral part of these Consolidated Financial Statements.

These Consolidated Financial Statements as at and for the year ended December 31, 2020 were authorized for issue by MFC's Board of Directors on February 10, 2021.

(b) Basis of preparation

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 evaluating assumptions used in measuring insurance and investment contract liabilities, assessing assets for impairment, determining pension and other post-employment benefit obligation and expense assumptions, determining income taxes and uncertain tax positions, and estimating fair values 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 these Consolidated Financial Statements are summarized below.

The Company's results and operations have been and may continue to be adversely impacted by the COVID -19 pandemic and the recent economic downturn. The adverse effects include but are not limited to significant volatility in equity markets, decline in interest rates, increase in credit risk, strain on commodity markets and alternative long duration asset prices, foreign currency exchange rate volatility, increases in insurance claims, persistency and redemptions, and disruption of business operations. The breadth and depth of these events and their duration contribute additional uncertainty around estimates used in determining the carrying value of certain assets and liabilities included in these Consolidated Financial Statements.

The uncertainty regarding key inputs used in establishing the carrying amounts of certain invested assets are outlined in the notes to these Consolidated Financial Statements. The Company has applied appropriate measurement techniques using reasonable judgment and estimates from the perspective of a market participant to reflect current economic conditions. The impact of these techniques has been reflected in these Financial Statements. Changes in the inputs used could materially impact the respective carrying values.

(c) Fair value measurement

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction (not a forced liquidation or distress sale) between market participants at the measurement date; fair value is an exit value.

When available, quoted market prices are used to determine fair value. If quoted market prices are not available, fair value is typically based upon alternative valuation techniques such as discounted cash flows, matrix pricing, consensus pricing services and other techniques. Broker quotes are generally used when external public vendor prices are not available.

The Company has a valuation process in place that includes a review of price movements relative to the market, a comparison of prices between vendors, and a comparison to internal matrix pricing which uses predominately external observable data. Judgment is applied in adjusting external observable data for items including liquidity and credit factors.

The Company categorizes its fair value measurement results according to a three-level hierarchy. The hierarchy prioritizes the inputs used by the Company's valuation techniques based on their reliability. A level is assigned to each fair value measurement based on the lowest level input significant to the fair value measurement in its entirety. The three levels of the fair value hierarchy are defined as follows:

Level 1 – Fair value measurements that reflect unadjusted, quoted prices in active markets for identical assets and liabilities that the Company can access at the measurement date, reflecting market transactions.

Level 2 – Fair value measurements using inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly. These include quoted prices for similar assets and liabilities in active markets, quoted prices for identical or similar assets and liabilities in inactive markets, inputs that are observable that are not prices (such as interest rates, credit risks, etc.) and inputs that are derived from or corroborated by observable market data. Most debt securities are classified within Level 2. Also, included in the Level 2 category are derivative instruments that are priced using models with observable market inputs, including interest rate swaps, equity swaps, credit default swaps and foreign currency forward contracts.

Level 3 – Fair value measurements using significant non-market observable inputs. These include valuations for assets and liabilities that are derived using data, some or all of which is not market observable, including assumptions about risk. Level 3 security valuations include less liquid securities such as real estate investment property, other invested assets, timber investments held within segregated funds, certain long-duration bonds and other securities that have little or no price transparency. Certain derivative financial instrument valuations are also included in Level 3.

(d) Basis of consolidation

MFC consolidates the financial statements of all entities it controls, including certain structured entities. Subsidiaries are entities controlled by the Company. The Company has control over an entity when the Company has the power to govern the financial and operating policies of the entity, and is exposed to variable returns from its activities which are significant in relation to the total variable returns of the entity and the Company is able to use its power over the entity to affect its share of variable returns. In assessing control, significant judgment is applied while considering all relevant facts and circumstances. When assessing decision-making power, the Company considers the extent of its rights relative to the management of an entity, the level of voting rights held in an entity which are potentially or presently exercisable, the existence of any contractual management agreements which may provide the Company with power over an entity's financial and operating policies, and to the extent of other parties' ownership in an entity, if any, the possibility for de facto control being present. When assessing variable returns, the Company considers the significance of direct and indirect financial and non-financial variable returns to the Company from an entity's activities in addition to the proportionate significance of such returns. The Company also considers the degree to which its interests are aligned with those of other parties investing in an entity and the degree to which it may act in its own interest.

The financial statements of subsidiaries are included in MFC's consolidated results from the date control is established and are excluded from consolidation from the date control ceases. The initial control assessment is performed at inception of the Company's involvement with the entity and is reconsidered if the Company acquires or loses power over key operating and financial policies of the entity; acquires additional interests or disposes of interests in the entity; the contractual arrangements of the entity are amended such that the Company's proportionate exposure to variable returns changes; or if the Company's ability to use its power to affect its variable returns from the entity changes.

The Company's Consolidated Financial Statements have been prepared using uniform accounting policies for like transactions and events in similar circumstances. Intercompany balances, and income and expenses arising from intercompany transactions, have been eliminated in preparing the Consolidated Financial Statements.

Non-controlling interests are interests of other parties in the equity of MFC's subsidiaries and are presented within total equity, separate from the equity of MFC's participating policyholders and shareholders. Non-controlling interests in the net income and other comprehensive income ("OCI") of MFC's subsidiaries are included in total net income and total OCI, respectively. An exception to this occurs where the subsidiary's shares are either puttable by the shareholder or required to be redeemed for cash on a fixed or determinable date, in which case other parties' interests in the subsidiary's capital are presented as liabilities of the Company and other parties' interests in the subsidiary's net income and OCI are recorded as expenses of the Company.

The equity method of accounting is used to account for entities over which the Company has significant influence or joint control ("associates" or "joint ventures"), whereby the Company records its share of the associate's or joint venture's net assets and financial results using uniform accounting policies for similar transactions and events. Significant judgment is used to determine whether voting rights, contractual management rights and other relationships with the entity, if any, provide the Company with significant influence or joint control over the entity. Gains and losses on the sale of associates or joint ventures are included in income when realized, while impairment losses are recognized immediately when there is objective evidence of impairment. Gains and losses on commercial transactions with associates or joint ventures are eliminated to the extent of the Company's interest in the associate or joint venture. Investments in associates or joint ventures are included in other invested assets on the Company's Consolidated Statements of Financial Position.

(e) Invested assets

Invested assets that are considered financial instruments are classified as fair value through profit or loss ("FVTPL"), loans and receivables, or as available-for-sale ("AFS") financial assets. The Company determines the classification of its financial assets at initial recognition. Invested assets are recognized initially at fair value plus, in the case of investments not at FVTPL, directly attributable transaction costs. Invested assets are classified as financial instruments at FVTPL if they are held for trading, if they are designated by management under the fair value option, or if they are designated by management when they include one or more embedded derivatives. Invested assets classified as AFS are non-derivative financial assets that do not fall into any of the other categories described above.

Valuation methods for the Company's invested assets are described above. All fair value valuations are performed in accordance with IFRS 13 "Fair Value Measurement". Disclosure of financial instruments carried at fair value within the three levels of the fair value hierarchy and disclosure of the fair value for financial instruments not carried at fair value on the Consolidated Statements of Financial Position are presented in note 3. Fair value valuations are performed by the Company and by third-party service providers. When third-party service providers are engaged, the Company performs a variety of procedures to corroborate pricing information. These procedures may include, but are not limited to, inquiry and review of valuation techniques, inputs to the valuation and vendor controls reports.

Cash and short-term securities comprise of cash, current operating accounts, overnight bank and term deposits, and fixed income securities held for meeting short-term cash commitments. Short-term securities are carried at fair value. Short-term securities are comprised of investments due to mature within one year of the date of purchase. Commercial paper and discount notes are classified as Level 2 because these securities are typically not actively traded. Net payments in transit and overdraft bank balances are included in other liabilities.

Debt securities are carried at fair value. Debt securities are generally valued by independent pricing vendors using proprietary pricing models incorporating current market inputs for similar instruments with comparable terms and credit quality (matrix pricing). The significant inputs include, but are not limited to, yield curves, credit risks and spreads, prepayment rates and volatility of these inputs. These debt securities are classified as Level 2 but can be Level 3 if significant inputs are market unobservable. Realized gains and losses on sale of debt securities and unrealized gains and losses on debt securities designated as FVTPL are recognized in investment income immediately. Unrealized gains and losses on AFS debt securities are recorded in OCI, except for unrealized gains and losses on foreign currency translation which are included in income. Impairment losses on AFS debt securities are recognized in income on an individual security basis when there is objective evidence of impairment. Impairment is considered to have occurred, based on management's judgment, when it is deemed probable that the Company will not be able to collect all amounts due according to the debt security's contractual terms.

Public equities are comprised of common and preferred equities and are carried at fair value. Public equities are generally classified as Level 1, as fair values are normally based on quoted market prices. Realized gains and losses on sale of equities and unrealized gains and losses on equities designated as FVTPL are recognized in investment income immediately. Unrealized gains and losses on AFS equities are recorded in OCI. Impairment losses on AFS equities are recognized in income on an individual security basis when there is objective evidence of impairment. Impairment is considered to have occurred when fair value has declined below cost by a significant amount or for a prolonged period. Significant judgment is applied in determining whether the decline is significant or prolonged.

Mortgages are carried at amortized cost and are classified as Level 3 for fair value purposes due to the lack of market observability of certain significant valuation inputs. Realized gains and losses are recorded in investment income immediately. Impairment losses are recorded on mortgages when there is no longer reasonable assurance as to the timely collection of the full amount of principal and interest and are measured based on the discounted value of expected future cash flows at the original effective interest rates inherent in the mortgage. Expected future cash flows of impaired mortgages are typically determined with reference to the fair value of collateral security underlying the mortgage, net of expected costs of realization and including any applicable insurance recoveries. Significant judgment is applied in the determination of impairment including the timing and amount of future collections.

The Company accounts for insured and uninsured mortgage securitizations as secured financing transactions since the criteria for sale accounting are not met. For these transactions, the Company continues to recognize the mortgages and records a liability in other liabilities for the amounts owed at maturity. Interest income from these mortgages and interest expense on the borrowings are recorded using the effective interest rate method.

Private placements, which include corporate loans for which there is no active market, are carried at amortized cost and are generally classified as Level 2 for fair value disclosure purposes or as Level 3 if significant inputs are market unobservable. Realized gains and losses are recorded in income immediately. Impairment losses are recorded on private placements when there is no longer assurance as to the timely collection of the full amount of principal and interest. Impairment is measured based on the discounted value of expected future cash flows at the original effective interest rate inherent in the loan. Significant judgment is applied in the determination of impairment including the timing and amount of future collections.

Policy loans are carried at an amount equal to their unpaid balances and are classified as Level 2 for fair value disclosure purposes. Policy loans are fully collateralized by the cash surrender value of the underlying policies.

Loans to Manulife Bank of Canada ("Manulife Bank" or "Bank") clients are carried at amortized cost and are classified as Level 2 for fair value disclosure purposes. A loan to a Bank client is considered impaired when there is objective evidence of impairment because of one or more loss events that have occurred after initial recognition, with a negative impact on the estimated future cash flows of the loan.

Once established, allowances for impairment of mortgages, private placements and loans to Bank clients are reversed only if the conditions that caused the impairment no longer exist. Reversals of impairment charges on AFS debt securities are only recognized in income to the extent that increases in fair value can be attributed to events after the impairment loss being recorded. Impairment losses for AFS equity instruments are not reversed through income. On disposition of an impaired asset, any allowance for impairment is released.

In addition to impairments and provisions for loan losses (recoveries) reported in investment income, the measurement of insurance contract liabilities, via investment return assumptions, includes expected future credit losses on fixed income investments. Refer to note 6(d).

Interest income is recognized on debt securities, mortgages, private placements, policy loans and loans to Bank clients as it accrues and is calculated using the effective interest rate method. Premiums, discounts and transaction costs are amortized over the life of the underlying investment using the effective yield method for all debt securities as well as mortgages and private placements.

The Company records purchases and sales of invested assets on a trade date basis. Loans originated by the Company are recognized on a settlement date basis.

Real estate consists of both own use and investment property. Own use property is carried at cost less accumulated depreciation and any accumulated impairment losses. Depreciation is calculated based on the cost of an asset less its residual value and is recognized in income on a straight-line basis over the estimated useful life ranging from 30 to 60 years. Impairment losses are recorded in income to the extent the recoverable amount is less than the carrying amount. Where own use property is included in assets backing insurance contract liabilities, the fair value of the property is used in the valuation of insurance contract liabilities. Own use property is classified as Level 3 for fair value disclosure purposes.

An investment property is a property held to earn rental income, for capital appreciation, or both. Investment properties are measured at fair value, with changes in fair value recognized in income. Fair value is determined using external appraisals that are based on the highest and best use of the property. The valuation techniques include discounted cash flows, the direct capitalization method as well as comparable sales analysis and include both observable and unobservable inputs. Inputs include existing and assumed tenancies, market data from recent comparable transactions, future economic outlook and market risk assumptions, capitalization rates and internal rates of return. Investment properties are classified as Level 3 for fair value disclosure purposes.

When a property changes from own use to investment property, any gain or loss arising on the remeasurement of the property to fair value at the date of transfer is recognized in OCI, to the extent that it is not reversing a previous impairment loss. Reversals of impairment losses are recognized in income.

Other invested assets include private equity and property investments held in infrastructure and timber, as well as in agriculture and oil and gas sectors. Private equity investments are accounted for as associates or joint ventures using the equity method (as described in note 1(d) above) or are classified as FVTPL or AFS and carried at fair value. Investments in oil and gas exploration and evaluation activities are measured on the cost basis using the "successful efforts" method. Timber and agriculture properties are measured at fair value with changes in fair value recognized in income, except for buildings, equipment and bearer plants which are measured at amortized cost. The fair value of other invested assets is determined using a variety of valuation techniques as described in note 3. Other invested assets that are measured or disclosed at fair value are classified as Level 3.

Other invested assets also include investments in leveraged leases, which are accounted for using the equity method. The carrying value under the equity method reflects the amortized cost of the lease receivable and related non-recourse debt using the effective yield method.

(f) Goodwill and intangible assets

Goodwill represents the difference between the fair value of purchase consideration of an acquired business and the Company's proportionate share of the net identifiable assets acquired. It is initially recorded at cost and subsequently measured at cost less any accumulated impairment.

Goodwill is tested for impairment at least annually and whenever events or changes in circumstances indicate that the carrying amounts may not be recoverable at the cash generating unit ("CGU") or group of CGUs level. The Company allocates goodwill to CGUs or groups of CGUs for impairment testing at the lowest level within the entity where the goodwill is monitored for internal management purposes. The allocation is made to those CGUs or groups of CGUs that are expected to benefit from the business combination in which the goodwill arose. Any potential impairment of goodwill is identified by comparing the recoverable amount with the carrying value of a CGU or group of CGUs. Goodwill is reduced by the amount of deficiency, if any. If the deficiency exceeds the carrying amount of goodwill, the carrying values of the remaining assets in the CGU or group of CGUs are subject to being reduced by the excess on a pro-rata basis.

The recoverable amount of a CGU is the higher of the estimated fair value less costs to sell or the value-in-use of the CGU. In assessing value-in-use, estimated future cash flows are discounted using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the CGU. In some cases, the most recent detailed calculation made in a prior period of the recoverable amount of a CGU is used in the testing of impairment of goodwill in the current period. This is the case only if there are no significant changes to the CGU, the likelihood of impairment is remote based on the analysis of current events and circumstances, and the most recently calculated recoverable amount substantially exceeds the current carrying amount of the CGU.

Intangible assets with indefinite useful lives include the John Hancock brand name, certain investment management contracts and agricultural water rights. The indefinite useful life assessment for the John Hancock brand name is based on the brand name being protected by indefinitely renewable trademarks in markets where branded products are sold, and for certain investment management contracts based on the ability to renew these contracts indefinitely. In addition, there are no legal, regulatory or contractual provisions that limit the useful lives of these intangible assets. An intangible asset with an indefinite useful life is not amortized but is subject to an annual impairment test which is performed more frequently if an indication that it is not recoverable arises.

Intangible assets with finite useful lives include acquired distribution networks, customer relationships, capitalized software, and certain investment management contracts and other contractual rights. Distribution networks, customer relationships, and other finite life intangible assets are amortized over their estimated useful lives, six to 68 years, either based on straight-line or in relation to other asset consumption metrics. Software intangible assets are amortized on a straight-line basis over their estimated useful lives of three to 10 years. Finite life intangible assets are assessed for indicators of impairment at each reporting period. If any indication of impairment arises, these assets are tested for impairment.

(g) Miscellaneous assets

Miscellaneous assets include assets held in a rabbi trust with respect to unfunded defined benefit obligations, defined benefit assets, if any, deferred acquisition costs and capital assets. Rabbi trust assets are carried at fair value. Defined benefit assets carrying value is explained in note 1(o). Deferred acquisition costs are carried at cost less accumulated amortization and are amortized over the period redemption fees may be charged or over the period revenue is earned. Capital assets are carried at cost less accumulated amortization computed on a straight-line basis over their estimated useful lives, which vary from two to 10 years.

(h) Segregated funds

The Company manages segregated funds on behalf of policyholders. The investment returns on these funds are passed directly to policyholders. In some cases, the Company has provided guarantees associated with these funds.

Segregated funds net assets are measured at fair value and include investments in mutual funds, debt securities, equities, cash, short-term investments and other investments. With respect to the consolidation requirement of IFRS, in assessing the Company's degree of control over the underlying investments, the Company considers the scope of its decision-making rights, the rights held by other parties, its remuneration as an investment manager and its exposure to variability of returns from the investments. The Company has determined that it does not have control over the underlying investments as it acts as an agent on behalf of segregated fund policyholders.

The methodology applied to determine the fair value of investments held in segregated funds is consistent with that applied to invested assets held by the general fund, as described above in note 1(e). Segregated funds liabilities are measured based on the value of the segregated funds net assets. Investment returns on segregated funds assets belong to policyholders and the Company does not bear the risk associated with these assets outside of guarantees offered on certain variable life and annuity products, for which the underlying investments are held within segregated funds. Accordingly, investment income earned by segregated funds and expenses incurred by segregated funds are offset and are not separately presented in the Consolidated Statements of Income. Fee income earned by the Company for managing the segregated funds is included in other revenue.

Liabilities related to guarantees associated with certain segregated funds, as a result of certain variable life and annuity contracts, are recorded within the Company's insurance contract liabilities. The Company holds assets supporting these guarantees in the general fund, which are included in invested assets according to their investment type.

(i) Insurance and investment contract liabilities

Most contracts issued by the Company are considered insurance, investment or service contracts. Contracts under which the Company accepts significant insurance risk from a policyholder are classified as insurance contracts in the Consolidated Financial Statements. A contract is considered to have significant insurance risk if, and only if, an insured event could cause an insurer to make significant additional payments in any scenario, excluding scenarios that lack commercial substance at the inception of the contract. Contracts under which the Company does not accept significant insurance risk are either classified as investment contracts or considered service contracts and are accounted for in accordance with IAS 39 *"Financial Instruments: Recognition and Measurement"* or IFRS 15 "Revenue from Contracts with Customers", respectively.

Once a contract has been classified as an insurance contract it remains an insurance contract even if the insurance risk reduces significantly. Investment contracts can be reclassified as insurance contracts if insurance risk subsequently becomes significant.

Insurance contract liabilities, net of reinsurance assets, represent the amount which, together with estimated future premiums and net investment income, will be sufficient to pay estimated future benefits, policyholder dividends and refunds, taxes (other than income taxes) and expenses on policies in-force. Insurance contract liabilities are presented gross of reinsurance assets on the Consolidated Statements of Financial Position. The Company's Appointed Actuary is responsible for determining the amount of insurance contract liabilities in accordance with standards established by the Canadian Institute of Actuaries. Insurance contract liabilities, net of reinsurance assets, have been determined using the Canadian Asset Liability Method ("CALM") as permitted by IFRS 4 "Insurance Contracts". Refer to note 6.

Investment contract liabilities include contracts issued to retail and institutional investors that do not contain significant insurance risk. Investment contract liabilities and deposits are measured at amortized cost or at FVTPL by election. The election reduces accounting mismatches between FVTPL assets supporting these contracts and the related contract liabilities. Investment contract liabilities are derecognized when the contract expires, is discharged or is cancelled.

Derivatives embedded within insurance contracts are separately accounted for as derivatives if they are not considered to be closely related to the host insurance contract and do not meet the definition of an insurance contract. These embedded derivatives are presented separately in other assets or other liabilities and are measured at FVTPL.

(j) Reinsurance assets

The Company uses reinsurance in the normal course of business to manage its risk exposure. Insurance ceded to a reinsurer does not relieve the Company from its obligations to policyholders. The Company remains liable to its policyholders for the portion reinsured to the extent that any reinsurer does not meet its obligations for reinsurance ceded to it under a reinsurance agreement.

Reinsurance assets represent the benefit derived from reinsurance agreements in-force at the reporting date, considering the financial condition of the reinsurer. Amounts recoverable from reinsurers are estimated in accordance with the terms of the relevant reinsurance contract.

Gains or losses on reinsurance transactions are recognized in income immediately on the transaction date and are not amortized. Premiums ceded and claims reimbursed are presented on a gross basis on the Consolidated Statements of Income. Reinsurance assets are not offset against the related insurance contract liabilities and are presented separately on the Consolidated Statements of Financial Position. Refer to note 6(a).

(k) Other financial instruments accounted for as liabilities

The Company issues a variety of other financial instruments classified as liabilities, including notes payable, term notes, senior notes, senior debentures, subordinated notes, surplus notes and preferred shares. These financial liabilities are measured at amortized cost, with issuance costs deferred and amortized using the effective interest rate method.

(l) Income taxes

The provision for income taxes is calculated based on income tax laws and income tax rates substantively enacted as at the date of the Consolidated Statements of Financial Position. The income tax provision is comprised of current income taxes and deferred income taxes. Current and deferred income taxes relating to items recognized in OCI and directly in equity are similarly recognized in OCI and directly in equity, respectively.

Current income taxes are amounts expected to be payable or recoverable for the current year and any adjustments to taxes payable in respect of previous years.

Deferred income taxes are provided for using the liability method and result from temporary differences between the carrying values of assets and liabilities and their respective tax bases. Deferred income taxes are measured at the substantively enacted tax rates that are expected to be applied to temporary differences when they reverse.

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. Deferred tax assets and liabilities are offset if there is a legally enforceable right to offset current tax assets and liabilities and they relate to income taxes levied by the same tax authority on the same taxable entity.

Deferred tax liabilities are recognized for all taxable temporary differences, except in respect of taxable temporary differences associated with investments in subsidiaries, associates and joint ventures, where the timing of the reversal of the temporary differences can be controlled and it is probable that the temporary differences will not reverse in the foreseeable future.

The Company records liabilities for uncertain tax positions if it is probable that the Company will make a payment on tax positions due to examinations by tax authorities. These provisions are measured at the Company's best estimate of the amount expected to be paid. Provisions are reversed to income in the period in which management assesses they are no longer required or determined by statute.

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 current income taxes and deferred 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 year. The Company may be required to change its provision for income taxes or deferred income tax balances when the ultimate deductibility of certain items is successfully challenged by taxing authorities, or if estimates used in determining the amount of deferred tax balances to recognize change significantly, or when receipt of new information indicates the need for adjustment in the amount of deferred income taxes to be recognized. 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 taxes, deferred tax balances and the effective tax rate. Any such changes could materially affect the amounts reported in the Consolidated Financial Statements in the period these changes occur.

(m) Foreign currency translation

Items included in the financial statements of each of the Company's subsidiaries, joint ventures and associates are measured by each entity using the currency of the primary economic environment in which the entity operates (the "functional currency"). If their functional currency is other than Canadian dollar, these entities are foreign operations of the Company.

Transactions in a foreign currency are translated to the functional currency at the exchange rate prevailing at the date of the transaction. Assets and liabilities denominated in foreign currencies are translated to the functional currency at the exchange rate in effect at the reporting date. Revenue and expenses denominated in foreign currencies are translated at the average exchange rate prevailing during the quarter reported. Exchange gains and losses are recognized in income except for translation of net investments in foreign operations and the results of hedging these positions, and for non-monetary items designated as AFS. These foreign exchange gains and losses are recognized in OCI until such time that the foreign operation or non-monetary item is disposed of or control or significant influence over it is lost.

The Consolidated Financial Statements are presented in Canadian dollars. The financial statements of the Company's foreign operations are translated from their functional currencies to Canadian dollars; assets and liabilities are translated at the exchange rate at the reporting date, and revenue and expenses are translated using the average exchange rates for the period. Foreign exchange gains and losses on these translations are recognized in OCI, subject to reclassification to income upon disposal of a foreign operation.

(n) Stock-based compensation

The Company provides stock-based compensation to certain employees and directors as described in note 14. Compensation expense of equity instruments granted is accrued based on the best estimate of the number of instruments expected to vest, with revisions made to that estimate if subsequent information indicates that actual forfeitures are likely to differ from initial forfeiture estimates, unless forfeitures are due to market-based conditions.

Stock options are expensed with a corresponding increase in contributed surplus. Restricted share units and deferred share units are expensed with a corresponding liability accrued based on the market value of MFC's common shares at the end of each quarter. Performance share units are expensed with a corresponding liability accrued based on specific performance conditions and the market value of MFC's common shares at the end of each quarter. The change in the value of the awards resulting from changes in the market value of MFC's common shares or changes in the specific performance conditions and credited dividends is recognized in income, offset by the impact of total return swaps used to manage the variability of the related liabilities.

Stock-based compensation cost is recognized over the applicable vesting period, unless the employee is eligible to retire at the time of grant or will be eligible to retire during the vesting period. Compensation costs attributable to stock options, restricted share units, and performance share units granted to employees who are eligible to retire on the grant date or who will become eligible to retire during the vesting period, are recognized at the grant date or over the period from the grant date to the date of retirement eligibility, respectively.

The Company's contributions to the Global Share Ownership Plan ("GSOP") (refer to note 14(d)), are expensed as incurred. Under the GSOP, subject to certain conditions, the Company will match a percentage of an employee's eligible contributions to certain maximums. All contributions are used by the plan's trustee to purchase MFC common shares in the open market.

(o) 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 and disability welfare plans that are typically not funded.

The Company's obligation in respect of defined benefit pension and other post-employment benefits is calculated for each plan as the estimated present value of future benefits that eligible employees have earned in return for their service up to the reporting date using the projected benefit method. The discount rate used is based on the yield, as at the reporting date, of high-quality corporate debt securities that have approximately the same term as the benefit obligations and that are denominated in the same currency in which the benefits are expected to be paid.

To determine the Company's net defined benefit asset or liability, the fair value of plan assets is deducted from the defined benefit obligations. When this calculation results in a surplus, the asset that can be recognized is limited to the present value of future economic benefit available in the form of future refunds from the plan or reductions in future contributions to the plan (the asset limit). Defined benefit assets are included in other assets and defined benefit liabilities are included in other liabilities.

Changes in the net defined benefit asset or liability due to re-measurement of pension and retiree welfare plans are recorded in OCI in the period in which they occur and are not reclassified to income in subsequent periods. They consist of actuarial gains and losses, the impact of the asset limit, if any, and the return on plan assets, excluding amounts included in net interest income or expense. Changes in the net defined benefit asset or liability due to re-measurement of disability welfare plans are recorded in income in the period in which they occur.

The cost of defined benefit pension plans is recognized over the employee's years of service to retirement while the cost of retiree welfare plans is recognized over the employee's years of service to their date of full eligibility. The net benefit cost for the year is recorded in income and is calculated as the sum of the service cost in respect of the fiscal year, the net interest income or expense and any applicable administration expenses, plus past service costs or credits resulting from plan amendments or curtailments. The net interest income or expense is determined by applying the discount rate to the net defined benefit asset or liability. The current year cost of disability welfare plans is the year-over-year change in the defined benefit obligation, including any actuarial gains or losses.

The cost of defined contribution plans is the contribution provided by the Company and is recorded in income in the periods during which services are rendered by employees.

(p) Derivative and hedging instruments

The Company uses derivative financial instruments ("derivatives") including swaps, forward and futures agreements, and options to manage current and anticipated exposures to changes in interest rates, foreign exchange rates, commodity prices and equity market prices, and to replicate permissible investments. Derivatives embedded in other financial instruments are separately recorded as derivatives when their economic characteristics and risks are not closely related to those of the host instrument, the terms of the embedded derivative are the same as those of a standalone derivative and the host instrument itself is not recorded at FVTPL. Derivatives which are separate financial instruments are recorded at fair value, and those with unrealized gains reported as derivative assets and those with unrealized losses reported as derivative liabilities.

A determination is made for each derivative as to whether to apply hedge accounting. Where hedge accounting is not applied, changes in the fair value of derivatives are recorded in investment income. Refer to note 3(c).

Where the Company has elected to apply hedge accounting, a hedging relationship is designated and documented at inception. Hedge effectiveness is evaluated at inception and throughout the term of the hedge. Hedge accounting is only applied when the Company expects that the hedging relationship will be highly effective in achieving offsetting changes in fair value or changes in cash flows attributable to the risk being hedged. The assessment of hedge effectiveness is performed at the end of each reporting period both prospectively and retrospectively. When it is determined that a hedging relationship is no longer effective, or the hedging instrument or the hedged item has been sold or terminated, the Company discontinues hedge accounting prospectively. In such cases, if the derivatives are not sold or terminated, any subsequent changes in fair value of the derivatives are recognized in investment income.

For derivatives that are designated as hedging instruments, changes in fair value are recorded according to the nature of the risks being hedged, as discussed below.

In a fair value hedging relationship, changes in fair value of the hedging instruments are recorded in investment income, offsetting changes in fair value of the hedged items, which would otherwise not be carried at fair value. Hedge ineffectiveness is recognized in investment income and arises from differences between changes in the fair values of hedging instruments and hedged items. When hedge accounting is discontinued, the carrying value of the hedged item is no longer adjusted and the cumulative fair value adjustments are amortized to investment income over the remaining term of the hedged item unless the hedged item is sold, at which time the balance is recognized immediately in investment income.

In a cash flow hedging relationship, the effective portion of the change in the fair value of the hedging instrument is recorded in OCI while the ineffective portion is recognized in investment income. Gains and losses in accumulated other comprehensive income ("AOCI") are recognized in income during the same periods that the variability in the hedged cash flows or the hedged forecasted transactions are recognized in income. The reclassifications from AOCI are made to investment income, except for total return swaps that hedge stock-based compensation awards, which are reclassified to general expenses.

Gains and losses on cash flow hedges in AOCI are reclassified immediately to investment income when the hedged item is sold, or the forecasted transaction is no longer expected to occur. When a hedge is discontinued, but the hedged forecasted transaction is expected to occur, the amounts in AOCI are reclassified to investment income in the periods during which variability in the cash flows hedged or the hedged forecasted transaction is recognized in income.

In a net investment in foreign operations hedging relationship, gains and losses relating to the effective portion of the hedge are recorded in OCI. Gains and losses in AOCI are recognized in income during the periods when gains or losses on the underlying hedged net investment in foreign operations are recognized in income upon disposal of the foreign operation.

(q) Premium income and related expenses

Gross premiums for all types of insurance contracts, and contracts with limited mortality or morbidity risk, are generally recognized as revenue when due. Premiums are reported gross of reinsurance ceded (refer to note 6).

(r) Revenue from service contracts

The Company recognizes revenue from service contracts in accordance with IFRS 15. The Company's service contracts generally impose single performance obligations, each consisting of a series of similar related services for each customer. Revenue is recorded as performance obligations are satisfied over time because the customers simultaneously receive and consume the benefits of the services rendered, measured using an output method. Revenue for variable consideration is recognized to the extent that it is highly probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the uncertainty is subsequently resolved. Refer to note 13.

Note 2 Accounting and Reporting Changes

(a) Changes in accounting and reporting policy

(i) Amendments to IFRS 3 "Business Combinations"

Amendments to IFRS 3 "Business Combinations" were issued in October 2018 and are effective for business combinations occurring on or after January 1, 2020, with earlier application permitted. The amendments revise the definition of a business and permit a simplified assessment of whether an acquired set of activities and assets qualifies as a business. Application of the amendments are expected to result in fewer acquisitions qualifying as business combinations. Adoption of these amendments did not have a significant impact on the Company's Consolidated Financial Statements.

(ii) Amendments to IAS 1 "Presentation of Financial Statements" and IAS 8 "Accounting Policies, Changes in Accounting Estimates and Errors"

Amendments to IAS 1 "Presentation of Financial Statements" and IAS 8 "Accounting Policies, Changes in Accounting Estimates and Errors" were issued in October 2018. The amendments are effective for annual periods beginning on or after January 1, 2020 and are to be applied prospectively. The amendments update the definition of material. Adoption of these amendments did not have a significant impact on the Company's Consolidated Financial Statements.

(iii) Interest Rate Benchmark Reform Amendments to IFRS 9, IAS 39 and IFRS 7

Amendments to IFRS 9, IAS 39 and IFRS 7 were issued in September 2019 related to interest rate benchmark reform and are effective retrospectively for annual periods beginning on or after January 1, 2020. The amendments provide temporary relief for hedge accounting to continue during the period of uncertainty before replacement of an existing interest rate benchmark with an alternative risk-free rate. The amendments apply to all hedge accounting relationships that are affected by the interest rate benchmark reform. The IASB has issued further guidance addressing various accounting issues that will arise when the existing interest rate benchmark has been replaced (refer to note 2(b)). Adoption of these amendments did not have a significant impact on the Company's Consolidated Financial Statements.

(b) Future accounting and reporting changes

(i) IFRS 17 "Insurance Contracts" and IFRS 9 "Financial Instruments"

Amendments to IFRS 17 "Insurance Contracts" were issued in June 2020 and include a two-year deferral of the effective date along with other changes targeted to address implementation concerns and challenges raised by stakeholders. Amendments include changes to loss recovery components for reinsurance contracts held, services related to investment activities and the allocation of acquisition cash flows. 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.

In conjunction with the amendments to IFRS 17, the IASB also amended IFRS 4 "Insurance Contracts" to permit eligible insurers to apply IFRS 9 effective January 1, 2023, alongside IFRS 17.

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 the Company's in-force business is expected to lead to an increase in insurance contract liabilities and corresponding decrease in equity upon transition. The Contractual Service Margin represents unearned profits that are expected to amortize into income as services are provided. The Company continues to evaluate the potential impacts of all other changes including available accounting policy choices under IFRS 17 on the measurement of its insurance contract liabilities.

(ii) Annual Improvements 2018–2020 Cycle

Annual Improvements 2018–2020 Cycle was issued in May 2020 and is effective on or after January 1, 2022. The IASB issued four minor amendments to different standards as part of the Annual Improvements process, to be applied prospectively. Adoption of these amendments is not expected to have a significant impact on the Company's Consolidated Financial Statements.

(iii) Amendments to IFRS 3 "Business Combinations"

Amendments to IFRS 3 "Business Combinations" were issued in May 2020, and are effective on or after January 1, 2022, with earlier application permitted. The amendments update references within IFRS 3 to the 2018 Conceptual Framework and require that the principles in IAS 37 "Provisions, Contingent Liabilities and Contingent Assets" be used to identify liabilities and contingent assets arising from a business combination. Adoption of these amendments is not expected to have a significant impact on the Company's Consolidated Financial Statements.

(iv) Amendments to IAS 37 "Provisions, Contingent Liabilities and Contingent Assets"

Amendments to IAS 37 "Provisions, Contingent Liabilities and Contingent Assets" were issued in May 2020, and are effective on or after January 1, 2022, with earlier application permitted. The amendments address identifying onerous contracts and specify the cost of fulfilling a contract which includes all costs directly relate to the contract. These include incremental direct costs and allocations of other costs that relate directly to fulfilling the contract. Adoption of these amendments is not expected to have a significant impact on the Company's Consolidated Financial Statements.

(v) Interest Rate Benchmark Reform Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4 and IFRS 16

Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4 and IFRS 16 were issued in August 2020 related to interest rate benchmark reform and are effective retrospectively for annual periods beginning January 1, 2021. The amendments provide relief from modification of financial assets and liabilities, and discontinuation of hedge relationships, when changing interest rate benchmarks from LIBOR to a replacement benchmark. The amendments include a practical expedient to treat changes in risk free rates as a change to a floating interest rate with an update to the effective rate of interest, rather than as a change in future cash flows which might require adjustments to carrying values through recording a modification gain or loss. Adoption of these amendments is not expected to have a significant impact on the Company's Consolidated Financial Statements.

Note 3 Invested Assets and Investment Income

(a) Carrying values and fair values of invested assets

As at December 31, 2020	FVTPL[1]	AFS[2]	Other[3]	Total carrying value[4]	Total fair value[5]
Cash and short-term securities[6]	**$ 2,079**	**$ 18,314**	**$ 5,774**	**$ 26,167**	**$ 26,167**
Debt securities[7]					
Canadian government and agency	**20,667**	**4,548**	**–**	**25,215**	**25,215**
U.S. government and agency	**11,449**	**19,787**	**–**	**31,236**	**31,236**
Other government and agency	**19,732**	**4,613**	**–**	**24,345**	**24,345**
Corporate	**128,297**	**6,566**	**–**	**134,863**	**134,863**
Mortgage/asset-backed securities	**2,916**	**149**	**–**	**3,065**	**3,065**
Public equities[8]	**22,071**	**1,651**	**–**	**23,722**	**23,722**
Mortgages	**–**	**–**	**50,207**	**50,207**	**54,230**
Private placements	**–**	**–**	**40,756**	**40,756**	**47,890**
Policy loans	**–**	**–**	**6,398**	**6,398**	**6,398**
Loans to Bank clients	**–**	**–**	**1,976**	**1,976**	**1,982**
Real estate					
Own use property[9]	**–**	**–**	**1,850**	**1,850**	**3,017**
Investment property	**–**	**–**	**10,982**	**10,982**	**10,982**
Other invested assets					
Alternative long-duration assets[10],[11]	**16,183**	**88**	**9,901**	**26,172**	**27,029**
Various other[12]	**145**	**–**	**3,878**	**4,023**	**4,023**
Total invested assets	**$ 223,539**	**$ 55,716**	**$ 131,722**	**$ 410,977**	**$ 424,164**

As at December 31, 2019	FVTPL[1]	AFS[2]	Other[3]	Total carrying value[4]	Total fair value[5]
Cash and short-term securities[6]	$ 1,859	$ 13,084	$ 5,357	$ 20,300	$ 20,300
Debt securities[7]					
Canadian government and agency	18,582	4,779	–	23,361	23,361
U.S. government and agency	11,031	17,221	–	28,252	28,252
Other government and agency	17,383	4,360	–	21,743	21,743
Corporate	116,044	5,285	–	121,329	121,329
Mortgage/asset-backed securities	3,267	170	–	3,437	3,437
Public equities[8]	20,060	2,791	–	22,851	22,851
Mortgages	–	–	49,376	49,376	51,450
Private placements	–	–	37,979	37,979	41,743
Policy loans	–	–	6,471	6,471	6,471
Loans to Bank clients	–	–	1,740	1,740	1,742
Real estate					
Own use property[9]	–	–	1,926	1,926	3,275
Investment property	–	–	11,002	11,002	11,002
Other invested assets					
Alternative long-duration assets[10],[11]	15,252	99	9,492	24,843	25,622
Various other[12]	149	–	3,768	3,917	3,918
Total invested assets	$ 203,627	$ 47,789	$ 127,111	$ 378,527	$ 386,496

(1) FVTPL classification was elected for securities backing insurance contract liabilities to substantially reduce any accounting mismatch arising from changes in the fair value of these assets and changes in the value of the related insurance contract liabilities. If this election had not been made and instead the AFS classification was selected, there would be an accounting mismatch because changes in insurance contract liabilities are recognized in net income rather than in OCI.

(2) Securities that are designated as AFS are not actively traded by the Company, but sales do occur as circumstances warrant. Such sales result in a reclassification of any accumulated unrealized gain (loss) in AOCI to net income as a realized gain (loss).

(3) Primarily includes assets classified as loans and carried at amortized cost, own use properties, investment properties, equity method accounted investments, oil and gas investments, and leveraged leases. Refer to note 1(e) for further details regarding accounting policy.

(4) Fixed income invested assets above include debt securities, mortgages, private placements and approximately $246 (2019 – $179) of other invested assets, which primarily have contractual cash flows that qualify as Solely Payment of Principal and Interest ("SPPI"). Fixed income invested assets which do not have SPPI qualifying cash flows as at December 31, 2020 include debt securities, private placements and other invested assets with fair values of $94, $211 and $380, respectively (2019 – $98, $257 and $373). The change in the fair value of these invested assets during the year was $44 (2019 – $71).
(5) The methodologies used in determining fair values of invested assets are described in note 1(c) and note 3(g).
(6) Includes short-term securities with maturities of less than one year at acquisition amounting to $7,062 (2019 – $3,806), cash equivalents with maturities of less than 90 days at acquisition amounting to $13,331 (2019 – $11,136) and cash of $5,774 (2019 – $5,358).
(7) Debt securities include securities which were acquired with maturities of less than one year and less than 90 days of $1,971 and $129, respectively (2019 – $537 and $69).
(8) Includes $229 (2019 – $12) of public equities that are managed in conjunction with the Company's alternative long duration asset ("ALDA") strategy.
(9) Includes accumulated depreciation of $376 (2019 – $414).
(10) Includes investments in private equity of $7,954, infrastructure of $9,127, oil and gas of $2,296, timber and agriculture of $4,819 and various other invested assets of $1,976 (2019 – $6,396, $8,854, $3,245, $4,669 and $1,679, respectively). In 2019, a group of investments in hydro-electric power of $418 was sold.
(11) In 2019, the Company sold $1,112 of North American Private Equity investments to Manulife Private Equity Partners, L.P, a closed-end pooled fund of funds. The Company provides management services to the fund.
(12) Includes $3,371 (2019 – $3,371) of leveraged leases. Refer to note 1(e) regarding accounting policy.

(b) Equity method accounted invested assets

Other invested assets include investments in associates and joint ventures which are accounted for using the equity method of accounting as presented in the following table.

	2020		2019	
As at December 31,	Carrying value	% of total	Carrying value	% of total
Leveraged leases	**$ 3,371**	**40**	$ 3,371	43
Timber and agriculture	**694**	**8**	668	9
Real estate	**1,187**	**14**	1,031	13
Other	**3,222**	**38**	2,716	35
Total	**$ 8,474**	**100**	$ 7,786	100

The Company's share of profit and dividends from these investments for the year ended December 31, 2020 were $315 and $2, respectively (2019 – $369 and $2).

(c) Investment income

For the year ended December 31, 2020	FVTPL	AFS	Other[1]	Total
Cash and short-term securities				
Interest income	$ 24	$ 145	$ –	$ 169
Gains (losses)[2]	(24)	(112)	–	(136)
Debt securities				
Interest income	5,805	692	–	6,497
Gains (losses)[2]	10,739	2,785	–	13,524
Impairment loss, net	(113)	(6)	–	(119)
Public equities				
Dividend income	517	38	–	555
Gains (losses)[2]	2,020	21	–	2,041
Impairment loss, net	–	(54)	–	(54)
Mortgages				
Interest income	–	–	1,837	1,837
Gains (losses)[2]	–	–	86	86
Provision, net	–	–	(18)	(18)
Private placements				
Interest income	–	–	1,883	1,883
Gains (losses)[2]	–	–	(18)	(18)
Impairment loss, net	–	–	(88)	(88)
Policy loans	–	–	390	390
Loans to Bank clients				
Interest income	–	–	72	72
Provision, net	–	–	(2)	(2)
Real estate				
Rental income, net of depreciation[3]	–	–	468	468
Gains (losses)[2]	–	–	(18)	(18)
Derivatives				
Interest income, net	924	–	(31)	893
Gains (losses)[2]	6,501	–	28	6,529
Other invested assets				
Interest income	–	–	72	72
Oil and gas, timber, agriculture and other income	–	–	1,435	1,435
Gains (losses)[2]	(210)	1	32	(177)
Impairment loss, net	(9)	(16)	(396)	(421)
Total investment income	**$ 26,174**	**$ 3,494**	**$ 5,732**	**$ 35,400**
Investment income				
Interest income	$ 6,753	$ 837	$ 4,223	$ 11,813
Dividend, rental and other income	517	38	1,903	2,458
Impairments, provisions and recoveries, net	(123)	(76)	(504)	(703)
Other	241	2,685	(61)	2,865
	7,388	3,484	5,561	16,433
Realized and unrealized gains (losses) on assets supporting insurance and investment contract liabilities and on macro equity hedges				
Debt securities	10,747	1	–	10,748
Public equities	1,908	9	–	1,917
Mortgages	–	–	86	86
Private placements	–	–	(47)	(47)
Real estate	–	–	1	1
Other invested assets	(318)	–	103	(215)
Derivatives, including macro equity hedging program	6,449	–	28	6,477
	18,786	10	171	18,967
Total investment income	**$ 26,174**	**$ 3,494**	**$ 5,732**	**$ 35,400**

For the year ended December 31, 2019	FVTPL	AFS	Other(1)	Total
Cash and short-term securities				
Interest income	$ 32	$ 281	$ –	$ 313
Gains (losses)(2)	11	(29)	–	(18)
Debt securities				
Interest income	5,557	783	–	6,340
Gains (losses)(2)	11,525	472	–	11,997
Recovery (impairment loss), net	(9)	1	–	(8)
Public equities				
Dividend income	551	69	–	620
Gains (losses)(2)	3,079	109	–	3,188
Impairment loss, net	–	(24)	–	(24)
Mortgages				
Interest income	–	–	1,951	1,951
Gains (losses)(2)	–	–	26	26
Provision, net	–	–	31	31
Private placements				
Interest income	–	–	1,782	1,782
Gains (losses)(2)	–	–	(62)	(62)
Impairment loss, net	–	–	(35)	(35)
Policy loans	–	–	391	391
Loans to Bank clients				
Interest income	–	–	87	87
Provision, net	–	–	(1)	(1)
Real estate				
Rental income, net of depreciation(3)	–	–	505	505
Gains (losses)(2)	–	–	508	508
Derivatives				
Interest income, net	579	–	(24)	555
Gains (losses)(2)	2,653	–	(6)	2,647
Other invested assets				
Interest income	–	–	69	69
Oil and gas, timber, agriculture and other income	–	–	1,862	1,862
Gains (losses)(2)	742	(1)	35	776
Recovery, net	–	–	93	93
Total investment income	$ 24,720	$ 1,661	$ 7,212	$ 33,593
Investment income				
Interest income	$ 6,168	$ 1,064	$ 4,256	$ 11,488
Dividend, rental and other income	552	69	2,367	2,988
Impairments, provisions and recoveries, net	(9)	(23)	88	56
Other	265	539	57	861
	6,976	1,649	6,768	15,393
Realized and unrealized gains (losses) on assets supporting insurance and investment contract liabilities and on macro equity hedges				
Debt securities	11,521	7	–	11,528
Public equities	2,865	5	–	2,870
Mortgages	–	–	26	26
Private placements	–	–	(62)	(62)
Real estate	–	–	514	514
Other invested assets	776	–	(28)	748
Derivatives, including macro equity hedging program	2,582	–	(6)	2,576
	17,744	12	444	18,200
Total investment income	$ 24,720	$ 1,661	$ 7,212	$ 33,593

(1) Primarily includes investment income on loans carried at amortized cost, own use properties, investment properties, derivative and hedging instruments in cash flow hedging relationships, equity method accounted investments, oil and gas investments, and leveraged leases.
(2) Includes net realized and unrealized gains (losses) for financial instruments at FVTPL, real estate investment properties, and other invested assets measured at fair value. Also includes net realized gains (losses) for financial instruments at AFS and other invested assets carried at amortized cost.
(3) Rental income from investment properties is net of direct operating expenses.

(d) Investment expenses

The following table presents total investment expenses.

For the years ended December 31,	2020	2019
Related to invested assets	$ 649	$ 617
Related to segregated, mutual and other funds	1,138	1,131
Total investment expenses	**$ 1,787**	$ 1,748

(e) Investment properties

The following table presents the rental income and direct operating expenses of investment properties.

For the years ended December 31,	2020	2019
Rental income from investment properties	$ 874	$ 864
Direct operating expenses of rental investment properties	(491)	(464)
Total	**$ 383**	$ 400

(f) Mortgage securitization

The Company securitizes certain insured and uninsured fixed and variable rate residential mortgages and Home Equity Lines of Credit ("HELOC") through creation of mortgage-backed securities under the Canadian Mortgage Bond Program ("CMB"), and the HELOC securitization program.

Benefits received from the securitization include interest spread between the asset and associated liability. There are no expected credit losses on securitized mortgages under the Canada Mortgage and Housing Corporation ("CMHC") sponsored CMB and the Platinum Canadian Mortgage Trust ("PCMT") HELOC securitization programs as they are insured by CMHC and other third-party insurance programs against borrowers' default. Mortgages securitized in the Platinum Canadian Mortgage Trust II ("PCMT II") program are uninsured.

Cash flows received from the underlying securitized assets/mortgages are used to settle the related secured borrowing liability. For CMB transactions, receipts of principal are deposited into a trust account for settlement of the liability at time of maturity. These transferred assets and related cash flows cannot be transferred or used for other purposes. For the HELOC transactions, investors are entitled to periodic interest payments, and the remaining cash receipts of principal are allocated to the Company (the "Seller") during the revolving period of the deal and are accumulated for settlement during an accumulation period or repaid to the investor monthly during a reduction period, based on the terms of the note.

Securitized assets and secured borrowing liabilities

As at December 31, 2020	Securitized assets			
Securitization program	Securitized mortgages	Restricted cash and short-term securities	Total	Secured borrowing liabilities[2]
HELOC securitization[1]	**$ 2,356**	**$ –**	**$ 2,356**	**$ 2,250**
CMB securitization	**2,273**	**–**	**2,273**	**2,332**
Total	**$ 4,629**	**$ –**	**$ 4,629**	**$ 4,582**

As at December 31, 2019	Securitized assets			
Securitization program	Securitized mortgages	Restricted cash and short-term securities	Total	Secured borrowing liabilities[2]
HELOC securitization[1]	$ 2,285	$ 8	$ 2,293	$ 2,250
CMB securitization	1,620	–	1,620	1,632
Total	$ 3,905	$ 8	$ 3,913	$ 3,882

(1) Manulife Bank, a subsidiary, securitizes a portion of its HELOC receivables through Platinum Canadian Mortgage Trust ("PCMT"), and Platinum Canadian Mortgage Trust II ("PCMT II"). PCMT funds the purchase of the co-ownership interests from Manulife Bank by issuing term notes collateralized by an underlying pool of CMHC insured HELOCs to institutional investors. PCMT II funds the purchase of the co-ownership interests from Manulife Bank by issuing term notes collateralized by an underlying pool of uninsured HELOCs to institutional investors. The restricted cash balance for the HELOC securitization reflects a cash reserve fund established in relation to the transactions. The reserve will be drawn upon only in the event of insufficient cash flows from the underlying HELOCs to satisfy the secured borrowing liability.

(2) Secured borrowing liabilities primarily comprise of Series 2011-1 notes with a floating rate which are expected to mature on December 15, 2021, and the Series 2016-1 notes with a floating rate which are expected to mature on May 15, 2022. Manulife Bank also securitizes insured amortizing mortgages under the National Housing Act Mortgage-Backed Securities ("NHA MBS") program sponsored by CMHC. Manulife Bank participates in CMB programs by selling NHA MBS securities to Canada Housing Trust ("CHT"), as a source of fixed rate funding.

As at December 31, 2020, the fair value of securitized assets and associated liabilities were $4,679 and $4,661, respectively (2019 – $3,950 and $3,879).

(g) Fair value measurement

The following table presents the fair values of invested assets and segregated funds net assets measured at fair value categorized by the fair value hierarchy.

As at December 31, 2020	Total fair value	Level 1	Level 2	Level 3
Cash and short-term securities				
FVTPL	**$ 2,079**	**$ –**	**$ 2,079**	**$ –**
AFS	**18,314**	**–**	**18,314**	**–**
Other	**5,774**	**5,774**	**–**	**–**
Debt securities				
FVTPL				
Canadian government and agency	**20,667**	**–**	**20,667**	**–**
U.S. government and agency	**11,449**	**–**	**11,449**	**–**
Other government and agency	**19,732**	**–**	**19,732**	**–**
Corporate	**128,297**	**–**	**127,787**	**510**
Residential mortgage-backed securities	**9**	**–**	**9**	**–**
Commercial mortgage-backed securities	**1,172**	**–**	**1,172**	**–**
Other asset-backed securities	**1,735**	**–**	**1,690**	**45**
AFS				
Canadian government and agency	**4,548**	**–**	**4,548**	**–**
U.S. government and agency	**19,787**	**–**	**19,787**	**–**
Other government and agency	**4,613**	**–**	**4,613**	**–**
Corporate	**6,566**	**–**	**6,563**	**3**
Residential mortgage-backed securities	**1**	**–**	**1**	**–**
Commercial mortgage-backed securities	**93**	**–**	**93**	**–**
Other asset-backed securities	**55**	**–**	**55**	**–**
Public equities				
FVTPL	**22,071**	**22,071**	**–**	**–**
AFS	**1,651**	**1,651**	**–**	**–**
Real estate – investment property[1]	**10,982**	**–**	**–**	**10,982**
Other invested assets[2]	**19,149**	**100**	**–**	**19,049**
Segregated funds net assets[3]	**367,436**	**327,437**	**35,797**	**4,202**
Total	**$ 666,180**	**$ 357,033**	**$ 274,356**	**$ 34,791**

As at December 31, 2019	Total fair value	Level 1	Level 2	Level 3
Cash and short-term securities				
FVTPL	$ 1,859	$ –	$ 1,859	$ –
AFS	13,084	–	13,084	–
Other	5,357	5,357	–	–
Debt securities				
FVTPL				
Canadian government and agency	18,582	–	18,582	–
U.S. government and agency	11,031	–	11,031	–
Other government and agency	17,383	–	17,383	–
Corporate	116,044	–	115,411	633
Residential mortgage-backed securities	13	–	13	–
Commercial mortgage-backed securities	1,271	–	1,271	–
Other asset-backed securities	1,983	–	1,983	–
AFS				
Canadian government and agency	4,779	–	4,779	–
U.S. government and agency	17,221	–	17,221	–
Other government and agency	4,360	–	4,360	–
Corporate	5,285	–	5,270	15
Residential mortgage-backed securities	1	–	1	–
Commercial mortgage-backed securities	102	–	102	–
Other asset-backed securities	67	–	67	–
Public equities				
FVTPL	20,060	20,060	–	–
AFS	2,791	2,788	3	–
Real estate – investment property[1]	11,002	–	–	11,002
Other invested assets[2]	18,194	91	–	18,103
Segregated funds net assets[3]	343,108	303,567	35,029	4,512
Total	$ 613,577	$ 331,863	$ 247,449	$ 34,265

(1) For investment properties, the significant unobservable inputs are capitalization rates (ranging from 2.75% to 8.50% during the year and ranging from 2.75% to 8.75% during 2019) and terminal capitalization rates (ranging from 3.25% to 9.25% during the year and ranging from 3.80% to 9.25% during 2019). Holding other factors constant, a lower capitalization or terminal capitalization rate will tend to increase the fair value of an investment property. Changes in fair value based on variations in unobservable inputs generally cannot be extrapolated because the relationship between the directional changes of each input is not usually linear.

(2) Other invested assets measured at fair value are held primarily in infrastructure and timber sectors. The significant inputs used in the valuation of the Company's infrastructure investments are primarily future distributable cash flows, terminal values and discount rates. Holding other factors constant, an increase to future distributable cash flows or terminal values would tend to increase the fair value of an infrastructure investment, while an increase in the discount rate would have the opposite effect. Discount rates during the year ranged from 7.00% to 15.6% (2019 – ranged from 7.00% to 16.5%). Disclosure of distributable cash flow and terminal value ranges are not meaningful given the disparity in estimates by project. The significant inputs used in the valuation of the Company's investments in timberland are timber prices and discount rates. Holding other factors constant, an increase to timber prices would tend to increase the fair value of a timberland investment, while an increase in the discount rates would have the opposite effect. Discount rates during the year ranged from 5.0% to 7.0% (2019 – ranged from 5.0% to 7.0%). A range of prices for timber is not meaningful as the market price depends on factors such as property location and proximity to markets and export yards.

(3) Segregated funds net assets are measured at fair value. The Company's Level 3 segregated funds assets are predominantly in investment properties and timberland properties valued as described above.

The following table presents fair value of invested assets not measured at fair value by the fair value hierarchy.

As at December 31, 2020	Carrying value	Fair value	Level 1	Level 2	Level 3
Mortgages(1)	**$ 50,207**	**$ 54,230**	**$ –**	**$ –**	**$ 54,230**
Private placements(2)	**40,756**	**47,890**	**–**	**41,398**	**6,492**
Policy loans(3)	**6,398**	**6,398**	**–**	**6,398**	**–**
Loans to Bank clients(4)	**1,976**	**1,982**	**–**	**1,982**	**–**
Real estate–own use property(5)	**1,850**	**3,017**	**–**	**–**	**3,017**
Other invested assets(6)	**11,046**	**11,903**	**128**	**–**	**11,775**
Total invested assets disclosed at fair value	**$ 112,233**	**$ 125,420**	**$ 128**	**$ 49,778**	**$ 75,514**

As at December 31, 2019	Carrying value	Fair value	Level 1	Level 2	Level 3
Mortgages(1)	$ 49,376	$ 51,450	$ –	$ –	$ 51,450
Private placements(2)	37,979	41,743	–	36,234	5,509
Policy loans(3)	6,471	6,471	–	6,471	–
Loans to Bank clients(4)	1,740	1,742	–	1,742	–
Real estate–own use property(5)	1,926	3,275	–	–	3,275
Other invested assets(6)	10,566	11,346	165	–	11,181
Total invested assets disclosed at fair value	$ 108,058	$ 116,027	$ 165	$ 44,447	$ 71,415

(1) Fair value of commercial mortgages is determined through an internal valuation methodology using both observable and unobservable inputs. Unobservable inputs include credit assumptions and liquidity spread adjustments. Fair value of fixed-rate residential mortgages is determined using the discounted cash flow method. Inputs used for valuation are primarily comprised of prevailing interest rates and prepayment rates, if applicable. Fair value of variable-rate residential mortgages is assumed to be their carrying value.

(2) Fair value of private placements is determined through an internal valuation methodology using both observable and unobservable inputs. Unobservable inputs include credit assumptions and liquidity spread adjustments. Private placements are classified within Level 2 unless the liquidity adjustment constitutes a significant price impact, in which case the securities are classified as Level 3.

(3) Fair value of policy loans is equal to their unpaid principal balances.

(4) Fair value of fixed-rate loans to Bank clients is determined using the discounted cash flow method. Inputs used for valuation are primarily comprised of current interest rates. Fair value of variable-rate loans is assumed to be their carrying value.

(5) Fair value of own use real estate and the fair value hierarchy are determined in accordance with the methodologies described for real estate – investment property in note 1.

(6) Primarily include leveraged leases, oil and gas properties and equity method accounted other invested assets. Fair value of leveraged leases is disclosed at their carrying values as fair value is not routinely calculated on these investments. Fair value for oil and gas properties is determined using external appraisals based on discounted cash flow methodology. Inputs used in valuation are primarily comprised of forecasted price curves, planned production, as well as capital expenditures, and operating costs. Fair value of equity method accounted other invested assets is determined using a variety of valuation techniques including discounted cash flows and market comparable approaches. Inputs vary based on the specific investment.

As a result of COVID-19 and the recent economic downturn, significant measurement uncertainty exists in determining the fair value of real estate and other invested assets. For the year ended December 31, 2020, the Company has recognized a reduction in the carrying value of oil and gas investments of $837 based on reasonable estimates and assumptions reflecting both the nature of the assets and currently available information which was subject to significant judgment. For the methodologies used in determining carrying values of the invested assets, refer to note 1.

Transfers between Level 1 and Level 2

The Company records transfers of assets and liabilities between Level 1 and Level 2 at their fair values as at the end of each reporting period. Assets are transferred out of Level 1 when they are no longer transacted with sufficient frequency and volume in an active market. Conversely, assets are transferred from Level 2 to Level 1 when transaction volume and frequency are indicative of an active market. The Company had $nil of assets transferred between Level 1 and Level 2 during the years ended December 31, 2020 and 2019.

For segregated funds net assets, the Company had $nil transfers from Level 1 to Level 2 for the year ended December 31, 2020 (2019 – $nil). The Company had $15 transfers from Level 2 to Level 1 for the year ended December 31, 2020 (2019 – $nil).

Invested assets and segregated funds net assets measured at fair value using significant unobservable inputs (Level 3)

The Company classifies fair values of invested assets and segregated funds net assets as Level 3 if there are no observable markets for these assets or, in the absence of active markets, most of the inputs used to determine fair value are based on the Company's own assumptions about market participant assumptions. The Company prioritizes the use of market-based inputs over entity-based assumptions in determining Level 3 fair values. The gains and losses in the table below includes the changes in fair value due to both observable and unobservable factors.

The following table presents a roll forward for invested assets, derivatives and segregated funds net assets measured at fair value using significant unobservable inputs (Level 3) for the years ended December 31, 2020 and 2019.

For the year ended December 31, 2020	Balance, January 1, 2020	Total gains (losses) included in net income[1]	Total gains (losses) included in AOCI[2]	Purchases	Sales	Settlements	Transfer in[3],[4]	Transfer out[3],[4]	Currency movement	**Balance, December 31, 2020**	Change in unrealized gains (losses) on assets still held
Debt securities											
FVTPL											
Corporate	$ 633	$ 4	$ –	$ 54	$ (272)	$ (1)	$ 151	$ (50)	$ (9)	$ 510	$ 105
Other securitized assets	–	(8)	–	–	–	(1)	55	–	(1)	45	–
AFS											
Corporate	15	(6)	2	–	–	–	5	(13)	–	3	–
Real estate – investment property	11,002	(255)	–	572	(318)	–	47	–	(66)	10,982	(300)
Other invested assets	18,103	(401)	(49)	3,162	(1,076)	(638)	92	(3)	(141)	19,049	(902)
Total invested assets	29,753	(666)	(47)	3,788	(1,666)	(640)	350	(66)	(217)	30,589	(1,097)
Derivatives	1,456	2,953	(18)	12	–	(1,165)	–	342	(137)	3,443	2,033
Segregated funds net assets	4,512	(6)	–	(84)	(149)	(26)	2	(3)	(44)	4,202	45
Total	**$ 35,721**	**$ 2,281**	**$ (65)**	**$ 3,716**	**$ (1,815)**	**$ (1,831)**	**$ 352**	**$ 273**	**$ (398)**	**$ 38,234**	**$ 981**

For the year ended December 31, 2019	Balance, January 1, 2019	Total gains (losses) included in net income[1]	Total gains (losses) included in AOCI[2]	Purchases	Sales	Settlements	Transfer in[3],[4]	Transfer out[3],[4]	Currency movement	Balance, December 31, 2019	Change in unrealized gains (losses) on assets still held
Debt securities											
FVTPL											
Other government & agency	$ 180	$ 1	$ –	$ 16	$ (18)	$ –	$ –	$ (178)	$ (1)	$ –	$ –
Corporate	784	35	–	43	(88)	(18)	514	(604)	(33)	633	47
Residential mortgage-backed securities	7	–	–	–	(1)	–	–	(6)	–	–	–
AFS											
Other government & agency	37	1	–	5	(12)	–	–	(31)	–	–	–
Corporate	122	1	–	13	(21)	(4)	–	(94)	(2)	15	–
Commercial mortgage-backed securities	–	–	–	37	–	–	–	(37)	–	–	–
Public equities											
FVTPL	3	1,739	–	–	(1,679)	–	–	–	(63)	–	1,510
Real estate – investment property	10,761	506	–	440	(457)	–	15	–	(263)	11,002	468
Other invested assets	17,562	(1,028)	2	3,401	(144)	(1,031)	2	–	(661)	18,103	(923)
Total invested assets	29,456	1,255	2	3,955	(2,420)	(1,053)	531	(950)	(1,023)	29,753	1,102
Derivatives	106	1,884	44	42	–	(685)	135	(34)	(36)	1,456	1,423
Segregated funds net assets	4,447	148	–	193	(140)	(30)	–	–	(106)	4,512	111
Total	$ 34,009	$ 3,287	$ 46	$ 4,190	$ (2,560)	$ (1,768)	$ 666	$ (984)	$ (1,165)	$ 35,721	$ 2,636

(1) These amounts are included in net investment income on the Consolidated Statements of Income except for the amount related to segregated funds net assets, where the amount is recorded in changes in segregated funds net assets, refer to note 22.
(2) These amounts are included in AOCI on the Consolidated Statements of Financial Position.
(3) The Company uses fair values of the assets at the beginning of the year for assets transferred into and out of Level 3 except for derivatives, refer to footnote 4 below.
(4) For derivatives transfer into or out of Level 3, the Company uses fair value at the end of the year and at the beginning of the year, respectively.

Transfers into Level 3 primarily result from securities that were impaired during the year or securities where a lack of observable market data (versus the previous period) resulted in reclassifying assets into Level 3. Transfers from Level 3 primarily result from observable market data now being available for the entire term structure of the debt security.

Note 4 Derivative and Hedging Instruments

Derivatives are financial contracts, the value of which is derived from underlying interest rates, foreign exchange rates, other financial instruments, commodity prices or indices. The Company uses derivatives including swaps, forward and futures agreements, and options to manage current and anticipated exposures to changes in interest rates, foreign exchange rates, commodity prices and equity market prices, and to replicate permissible investments.

Swaps are over-the-counter ("OTC") contractual agreements between the Company and a third party to exchange a series of cash flows based upon rates applied to a notional amount. For interest rate swaps, counterparties generally exchange fixed or floating interest rate payments based on a notional value in a single currency. Cross currency swaps involve the exchange of principal amounts between parties as well as the exchange of interest payments in one currency for the receipt of interest payments in another currency. Total return swaps are contracts that involve the exchange of payments based on changes in the values of a reference asset, including any returns such as interest earned on these assets, in return for amounts based on reference rates specified in the contract.

Forward and futures agreements are contractual obligations to buy or sell a financial instrument, foreign currency or other underlying commodity on a predetermined future date at a specified price. Forward contracts are OTC contracts negotiated between counterparties, whereas futures agreements are contracts with standard amounts and settlement dates that are traded on regulated exchanges.

Options are contractual agreements whereby the holder has the right, but not the obligation, to buy (call option) or sell (put option) a security, exchange rate, interest rate, or other financial instrument at a predetermined price/rate within a specified time.

See variable annuity dynamic hedging strategy in the "Risk Management" section of the Company's 2020 MD&A for an explanation of the Company's dynamic hedging strategy for its variable annuity product guarantees.

(a) Fair value of derivatives

The pricing models used to value OTC derivatives are based on market standard valuation methodologies and the inputs to these models are consistent with what a market participant would use when pricing the instruments. Derivative valuations can be affected by changes in interest rates, currency exchange rates, financial indices, credit spreads, default risk (including the counterparties to the contract), and market volatility. The significant inputs to the pricing models for most OTC derivatives are inputs that are observable or can be corroborated by observable market data and are classified as Level 2. Inputs that are observable generally include interest rates, foreign currency exchange rates and interest rate curves. However, certain OTC derivatives may rely on inputs that are significant to the fair value that are not observable in the market or cannot be derived principally from, or corroborated by, observable market data and these derivatives are classified as Level 3. Inputs that are unobservable generally include broker quoted prices, volatilities and inputs that are outside of the observable portion of the interest rate curve or other relevant market measures. These unobservable inputs may involve significant management judgment or estimation. Even though unobservable, these inputs are based on assumptions deemed appropriate given the circumstances and consistent with what market participants would use when pricing such instruments. The Company's use of unobservable inputs is limited and the impact on derivative fair values does not represent a material amount as evidenced by the limited amount of Level 3 derivatives. The credit risk of both the counterparty and the Company are considered in determining the fair value for all OTC derivatives after considering the effects of netting agreements and collateral arrangements.

The following table presents gross notional amount and fair value of derivative instruments by the underlying risk exposure.

As at December 31,		2020			2019		
		Notional	Fair value		Notional	Fair value	
Type of hedge	Instrument type	amount	Assets	Liabilities	amount	Assets	Liabilities
Qualifying hedge accounting relationships							
Fair value hedges	Interest rate swaps	**$ 82**	**$ 1**	**$ –**	$ 350	$ –	$ 5
	Foreign currency swaps	**57**	**–**	**4**	86	3	1
Cash flow hedges	Foreign currency swaps	**1,756**	**24**	**468**	1,790	39	407
	Equity contracts	**127**	**6**	**–**	132	16	–
Net investment hedges	Forward contracts	**628**	**1**	**10**	2,822	7	22
Total derivatives in qualifying hedge accounting relationships		**2,650**	**32**	**482**	5,180	65	435
Derivatives not designated in qualifying hedge accounting relationships							
	Interest rate swaps	**287,182**	**21,332**	**12,190**	283,172	15,159	8,140
	Interest rate futures	**16,750**	**–**	**–**	13,069	–	–
	Interest rate options	**11,622**	**663**	**–**	12,248	423	–
	Foreign currency swaps	**31,491**	**838**	**1,659**	26,329	606	1,399
	Currency rate futures	**3,467**	**–**	**–**	3,387	–	–
	Forward contracts	**38,853**	**3,833**	**565**	33,432	2,337	273
	Equity contracts	**15,738**	**1,092**	**66**	14,582	853	37
	Credit default swaps	**241**	**3**	**–**	502	6	–
	Equity futures	**10,984**	**–**	**–**	10,576	–	–
Total derivatives not designated in qualifying hedge accounting relationships		**416,328**	**27,761**	**14,480**	397,297	19,384	9,849
Total derivatives		**$ 418,978**	**$ 27,793**	**$ 14,962**	$ 402,477	$ 19,449	$ 10,284

The following table presents fair values of derivative instruments by the remaining term to maturity. The fair values disclosed below do not incorporate the impact of master netting agreements. Refer to note 8.

	Remaining term to maturity				
As at December 31, 2020	Less than 1 year	1 to 3 years	3 to 5 years	Over 5 years	Total
Derivative assets	**$ 1,656**	**$ 3,524**	**$ 1,228**	**$ 21,385**	**$ 27,793**
Derivative liabilities	**386**	**250**	**555**	**13,771**	**14,962**

	Remaining term to maturity				
As at December 31, 2019	Less than 1 year	1 to 3 years	3 to 5 years	Over 5 years	Total
Derivative assets	$ 1,248	$ 1,659	$ 1,309	$ 15,233	$ 19,449
Derivative liabilities	332	145	218	9,589	10,284

The following table presents gross notional amount by the remaining term to maturity, total fair value (including accrued interest), credit risk equivalent and risk-weighted amount by contract type.

As at December 31, 2020	Remaining term to maturity (notional amounts)				Fair value				
	Under 1 year	1 to 5 years	Over 5 years	Total	Positive	Negative	Net	Credit risk equivalent[1]	Risk-weighted amount[2]
Interest rate contracts									
OTC swap contracts	**$ 7,567**	**$ 20,852**	**$ 110,166**	**$ 138,585**	**$ 21,803**	**$ (12,816)**	**$ 8,987**	**$ 8,773**	**$ 1,181**
Cleared swap contracts	**2,314**	**18,784**	**127,581**	**148,679**	**432**	**(424)**	**8**	**–**	**–**
Forward contracts	**11,092**	**18,355**	**1,259**	**30,706**	**3,739**	**(462)**	**3,277**	**603**	**80**
Futures	**16,750**	**–**	**–**	**16,750**	**–**	**–**	**–**	**–**	**–**
Options purchased	**1,572**	**3,922**	**6,128**	**11,622**	**664**	**–**	**664**	**665**	**93**
Subtotal	**39,295**	**61,913**	**245,134**	**346,342**	**26,638**	**(13,702)**	**12,936**	**10,041**	**1,354**
Foreign exchange									
Swap contracts	**1,670**	**8,490**	**23,144**	**33,304**	**855**	**(2,195)**	**(1,340)**	**2,979**	**327**
Forward contracts	**8,741**	**34**	**–**	**8,775**	**95**	**(113)**	**(18)**	**160**	**18**
Futures	**3,467**	**–**	**–**	**3,467**	**–**	**–**	**–**	**–**	**–**
Credit derivatives	**192**	**49**	**–**	**241**	**3**	**–**	**3**	**–**	**–**
Equity contracts									
Swap contracts	**1,227**	**289**	**–**	**1,516**	**43**	**(51)**	**(8)**	**384**	**46**
Futures	**10,984**	**–**	**–**	**10,984**	**–**	**–**	**–**	**–**	**–**
Options purchased	**8,168**	**6,181**	**–**	**14,349**	**1,051**	**(15)**	**1,036**	**5,116**	**664**
Subtotal including accrued interest	**73,744**	**76,956**	**268,278**	**418,978**	**28,685**	**(16,076)**	**12,609**	**18,680**	**2,409**
Less accrued interest	**–**	**–**	**–**	**–**	**892**	**(1,114)**	**(222)**	**–**	**–**
Total	**$ 73,744**	**$ 76,956**	**$ 268,278**	**$ 418,978**	**$ 27,793**	**$ (14,962)**	**$ 12,831**	**$ 18,680**	**$ 2,409**

As at December 31, 2019	Remaining term to maturity (notional amounts)				Fair value				
	Under 1 year	1 to 5 years	Over 5 years	Total	Positive	Negative	Net	Credit risk equivalent[1]	Risk-weighted amount[2]
Interest rate contracts									
OTC swap contracts	$ 5,105	$ 22,288	$ 112,863	$ 140,256	$ 15,627	$ (8,910)	$ 6,717	$ 6,891	$ 957
Cleared swap contracts	3,932	11,499	127,835	143,266	238	(240)	(2)	–	–
Forward contracts	11,709	15,089	1,283	28,081	2,312	(253)	2,059	398	53
Futures	13,069	–	–	13,069	–	–	–	–	–
Options purchased	1,266	4,454	6,528	12,248	423	–	423	560	77
Subtotal	35,081	53,330	248,509	336,920	18,600	(9,403)	9,197	7,849	1,087
Foreign exchange									
Swap contracts	998	7,519	19,688	28,205	642	(1,864)	(1,222)	2,515	279
Forward contracts	8,173	–	–	8,173	32	(42)	(10)	138	16
Futures	3,387	–	–	3,387	–	–	–	–	–
Credit derivatives	275	227	–	502	6	–	6	–	–
Equity contracts									
Swap contracts	1,233	164	–	1,397	43	(16)	27	236	29
Futures	10,576	–	–	10,576	–	–	–	–	–
Options purchased	6,604	6,633	80	13,317	821	(20)	801	3,418	448
Subtotal including accrued interest	66,327	67,873	268,277	402,477	20,144	(11,345)	8,799	14,156	1,859
Less accrued interest	–	–	–	–	695	(1,061)	(366)	–	–
Total	$ 66,327	$ 67,873	$ 268,277	$ 402,477	$ 19,449	$ (10,284)	$ 9,165	$ 14,156	$ 1,859

(1) Credit risk equivalent is the sum of replacement cost and the potential future credit exposure. Replacement cost represents the current cost of replacing all contracts with a positive fair value. The amounts take into consideration legal contracts that permit offsetting of positions. The potential future credit exposure is calculated based on a formula prescribed by OSFI.

(2) Risk-weighted amount represents the credit risk equivalent, weighted according to the creditworthiness of the counterparty, as prescribed by OSFI.

The total notional amount of $419 billion (2019 – $402 billion) includes $183 billion (2019 – $128 billion) related to derivatives utilized in the Company's variable annuity guarantee dynamic hedging and macro equity risk hedging programs. Due to the Company's variable annuity hedging practices, a large number of trades are in offsetting positions, resulting in materially lower net fair value exposure to the Company than what the gross notional amount would suggest.

Fair value and the fair value hierarchy of derivative instruments

As at December 31, 2020	Fair value	Level 1	Level 2	Level 3
Derivative assets				
Interest rate contracts	**$ 25,735**	**$ –**	**$ 21,902**	**$ 3,833**
Foreign exchange contracts	**957**	**–**	**957**	**–**
Equity contracts	**1,098**	**–**	**1,051**	**47**
Credit default swaps	**3**	**–**	**3**	**–**
Total derivative assets	**$ 27,793**	**$ –**	**$ 23,913**	**$ 3,880**
Derivative liabilities				
Interest rate contracts	**$ 12,652**	**$ –**	**$ 12,271**	**$ 381**
Foreign exchange contracts	**2,244**	**–**	**2,239**	**5**
Equity contracts	**66**	**–**	**15**	**51**
Total derivative liabilities	**$ 14,962**	**$ –**	**$ 14,525**	**$ 437**

As at December 31, 2019	Fair value	Level 1	Level 2	Level 3
Derivative assets				
Interest rate contracts	$ 17,894	$ –	$ 15,801	$ 2,093
Foreign exchange contracts	680	–	680	–
Equity contracts	869	–	821	48
Credit default swaps	6	–	6	–
Total derivative assets	$ 19,449	$ –	$ 17,308	$ 2,141
Derivative liabilities				
Interest rate contracts	$ 8,397	$ –	$ 7,730	$ 667
Foreign exchange contracts	1,850	–	1,849	1
Equity contracts	37	–	20	17
Total derivative liabilities	$ 10,284	$ –	$ 9,599	$ 685

Level 3 roll forward information for net derivative contracts measured using significant unobservable inputs is disclosed in note 3(g).

(b) Hedging relationships

The Company uses derivatives for economic hedging purposes. In certain circumstances, these hedges also meet the requirements of hedge accounting. Risk management strategies eligible for hedge accounting are designated as fair value hedges, cash flow hedges or net investment hedges, as described below.

Fair value hedges

The Company uses interest rate swaps to manage its exposure to changes in the fair value of fixed rate financial instruments due to changes in interest rates. The Company also uses cross currency swaps to manage its exposure to foreign exchange rate fluctuations, interest rate fluctuations, or both.

The Company recognizes gains and losses on derivatives and the related hedged items in fair value hedges in investment income. These investment gains (losses) are shown in the following table.

For the year ended December 31, 2020	Hedged items in qualifying fair value hedging relationships	Gains (losses) recognized on derivatives	Gains (losses) recognized for hedged items	Ineffectiveness recognized in investment income
Interest rate swaps	Fixed rate liabilities	**$ 4**	**$ (2)**	**$ 2**
Foreign currency swaps	Fixed rate assets	**(2)**	**3**	**1**
Total		**$ 2**	**$ 1**	**$ 3**

For the year ended December 31, 2019	Hedged items in qualifying fair value hedging relationships	Gains (losses) recognized on derivatives	Gains (losses) recognized for hedged items	Ineffectiveness recognized in investment income
Interest rate swaps	Fixed rate liabilities	$ 8	$ (6)	$ 2
Foreign currency swaps	Fixed rate assets	(1)	2	1
Total		$ 7	$ (4)	$ 3

Cash flow hedges

The Company uses interest rate swaps to hedge the variability in cash flows from variable rate financial instruments and forecasted transactions. The Company also uses cross currency swaps and foreign currency forward contracts to hedge the variability from foreign currency financial instruments and foreign currency expenses. Total return swaps are used to hedge the variability in cash flows associated with certain stock-based compensation awards. Inflation swaps are used to reduce inflation risk generated from inflation-indexed liabilities.

The effects of derivatives in cash flow hedging relationships on the Consolidated Statements of Income and the Consolidated Statements of Comprehensive Income are shown in the following table.

For the year ended December 31, 2020	Hedged items in qualifying cash flow hedging relationships	Gains (losses) deferred in AOCI on derivatives	Gains (losses) reclassified from AOCI into investment income	Ineffectiveness recognized in investment income
Foreign currency swaps	Fixed rate assets	**$ 1**	**$ –**	**$ –**
	Floating rate liabilities	**(64)**	**14**	**–**
	Fixed rate liabilities	**(14)**	**(2)**	**–**
Equity contracts	Stock-based compensation	**(2)**	**16**	**–**
Total		**$ (79)**	**$ 28**	**$ –**

For the year ended December 31, 2019	Hedged items in qualifying cash flow hedging relationships	Gains (losses) deferred in AOCI on derivatives	Gains (losses) reclassified from AOCI into investment income	Ineffectiveness recognized in investment income
Foreign currency swaps	Fixed rate assets	$ (2)	$ 1	$ –
	Floating rate liabilities	(40)	37	–
	Fixed rate liabilities	(41)	(35)	–
Forward contracts	Forecasted expenses	–	(9)	–
Equity contracts	Stock-based compensation	35	(9)	–
Total		$ (48)	$ (15)	$ –

The Company anticipates that net losses of approximately $11 will be reclassified from AOCI to net income within the next 12 months. The maximum time frame for which variable cash flows are hedged is 16 years.

Hedges of net investments in foreign operations

The Company primarily uses forward currency contracts, cross currency swaps and non-functional currency denominated debt to manage its foreign currency exposures to net investments in foreign operations.

The effects of net investment hedging relationships on the Consolidated Statements of Income and the Consolidated Statements of Other Comprehensive Income are shown in the following table.

For the year ended December 31, 2020	Gains (losses) deferred in AOCI	Gains (losses) reclassified from AOCI into investment income	Ineffectiveness recognized in investment income
Non-functional currency denominated debt	**$ 161**	**$ –**	**$ –**
Forward contracts	**(53)**	**–**	**–**
Total	**$ 108**	**$ –**	**$ –**

For the year ended December 31, 2019	Gains (losses) deferred in AOCI	Gains (losses) reclassified from AOCI into investment income	Ineffectiveness recognized in investment income
Non-functional currency denominated debt	$ 279	$ –	$ –
Forward contracts	80	–	–
Total	$ 359	$ –	$ –

(c) Derivatives not designated in qualifying hedge accounting relationships

Derivatives used in portfolios supporting insurance contract liabilities are generally not designated in qualifying hedge accounting relationships because the change in the value of the insurance contract liabilities economically hedged by these derivatives is recorded through net income. Since changes in fair value of these derivatives and related hedged risks are recognized in investment income as they occur, they generally offset the change in hedged risk to the extent the hedges are economically effective. Interest rate and cross currency swaps are used in the portfolios supporting insurance contract liabilities to manage duration and currency risks.

Investment income on derivatives not designated in qualifying hedge accounting relationships

For the years ended December 31,	2020	2019
Interest rate swaps	**$ 2,423**	$ 1,483
Interest rate futures	**894**	571
Interest rate options	**291**	96
Foreign currency swaps	**(55)**	(242)
Currency rate futures	**(47)**	88
Forward contracts	**3,785**	2,815
Equity futures	**(1,111)**	(2,436)
Equity contracts	**322**	277
Credit default swaps	**(4)**	(3)
Total	**$ 6,498**	$ 2,649

(d) Embedded derivatives

Certain insurance contracts contain features that are classified as embedded derivatives and are measured separately at FVTPL, including reinsurance contracts related to guaranteed minimum income benefits and contracts containing certain credit and interest rate features.

Certain reinsurance contracts related to guaranteed minimum income benefits contain embedded derivatives requiring separate measurement at FVTPL as the financial component contained in the reinsurance contracts does not contain significant insurance risk. As at December 31, 2020, reinsurance ceded guaranteed minimum income benefits had a fair value of $1,007 (2019 – $981) and reinsurance assumed guaranteed minimum income benefits had a fair value of $112 (2019 – $109). Claims recovered under reinsurance ceded contracts offset claims expenses and claims paid on the reinsurance assumed are reported as contract benefits.

The Company's credit and interest rate embedded derivatives promise to pay the returns on a portfolio of assets to the contract holder. These embedded derivatives contain a credit and interest rate risk that is a financial risk embedded in the underlying insurance contract. As at December 31, 2020, these embedded derivatives had a fair value of $(229) (2019 – $(137)).

Other financial instruments classified as embedded derivatives but exempt from separate measurement at fair value include variable universal life and variable life products' minimum guaranteed credited rates, no lapse guarantees, guaranteed annuitization options, CPI indexing of benefits, and segregated fund minimum guarantees other than reinsurance ceded/assumed guaranteed minimum income benefits. These embedded derivatives are measured and reported within insurance contract liabilities and are exempt from separate fair value measurement as they contain insurance risk and/or are closely related to the insurance host contract.

Note 5 Goodwill and Intangible Assets

(a) Change in the carrying value of goodwill and intangible assets

The following table presents the change in carrying value of goodwill and intangible assets.

As at December 31, 2020	Balance, January 1	Net additions/ (disposals)	Amortization expense	Effect of changes in foreign exchange rates	Balance, December 31
Goodwill	**$ 5,743**	**$ (5)**	**$ n/a**	**$ (24)**	**$ 5,714**
Indefinite life intangible assets					
Brand	**779**	**–**	**n/a**	**(15)**	**764**
Fund management contracts and other[1]	**805**	**(2)**	**n/a**	**(7)**	**796**
	1,584	**(2)**	**n/a**	**(22)**	**1,560**
Finite life intangible assets[2]					
Distribution networks	**801**	**59**	**42**	**(12)**	**806**
Customer relationships	**795**	**–**	**54**	**(3)**	**738**
Software	**991**	**262**	**189**	**(5)**	**1,059**
Other	**61**	**(9)**	**4**	**4**	**52**
	2,648	**312**	**289**	**(16)**	**2,655**
Total intangible assets	**4,232**	**310**	**289**	**(38)**	**4,215**
Total goodwill and intangible assets	**$ 9,975**	**$ 305**	**$ 289**	**$ (62)**	**$ 9,929**

As at December 31, 2019	Balance, January 1	Net additions/ (disposals)	Amortization expense	Effect of changes in foreign exchange rates	Balance, December 31
Goodwill	$ 5,864	$ (6)	$ n/a	$ (115)	$ 5,743
Indefinite life intangible assets					
Brand	819	–	n/a	(40)	779
Fund management contracts and other[1]	798	32	n/a	(25)	805
	1,617	32	n/a	(65)	1,584
Finite life intangible assets[2]					
Distribution networks	868	6	44	(29)	801
Customer relationships	860	(2)	54	(9)	795
Software	821	357	168	(19)	991
Other	67	–	5	(1)	61
	2,616	361	271	(58)	2,648
Total intangible assets	4,233	393	271	(123)	4,232
Total goodwill and intangible assets	$ 10,097	$ 387	$ 271	$ (238)	$ 9,975

[1] Fund management contracts were mostly allocated to Canada WAM and U.S. WAM CGUs with the carrying values of $273 (2019 – $273) and $373 (2019 – $380), respectively.

[2] Gross carrying amount of finite life intangible assets was $1,332 for distribution networks, $1,130 for customer relationships, $2,310 for software and $123 for other (2019 – $1,292, $1,133, $2,239 and $130), respectively.

(b) Goodwill impairment testing

The Company completed its annual goodwill impairment testing in the fourth quarter of 2020 by determining the recoverable amounts of its businesses using valuation techniques discussed below (refer to notes 1(f) and 5(c)). The review indicated that there was no impairment of goodwill in 2020 (2019 – $nil).

The following tables present the carrying value of goodwill by CGU or group of CGUs.

As at December 31, 2020 CGU or group of CGUs	Balance, January 1,	Net additions/ (disposals)	Effect of changes in foreign exchange rates	Balance, December 31,
Asia				
Asia Insurance (excluding Japan)	**$ 159**	**$ –**	**$ –**	**$ 159**
Japan Insurance	**420**	**–**	**13**	**433**
Canada Insurance	**1,957**	**–**	**(2)**	**1,955**
U.S. Insurance	**349**	**(5)**	**(6)**	**338**
Global Wealth and Asset Management				
Asia WAM	**187**	**–**	**(2)**	**185**
Canada WAM	**1,436**	**–**	**–**	**1,436**
U.S. WAM	**1,235**	**–**	**(27)**	**1,208**
Total	**$ 5,743**	**$ (5)**	**$ (24)**	**$ 5,714**

As at December 31, 2019 CGU or group of CGUs	Balance, January 1,	Net additions/ (disposals)	Effect of changes in foreign exchange rates	Balance, December 31,
Asia				
Asia Insurance (excluding Japan)	$ 165	$ –	$ (6)	$ 159
Japan Insurance	435	–	(15)	420
Canada Insurance	1,962	–	(5)	1,957
U.S. Insurance	367	–	(18)	349
Global Wealth and Asset Management				
Asia WAM	196	–	(9)	187
Canada WAM	1,436	–	–	1,436
U.S. WAM	1,303	(6)	(62)	1,235
Total	$ 5,864	$ (6)	$ (115)	$ 5,743

The valuation techniques, significant assumptions and sensitivities, where applicable, applied in the goodwill impairment testing are described below.

(c) Valuation techniques

When determining if a CGU is impaired, the Company compares its recoverable amount to the allocated capital for that unit, which is aligned with the Company's internal reporting practices. The recoverable amounts were based on fair value less costs to sell ("FVLCS") for Asia Insurance (excluding Japan) and Asia WAM. For other CGUs, value-in-use ("VIU") was used.

Under the FVLCS approach, the Company determines the fair value of the CGU or group of CGUs using an earnings-based approach which incorporates forecasted earnings, excluding interest and equity market impacts and normalized new business expenses multiplied by an earnings-multiple derived from the observable price-to-earnings multiples of comparable financial institutions. The price-to-earnings multiple used by the Company for testing was 10.7 (2019 – 10.3). These FVLCS valuations are categorized as Level 3 of the fair value hierarchy (2019 – Level 3).

Under the VIU approach, used for CGUs with insurance business, an embedded appraisal value is determined from a projection of future distributable earnings derived from both the in-force business and new business expected to be sold in the future, and therefore, reflects the economic value for each CGU's or group of CGUs' profit potential under a set of assumptions. This approach requires assumptions including sales and revenue growth rates, capital requirements, interest rates, equity returns, mortality, morbidity, policyholder behaviour, tax rates and discount rates. For non-insurance CGUs, the VIU is based on discounted cash flow analysis which incorporates relevant aspects of the embedded appraisal value approach.

(d) Significant assumptions

To calculate embedded appraisal value, the Company discounted projected earnings from in-force contracts and valued 20 years of new business growing at expected plan levels, consistent with the periods used for forecasting long-term businesses such as insurance. In arriving at its projections, the Company considered past experience, economic trends such as interest rates, equity returns and product mix as well as industry and market trends. Where growth rate assumptions for new business cash flows were used in the embedded appraisal value calculations, they ranged from zero per cent to 10 per cent (2019 – zero per cent to 20 per cent).

Interest rate assumptions are based on prevailing market rates at the valuation date.

Tax rates applied to the projections include the impact of internal reinsurance treaties and amounted to 28.0 per cent, 26.5 per cent and 21.0 per cent (2019 – 28.0 per cent, 26.5 per cent and 21.0 per cent) for the Japan, Canada and U.S. jurisdictions, respectively. Tax assumptions are sensitive to changes in tax laws as well as assumptions about the jurisdictions in which profits are earned. It is possible that actual tax rates could differ from those assumed.

Discount rates assumed in determining the value-in-use for applicable CGUs or group of CGUs ranged from 8.0 per cent to 10.0 per cent on an after-tax basis or 10.0 per cent to 12.5 per cent on a pre-tax basis (2019 – 7.5 per cent to 10.0 per cent on an after-tax basis or 9.4 per cent to 12.5 per cent on a pre-tax basis).

Key assumptions may change as economic and market conditions change, which may lead to impairment charges in the future. Adverse changes in discount rates (including from decline in interest rates) and growth rate assumptions for new business cash flow projections used in the determination of embedded appraisal values or reductions in market-based earnings multiples calculations may result in impairment charges in the future which could be material.

Note 6 Insurance Contract Liabilities and Reinsurance Assets

(a) Insurance contract liabilities and reinsurance assets

Insurance contract liabilities are reported gross of reinsurance ceded and the ceded liabilities are reported separately as reinsurance assets. Insurance contract liabilities include actuarial liabilities, benefits payable, provision for unreported claims and policyholder amounts on deposit. The components of gross and net insurance contract liabilities are shown below.

As at December 31,	**2020**	2019
Insurance contract liabilities	**$ 369,230**	$ 336,156
Benefits payable and provision for unreported claims	**4,837**	4,229
Policyholder amounts on deposit	**11,487**	10,776
Gross insurance contract liabilities	**385,554**	351,161
Reinsurance assets[1]	**(45,769)**	(41,353)
Net insurance contract liabilities	**$ 339,785**	$ 309,808

[1] Reinsurance assets of $67 (2019 – $93) are related to investment contract liabilities, refer to note 7(b).

Net insurance contract liabilities represent the amount which, together with estimated future premiums and net investment income, will be sufficient to pay estimated future benefits, policyholder dividends and refunds, taxes (other than income taxes) and expenses on policies in-force net of reinsurance premiums and recoveries.

Net insurance contract liabilities are determined using CALM, as required by the Canadian Institute of Actuaries.

The determination of net insurance contract liabilities is based on an explicit projection of cash flows using current assumptions for each material cash flow item. Investment returns are projected using the current asset portfolios and projected reinvestment strategies.

Each assumption is based on the best estimate, adjusted by a margin for adverse deviation. For fixed income returns, this margin is established by scenario testing a range of prescribed and company-developed scenarios consistent with Canadian Actuarial Standards of Practice. For all other assumptions, this margin is established by directly adjusting the best estimate assumption.

Cash flows used in the net insurance contract liabilities valuation adjust the gross policy cash flows to reflect projected cash flows from ceded reinsurance. The cash flow impact of ceded reinsurance varies depending upon the amount of reinsurance, the structure of reinsurance treaties, the expected economic benefit from treaty cash flows and the impact of margins for adverse deviation. Gross insurance contract liabilities are determined by discounting gross policy cash flows using the same discount rate as the net CALM model discount rate.

The reinsurance asset is determined by taking the difference between the gross insurance contract liabilities and the net insurance contract liabilities. The reinsurance asset represents the benefit derived from reinsurance arrangements in force at the date of the Consolidated Statements of Financial Position.

The period used for the projection of cash flows is the policy lifetime for most individual insurance contracts. For other types of contracts, a shorter projection period may be used, with the contract generally ending at the earlier of the first renewal date on or after the Consolidated Statements of Financial Position date where the Company can exercise discretion in renewing its contractual obligations or terms of those obligations and the renewal or adjustment date that maximizes the insurance contract liabilities. For segregated fund products with guarantees, the projection period is generally set as the period that leads to the largest insurance contract liability. Where the projection period is less than the policy lifetime, insurance contract liabilities may be reduced by an allowance for acquisition expenses expected to be recovered from policy cash flows beyond the projection period used for the liabilities. Such allowances are tested for recoverability using assumptions that are consistent with other components of the actuarial valuation.

(b) Composition

The composition of insurance contract liabilities and reinsurance assets by the line of business and reporting segment is as follows.

Gross insurance contract liabilities

As at December 31, 2020	Individual insurance Participating	Individual insurance Non-participating	Annuities and pensions	Other insurance contract liabilities[1]	Total, net of reinsurance ceded	Total reinsurance ceded	Total, gross of reinsurance ceded
Asia	**$ 55,262**	**$ 36,930**	**$ 7,114**	**$ 3,652**	**$ 102,958**	**$ 2,127**	**$ 105,085**
Canada	**12,796**	**44,468**	**18,462**	**14,620**	**90,346**	**443**	**90,789**
U.S.	**8,422**	**68,001**	**16,292**	**54,224**	**146,939**	**42,875**	**189,814**
Corporate and Other	**–**	**(684)**	**34**	**192**	**(458)**	**324**	**(134)**
Total, net of reinsurance ceded	**76,480**	**148,715**	**41,902**	**72,688**	**339,785**	**$ 45,769**	**$ 385,554**
Total reinsurance ceded	**8,780**	**19,944**	**16,065**	**980**	**45,769**		
Total, gross of reinsurance ceded	**$ 85,260**	**$ 168,659**	**$ 57,967**	**$ 73,668**	**$ 385,554**		

As at December 31, 2019	Individual insurance Participating	Individual insurance Non-participating	Annuities and pensions	Other insurance contract liabilities[1]	Total, net of reinsurance ceded	Total reinsurance ceded	Total, gross of reinsurance ceded
Asia	$ 46,071	$ 32,887	$ 5,915	$ 3,064	$ 87,937	$ 1,432	$ 89,369
Canada	12,012	39,655	17,871	13,759	83,297	286	83,583
U.S.	8,734	66,163	14,763	49,199	138,859	39,411	178,270
Corporate and Other	–	(609)	36	288	(285)	224	(61)
Total, net of reinsurance ceded	66,817	138,096	38,585	66,310	309,808	$ 41,353	$ 351,161
Total reinsurance ceded	9,869	13,588	16,850	1,046	41,353		
Total, gross of reinsurance ceded	$ 76,686	$ 151,684	$ 55,435	$ 67,356	$ 351,161		

[1] Other insurance contract liabilities include group insurance and individual and group health including long-term care insurance.

Separate sub-accounts were established for participating policies in-force at the demutualization of MLI and John Hancock Mutual Life Insurance Company. These sub-accounts permit this participating business to be operated as separate "closed blocks" of participating policies. As at December 31, 2020, $29,480 (2019 – $29,402) of both reinsurance assets and insurance contract liabilities were related to these closed blocks of participating policies.

(c) Assets backing insurance contract liabilities, other liabilities and capital

Assets are segmented and matched to liabilities with similar underlying characteristics by product line and major currency. The Company has established target investment strategies and asset mixes for each asset segment supporting insurance contract liabilities which consider the risk attributes of the liabilities supported by the assets and expectations of market performance. Liabilities with rate and term guarantees are predominantly backed by fixed-rate instruments on a cash flow matching basis for a targeted duration horizon. Longer duration cash flows on these liabilities as well as on adjustable products such as participating life insurance are backed by a broader range of asset classes, including equity and alternative long-duration investments. The Company's capital is invested in a range of debt and equity investments, both public and private.

Changes in the fair value of assets backing net insurance contract liabilities, that the Company considers to be other than temporary, would have a limited impact on the Company's net income wherever there is an effective matching of assets and liabilities, as these changes would be substantially offset by corresponding changes in the value of net insurance contract liabilities. The fair value of assets backing net insurance contract liabilities as at December 31, 2020, excluding reinsurance assets, was estimated at $350,264 (2019 – $315,952).

As at December 31, 2020, the fair value of assets backing capital and other liabilities was estimated at $543,273 (2019 – $501,147).

The following table presents the carrying value of assets backing net insurance contract liabilities, other liabilities and capital.

As at December 31, 2020	Individual insurance Participating	Individual insurance Non-participating	Annuities and pensions	Other insurance contract liabilities(1)	Other liabilities(2)	Capital(3)	Total
Assets							
Debt securities	**$ 39,523**	**$ 81,548**	**$ 20,936**	**$ 34,725**	**$ 8,872**	**$ 33,121**	**$ 218,725**
Public equities	**12,365**	**6,971**	**461**	**310**	**402**	**3,213**	**23,722**
Mortgages	**3,069**	**12,536**	**4,923**	**8,315**	**21,338**	**26**	**50,207**
Private placements	**5,549**	**17,276**	**7,499**	**9,439**	**817**	**176**	**40,756**
Real estate	**3,385**	**6,466**	**1,027**	**1,697**	**57**	**200**	**12,832**
Other	**12,589**	**23,918**	**7,056**	**18,202**	**448,014**	**24,328**	**534,107**
Total	**$ 76,480**	**$ 148,715**	**$ 41,902**	**$ 72,688**	**$ 479,500**	**$ 61,064**	**$ 880,349**

As at December 31, 2019	Individual insurance Participating	Individual insurance Non-participating	Annuities and pensions	Other insurance contract liabilities(1)	Other liabilities(2)	Capital(3)	Total
Assets							
Debt securities	$ 34,169	$ 74,113	$ 19,865	$ 31,620	$ 8,828	$ 29,527	$ 198,122
Public equities	10,907	6,453	204	253	381	4,653	22,851
Mortgages	2,921	12,140	5,203	7,916	21,165	31	49,376
Private placements	4,658	16,020	6,957	9,122	1,090	132	37,979
Real estate	3,336	6,446	1,082	1,731	113	220	12,928
Other	10,826	22,924	5,274	15,668	410,376	22,806	487,874
Total	$ 66,817	$ 138,096	$ 38,585	$ 66,310	$ 441,953	$ 57,369	$ 809,130

(1) Other insurance contract liabilities include group insurance and individual and group health including long-term care insurance.
(2) Other liabilities are non-insurance contract liabilities which include segregated funds, bank deposits, long-term debt, deferred tax liabilities, derivatives, investment contracts, embedded derivatives and other miscellaneous liabilities.
(3) Capital is defined in note 12.

(d) Significant insurance contract liability valuation assumptions

The determination of insurance contract liabilities involves the use of estimates and assumptions. Insurance contract liabilities have two major components: a best estimate amount and a provision for adverse deviation.

Best estimate assumptions

Best estimate assumptions are made with respect to mortality and morbidity, investment returns, rates of policy termination, operating expenses and certain taxes. Actual experience is monitored to ensure that assumptions remain appropriate and assumptions are changed as warranted. Assumptions are discussed in more detail in the following table.

Nature of factor and assumption methodology		Risk management
Mortality and morbidity	Mortality relates to the occurrence of death. Mortality is a key assumption for life insurance and certain forms of annuities. Mortality assumptions are based on the Company's internal experience as well as past and emerging industry experience. Assumptions are differentiated by sex, underwriting class, policy type and geographic market. Assumptions are made for future mortality improvements. Morbidity relates to the occurrence of accidents and sickness for insured risks. Morbidity is a key assumption for long-term care insurance, disability insurance, critical illness and other forms of individual and group health benefits. Morbidity assumptions are based on the Company's internal experience as well as past and emerging industry experience and are established for each type of morbidity risk and geographic market. Assumptions are made for future morbidity improvements.	The Company maintains underwriting standards to determine the insurability of applicants. Claim trends are monitored on an ongoing basis. Exposure to large claims is managed by establishing policy retention limits, which vary by market and geographic location. Policies in excess of the limits are reinsured with other companies. Mortality is monitored monthly and the overall 2020 experience was unfavourable (2019 – unfavourable) when compared to the Company's assumptions. Morbidity is also monitored monthly and the overall 2020 experience was favourable (2019 – unfavourable) when compared to the Company's assumptions.

Nature of factor and assumption methodology		Risk management
Investment returns	The Company segments assets to support liabilities by business segment and geographic market and establishes investment strategies for each liability segment. Projected cash flows from these assets are combined with projected cash flows from future asset purchases/sales to determine expected rates of return on these assets for future years. Investment strategies are based on the target investment policies for each segment and the reinvestment returns are derived from current and projected market rates for fixed income investments and a projected outlook for other alternative long-duration assets. Investment return assumptions include expected future asset credit losses on fixed income investments. Credit losses are projected based on past experience of the Company and industry as well as specific reviews of the current investment portfolio. Investment return assumptions for each asset class and geographic market also incorporate expected investment management expenses that are derived from internal cost studies. The costs are attributed to each asset class to develop unitized assumptions per dollar of asset for each asset class and geographic market.	The Company's policy of closely matching asset cash flows with those of the corresponding liabilities is designed to mitigate the Company's exposure to future changes in interest rates. The interest rate risk positions in business segments are monitored on an ongoing basis. Under CALM, the reinvestment rate is developed using interest rate scenario testing and reflects the interest rate risk positions. In 2020, the movement in interest rates negatively (2019 – negatively) impacted the Company's net income. This negative impact was driven by decreases in risk free interest rates and corporate spreads, as well the impact of swap spreads on policy liabilities. The exposure to credit losses is managed against policies that limit concentrations by issuer, corporate connections, ratings, sectors and geographic regions. On participating policies and some non-participating policies, credit loss experience is passed back to policyholders through the investment return crediting formula. For other policies, premiums and benefits reflect the Company's assumed level of future credit losses at contract inception or most recent contract adjustment date. The Company holds explicit provisions in actuarial liabilities for credit risk including provisions for adverse deviation. In 2020, credit loss experience on debt securities and mortgages was unfavourable (2019 – favourable) when compared to the Company's assumptions. Equities, real estate and other alternative long-duration assets are used to support liabilities where investment return experience is passed back to policyholders through dividends or credited investment return adjustments. Equities, real estate, oil and gas and other alternative long-duration assets are also used to support long-dated obligations in the Company's annuity and pension businesses and for long-dated insurance obligations on contracts where the investment return risk is borne by the Company. In 2020, investment experience on alternative long-duration assets backing policyholder liabilities was unfavourable (2019 – favourable) primarily due to losses in real estate properties, and private equities, timber and agriculture properties as well as in oil and gas properties. In 2020, alternative long-duration asset origination did not exceed (2019 – exceeded) valuation requirements. In 2020, for the business that is dynamically hedged, segregated fund guarantee experience on residual, non-dynamically hedged market risks were unfavourable (2019 – favourable). For the business that is not dynamically hedged, experience on segregated fund guarantees due to changes in the market value of assets under management was also unfavourable (2019 – favourable). This excludes the experience on the macro equity hedges. In 2020, investment expense experience was unfavourable (2019 – unfavourable) when compared to the Company's assumptions.

Nature of factor and assumption methodology		Risk management
Policy termination and premium persistency	Policies are terminated through 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 the Company's recent experience adjusted for expected future conditions. Assumptions reflect differences by type of contract within each geographic market.	The Company seeks to design products that minimize financial exposure to lapse, surrender and premium persistency risk. The Company monitors lapse, surrender and persistency experience. In aggregate, 2020 policyholder termination and premium persistency experience was unfavourable (2019 – unfavourable) when compared to the Company's assumptions used in the computation of actuarial liabilities.
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 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 grow. 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.	The Company prices its products to cover the expected costs of servicing and maintaining them. In addition, the Company monitors expenses monthly, including comparisons of actual expenses to expense levels allowed for in pricing and valuation. Maintenance expenses for 2020 were unfavourable (2019 – unfavourable) when compared to the Company's assumptions used in the computation of actuarial liabilities. The Company prices its products to cover the expected cost of taxes.
Policyholder dividends, experience rating refunds, and other adjustable policy elements	The best estimate projections for policyholder dividends and experience rating refunds, and other adjustable elements of policy benefits are determined to be consistent with management's expectation of how these elements will be managed should experience emerge consistently with the best estimate assumptions used for mortality and morbidity, investment returns, rates of policy termination, operating expenses and taxes.	The Company monitors policy experience and adjusts policy benefits and other adjustable elements to reflect this experience. Policyholder dividends are reviewed annually for all businesses under a framework of Board-approved policyholder dividend policies.
Foreign currency	Foreign currency risk results from a mismatch of the currency of liabilities and the currency of the assets designated to support these obligations. 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 foreign exchange rates.	The Company generally matches the currency of its assets with the currency of the liabilities they support, with the objective of mitigating the risk of loss arising from movements in currency exchange rates.

The Company reviews actuarial methods and assumptions on an annual basis. If changes are made to assumptions (refer to note 6(h)), the full impact is recognized in income immediately.

(e) Sensitivity of insurance contract liabilities to changes in non-economic assumptions

The sensitivity of net income attributed to shareholders to changes in non-economic assumptions underlying insurance contract liabilities is shown below, assuming a simultaneous change in the assumption across all business units. The sensitivity of net income attributed to shareholders to a deterioration or improvement in non-economic assumptions for Long-Term Care ("LTC") as at December 31, 2020 is also shown below.

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; changes in business mix, effective tax rates and other market factors; and the general limitations of internal models.

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

As at December 31,	Decrease in net income attributed to shareholders 2020	2019
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	**(600)**	(500)
5% adverse change in future morbidity rates (incidence and termination)[3],[4],[5]	**(5,700)**	(5,100)
10% adverse change in future policy termination rates[4]	**(2,600)**	(2,400)
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 adverse sensitivities on LTC for morbidity, mortality and lapse do not assume any partial offsets from the Company's ability to contractually raise premium rates in such events, subject to state regulatory approval. In practice, the Company would plan to file for rate increases equal to the amount of deterioration resulting from the sensitivities.
[5] 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 included in the above table[1],[2]

As at December 31,	Decrease in net income attributed to shareholders 2020	2019
Policy related assumptions		
2% adverse change in future mortality rates	**$ (300)**	$ (300)
5% adverse change in future morbidity incidence rates[3]	**(2,100)**	(1,900)
5% adverse change in future morbidity claims termination rates[3]	**(3,100)**	(2,800)
10% adverse change in future policy termination rates	**(400)**	(400)
5% increase in future expense levels	**(100)**	(100)

[1] The impacts of the adverse sensitivities on LTC for morbidity, mortality and lapse do not assume any partial offsets from the Company's ability to contractually raise premium rates in such events, subject to state regulatory approval. In practice, the Company would plan to file for rate increases equal to the amount of deterioration resulting from the sensitivities.
[2] The impact of favourable changes to all the sensitivities is relatively symmetrical.
[3] The comparatives for 2019 have been updated to reflect refinements between incidence and termination impacts implemented in 2020.

(f) Provision for adverse deviation assumptions

The assumptions made in establishing insurance contract liabilities reflect expected best estimates of future experience. To recognize the uncertainty in these best estimate assumptions, to allow for possible misestimation of and deterioration in experience and to provide a greater degree of assurance that the insurance contract liabilities are adequate to pay future benefits, the Appointed Actuary is required to include a margin in each assumption.

Margins are released into future earnings as the policy is released from risk. 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 the 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.

Specific guidance is also provided for other risks such as market, credit, mortality and morbidity risks. For other risks which are not specifically addressed by the Canadian Institute of Actuaries, a range is provided of five per cent to 20 per cent of the expected experience assumption. The Company uses assumptions within the permissible ranges, with the determination of the level set considering the risk profile of the business. On occasion, in specific circumstances for additional prudence, a margin may exceed the high end of the range, which is permissible under the Canadian Actuarial Standards of Practice. This additional margin would be released if the specific circumstances which led to it being established were to change.

Each margin is reviewed annually for continued appropriateness.

(g) Change in insurance contract liabilities

The change in insurance contract liabilities was a result of the following business activities and changes in actuarial estimates.

For the year ended December 31, 2020	Net actuarial liabilities	Other insurance contract liabilities(1)	Net insurance contract liabilities	Reinsurance assets	Gross insurance contract liabilities
Balance, January 1	**$ 296,589**	**$ 13,219**	**$ 309,808**	**$ 41,353**	**$ 351,161**
New policies(2)	**3,166**	**–**	**3,166**	**481**	**3,647**
Normal in-force movement(2)	**32,340**	**1,312**	**33,652**	**(3,030)**	**30,622**
Changes in methods and assumptions(2)	**563**	**–**	**563**	**4,559**	**5,122**
Reinsurance transactions(3)	**(3,360)**	**–**	**(3,360)**	**3,360**	**–**
Impact of changes in foreign exchange rates	**(3,890)**	**(154)**	**(4,044)**	**(954)**	**(4,998)**
Balance, December 31	**$ 325,408**	**$ 14,377**	**$ 339,785**	**$ 45,769**	**$ 385,554**

For the year ended December 31, 2019	Net actuarial liabilities	Other insurance contract liabilities(1)	Net insurance contract liabilities	Reinsurance assets	Gross insurance contract liabilities
Balance, January 1	$ 272,761	$ 12,968	$ 285,729	$ 42,925	$ 328,654
New policies(4)	3,251	–	3,251	521	3,772
Normal in-force movement(4)	30,171	750	30,921	(972)	29,949
Changes in methods and assumptions(4)	74	–	74	927	1,001
Impact of changes in foreign exchange rates	(9,668)	(499)	(10,167)	(2,048)	(12,215)
Balance, December 31	$ 296,589	$ 13,219	$ 309,808	$ 41,353	$ 351,161

(1) Other insurance contract liabilities are comprised of benefits payable and provisions for unreported claims and policyholder amounts on deposit.

(2) In 2020, the $36,982 increase reported as the change in insurance contract liabilities on the Consolidated Statements of Income primarily consists of changes due to normal in-force movement, new policies, associated embedded derivatives and changes in methods and assumptions. These three items in the gross insurance contract liabilities were netted off by an increase of $39,391, of which $37,876 is included in the Consolidated Statements of Income increase in insurance contract liabilities and $1,515 is included in gross claims and benefits. The Consolidated Statements of Income change in insurance contract liabilities 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.

(3) 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.

(4) In 2019, the $33,727 increase reported as the change in insurance contract liabilities on the Consolidated Statements of Income primarily consists of changes due to normal in-force movement, new policies, associated embedded derivatives and changes in methods and assumptions. These three items in the gross insurance contract liabilities were netted off by an increase of $34,721, of which $34,056 is included in the Consolidated Statements of Income increase in insurance contract liabilities and $665 is included in gross claims and benefits. The Consolidated Statements of Income change in insurance contract liabilities 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.

(h) Actuarial methods and assumptions

A comprehensive review of valuation assumptions and methods is performed annually. The review reduces the Company's exposure to uncertainty by ensuring assumptions for both asset and liability risks remain appropriate. This is accomplished by monitoring experience and updating assumptions which represent a best estimate of expected future experience, and margins 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 the changes in economic environment are likely to result in future changes to the actuarial assumptions, which could materially impact the insurance contract liabilities.

Annual review 2020

The completion of the 2020 annual review of actuarial methods and assumptions resulted in an increase in insurance contract liabilities of $563, net of reinsurance, and a decrease in net income attributed to shareholders of $198 post-tax.

	Change in insurance contract liabilities, net of reinsurance			
For the year ended December 31, 2020	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 related updates	**(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 the Company's 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 the Company's variable annuity product in Canada resulted in a $31 post-tax gain to net income attributed to shareholders.

The gain was driven by refinements to the 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 post-tax gain to net income attributed to shareholders.

The gain was primarily driven by a review of the Company's reinsurance arrangements and mortality margins for preferred risk classes in 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 the 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 post-tax charge to net income attributed to shareholders.

The Company 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. The Company lowered the ultimate lapse assumptions due to the emergence of more recent data, which resulted in a post-tax charge of $504 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 post-tax gain to net income attributed to shareholders.

Other updates
Other updates resulted in a $190 post-tax gain to net income attributed to shareholders. This incorporated several positive items including updates to the Company's U.S. segregated fund guaranteed minimum withdrawal benefit valuation models, as well as updates to the projection of the 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 the valuation models, primarily driven by annual updates to reflect market movements in the first half of 2020.

Annual review 2019
The 2019 annual review of actuarial methods and assumptions resulted in an increase in insurance contract liabilities of $74, net of reinsurance, and a decrease in net income attributed to shareholders of $21 post-tax.

	Change in insurance contract liabilities, net of reinsurance			
For the year ended December 31, 2019	Total	Attributed to participating policyholders' account	Attributed to shareholders' account	Change in net income attributed to shareholders (post-tax)
Long-term care triennial review	$ 11	$ –	$ 11	$ (8)
Mortality and morbidity updates	25	47	(22)	14
Lapses and policyholder behaviour	135	17	118	(75)
Investment return assumptions	12	81	(69)	70
Other updates	(109)	(163)	54	(22)
Net impact	$ 74	$ (18)	$ 92	$ (21)

Long-term care triennial review
U.S. Insurance completed a comprehensive long-term care ("LTC") experience study in 2019. The review included all aspects of claim assumptions, the impact of policyholder benefit reductions as well as the progress on future premium rate increases and a review of margins on the business. The impact of the LTC review was approximately net neutral to net income attributed to shareholders.

The experience study showed lower termination rates than expected during the elimination or "qualifying" period (which is the period between when a claim is filed and when benefit payments begin), and favourable incidence as policyholders are filing claims at a lower rate than expected. In addition, policyholders are electing to reduce their benefits in lieu of paying increased premiums. The overall claims experience review led to a post-tax charge to net income attributed to shareholders of approximately $1.9 billion, which includes a gain of approximately $0.2 billion for the impact of benefit reductions.

The experience study included additional claims data due to the natural aging of the block of business. As a result, the Company reduced certain margins for adverse deviations, which resulted in a post-tax gain to net income attributed to shareholders of approximately $0.7 billion.

While the study continues to support the assumptions of both future morbidity and mortality improvement, the Company reduced its morbidity improvement assumption, which resulted in a post-tax charge to net income attributed to shareholders of approximately $0.7 billion.

The review of premium increases assumed in the policy liabilities resulted in a post-tax gain to net income attributed to shareholders of approximately $2.0 billion related to the expected timing and amount of premium increases that are subject to state approval and reflects a 30% margin. The expected premium increases are informed by past approval rates applied to prior state filings that remain outstanding and estimated new requests based on the Company's 2019 review of morbidity, mortality and lapse assumptions. The Company's actual experience in obtaining premium increases could be materially different than what it has assumed, resulting in further increases or decreases in policy liabilities, which could be material.

Updates to mortality and morbidity

Mortality and morbidity updates resulted in a $14 post-tax gain to net income attributed to shareholders. This included a review of the Company's Canada Individual Insurance mortality and reinsurance arrangements.

Updates to lapses and policyholder behaviour

Updates to lapses and policyholder behaviour assumptions resulted in a $75 post-tax charge to net income attributed to shareholders.

The primary driver of the charge was an update to the Company's lapse assumptions across several term and whole life product lines within the Company's Canada Individual Insurance business, partially offset by several updates to lapse and premium persistency assumptions in other geographies.

Updates to investment return assumptions

Updates to investment return assumptions resulted in a $70 post-tax gain to net income attributed to shareholders.

The primary driver of the gain was an update to the Company's senior secured loan default rates to reflect recent experience, as well as its investment and crediting rate strategy for certain universal life products. This was partially offset by updates to certain private equity investment assumptions in Canada.

Other updates

Other updates resulted in a $22 post-tax charge to net income attributed to shareholders.

(i) Insurance contracts contractual obligations

Insurance contracts give rise to obligations fixed by agreement. As at December 31, 2020, the Company's contractual obligations and commitments relating to insurance contracts are as follows.

Payments due by period	Less than 1 year	1 to 3 years	3 to 5 years	Over 5 years	Total
Insurance contract liabilities(1)	**$ 10,672**	**$ 9,859**	**$ 15,416**	**$ 791,780**	**$ 827,727**

(1) Insurance contract liability 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. Cash flows include embedded derivatives measured separately at fair value.

(j) Gross claims and benefits

The following table presents a breakdown of gross claims and benefits.

For the years ended December 31,	2020	2019
Death, disability and other claims	**$ 18,064**	$ 15,752
Maturity and surrender benefits	**8,613**	8,433
Annuity payments	**3,560**	4,030
Policyholder dividends and experience rating refunds	**1,411**	1,445
Net transfers from segregated funds	**(1,515)**	(1,000)
Total	**$ 30,133**	$ 28,660

(k) Reinsurance transactions

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.

The transaction closed with an effective date of July 1, 2020. The Company recorded an after-tax gain of $262, which includes an increase in reinsurance assets and ceded premiums of $3.4 billion and $3.3 billion, respectively, on the Consolidated Statements of Income.

On September 26, 2018, the Company entered into coinsurance agreements with Reinsurance Group of America ("RGA") to reinsure a block of legacy U.S. individual pay-out annuities business from John Hancock Life Insurance Company (U.S.A.) ("JHUSA") with a 100% quota share and John Hancock Life Insurance Company of New York ("JHNY") with a 90% quota share. Under the terms of the agreements, the Company will maintain responsibility for servicing the policies. The transaction was structured such that the Company ceded policyholder contract liabilities and transferred invested assets backing these liabilities. The JHUSA transaction closed in 2018. The JHNY transaction closed with an effective date of January 1, 2019. The Company recorded an after-tax gain of $18, which includes an increase in reinsurance assets of $132 and ceded premiums of $131 in the Consolidated Statements of Income in 2019.

On October 31, 2018, the Company entered into coinsurance agreements with Jackson National Life Insurance Company ("Jackson"), a wholly owned subsidiary of Prudential plc, to reinsure a block of legacy U.S. group pay-out annuities business from JHUSA with a 100% quota share and from JHNY with a 90% quota share. Under the terms of the agreements, the Company will maintain responsibility for servicing the policies. The transaction was structured such that the Company ceded policyholder contract liabilities and transferred related invested assets backing these liabilities. The JHUSA transaction closed in 2018. The JHNY transaction closed with an effective date of January 1, 2019. The Company recorded an after-tax gain of $31 in 2019, which includes an increase in reinsurance assets of $621, a ceding commission paid of $35 and ceded premiums of $581 in the Consolidated Statements of Income.

Note 7 Investment Contract Liabilities

Investment contract liabilities are contractual obligations that do not contain significant insurance risk. Those contracts are measured either at fair value or at amortized cost.

(a) Investment contract liabilities measured at fair value

Investment contract liabilities measured at fair value include certain investment savings and pension products sold primarily in Hong Kong and mainland China. The following table presents the movement in investment contract liabilities measured at fair value.

For the years ended December 31,	2020	2019
Balance, January 1	**$ 789**	$ 782
New policies	**180**	66
Changes in market conditions	**90**	62
Redemptions, surrenders and maturities	**(108)**	(86)
Impact of changes in foreign exchange rates	**(19)**	(35)
Balance, December 31	**$ 932**	$ 789

(b) Investment contract liabilities measured at amortized cost

Investment contract liabilities measured at amortized cost include several fixed annuity products sold in the U.S. and Canada that provide guaranteed income payments for a contractually determined period and are not contingent on survivorship.

The following table presents carrying and fair values of investment contract liabilities measured at amortized cost.

	2020		2019	
As at December 31,	Amortized cost, gross of reinsurance ceded[1]	Fair value	Amortized cost, gross of reinsurance ceded[1]	Fair value
U.S. fixed annuity products	**$ 1,361**	**$ 1,680**	$ 1,248	$ 1,482
Canadian fixed annuity products	**995**	**1,086**	1,067	1,158
Investment contract liabilities	**$ 2,356**	**$ 2,766**	$ 2,315	$ 2,640

[1] As at December 31, 2020, investment contract liabilities with carrying value and fair value of $67 and $76, respectively (2019 – $93 and $103, respectively), were reinsured by the Company. The net carrying value and fair value of investment contract liabilities were $2,289 and $2,690 (2019 – $2,222 and $2,537), respectively.

The changes in investment contract liabilities measured at amortized cost was a result of the following business activities.

For the years ended December 31,	2020	2019
Balance, January 1	**$ 2,315**	$ 2,483
Policy deposits	**202**	2
Interest	**61**	62
Withdrawals	**(194)**	(182)
Fees	**(1)**	(3)
Other	**–**	17
Impact of changes in foreign exchange rates	**(27)**	(64)
Balance, December 31	**$ 2,356**	$ 2,315

Carrying value of fixed annuity products is amortized at a rate that exactly discounts the projected actual cash flows to the net carrying amount of the liability at the date of issue.

Fair value of fixed annuity products is determined by projecting cash flows according to the contract terms and discounting the cash flows at current market rates adjusted for the Company's own credit standing. As at December 31, 2020 and 2019, fair value of all investment contract liabilities was determined using Level 2 valuation techniques.

(c) Investment contracts contractual obligations

As at December 31, 2020, the Company's contractual obligations and commitments relating to the investment contracts are as follows.

Payments due by period	Less than 1 year	1 to 3 years	3 to 5 years	Over 5 years	Total
Investment contract liabilities[1]	**$ 297**	**$ 514**	**$ 520**	**$ 4,220**	**$ 5,551**

[1] Due to the nature of the products, the timing of net cash flows may be before contract maturity. Cash flows are undiscounted.

Note 8 Risk Management

The Company's policies and procedures for managing risks of financial instruments are disclosed in denoted components of the "Risk Management and Risk Factors" section of the MD&A for the year ended December 31, 2020. These disclosures are in accordance with IFRS 7 "Financial Instruments: Disclosures" and an integral part of these Consolidated Financial Statements.

(a) Credit risk

Credit risk is the risk of loss due to inability or unwillingness of a borrower, or counterparty, to fulfill its payment obligations. Worsening regional and global economic conditions, segment or industry sector challenges, or company specific factors could result in defaults or downgrades and could lead to increased provisions or impairments related to the Company's general fund invested assets, derivative financial instruments and reinsurance assets and an increase in provisions for future credit impairments that are included in actuarial liabilities.

The Company's exposure to credit risk is managed through risk management policies and procedures which include a defined credit evaluation and adjudication process, delegated credit approval authorities and established exposure limits by borrower, corporate connection, credit rating, industry and geographic region. The Company measures 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.

The Company also ensures where warranted, that mortgages, private placements and loans to Bank clients are secured by collateral, the nature of which depends on the credit risk of the counterparty.

An allowance for losses on loans is established when a loan becomes impaired. Allowances for loan losses are calculated to reduce the carrying value of the loans to estimated net realizable value. The establishment of such allowances takes into consideration normal historical credit loss levels and future expectations, with an allowance for adverse deviations. In addition, policy liabilities include general provisions for credit losses from future asset impairments. Impairments are identified 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. Allowances for losses on reinsurance contracts are established when a reinsurance counterparty becomes unable or unwilling to fulfill its contractual obligations. The allowance for loss is based on current recoverable amounts and ceded policy liabilities.

Credit risk associated with derivative counterparties is discussed in note 8(d) and credit risk associated with reinsurance counterparties is discussed in note 8(i).

(i) Credit exposure

The following table presents the gross carrying amount of financial instruments subject to credit exposure, without considering any collateral held or other credit enhancements.

As at December 31,	2020	2019
Debt securities		
FVTPL	**$ 183,061**	$ 166,307
AFS	**35,663**	31,815
Mortgages	**50,207**	49,376
Private placements	**40,756**	37,979
Policy loans	**6,398**	6,471
Loans to Bank clients	**1,976**	1,740
Derivative assets	**27,793**	19,449
Accrued investment income	**2,523**	2,416
Reinsurance assets	**45,836**	41,446
Other financial assets	**6,156**	5,628
Total	**$ 400,369**	$ 362,627

As at December 31, 2020, 97% (2019 – 99%) of debt securities were investment grade-rated with ratings ranging between AAA to BBB.

(ii) Credit quality

Credit quality of commercial mortgages and private placements

Credit quality of commercial mortgages and private placements is assessed at least annually by using an internal rating based on regular monitoring of credit-related exposures, considering both qualitative and quantitative factors.

A provision is recorded when the internal risk ratings indicate that a loss represents the most likely outcome. These assets are designated as non-accrual and an allowance is established based on an analysis of the security and repayment sources.

The following table presents the credit quality of commercial mortgages and private placements.

As at December 31, 2020	AAA	AA	A	BBB	BB	B and lower	Total
Commercial mortgages							
Retail	**$ 110**	**$ 1,339**	**$ 4,761**	**$ 2,242**	**$ 168**	**$ 1**	**$ 8,621**
Office	**66**	**1,297**	**5,948**	**1,174**	**164**	**20**	**8,669**
Multi-family residential	**613**	**1,675**	**2,896**	**582**	**33**	**–**	**5,799**
Industrial	**25**	**320**	**2,353**	**259**	**3**	**–**	**2,960**
Other	**238**	**966**	**914**	**984**	**355**	**7**	**3,464**
Total commercial mortgages	**1,052**	**5,597**	**16,872**	**5,241**	**723**	**28**	**29,513**
Agricultural mortgages	**–**	**–**	**127**	**77**	**106**	**–**	**310**
Private placements	**1,061**	**4,829**	**15,585**	**15,825**	**1,206**	**2,250**	**40,756**
Total	**$ 2,113**	**$ 10,426**	**$ 32,584**	**$ 21,143**	**$ 2,035**	**$ 2,278**	**$ 70,579**

As at December 31, 2019	AAA	AA	A	BBB	BB	B and lower	Total
Commercial mortgages							
Retail	$ 132	$ 1,374	$ 5,285	$ 2,039	$ 10	$ –	$ 8,840
Office	77	1,540	5,808	1,402	26	18	8,871
Multi-family residential	640	1,585	2,397	714	35	–	5,371
Industrial	38	364	1,820	237	10	–	2,469
Other	260	739	976	1,290	–	8	3,273
Total commercial mortgages	1,147	5,602	16,286	5,682	81	26	28,824
Agricultural mortgages	–	27	137	312	–	–	476
Private placements	1,098	5,513	14,311	14,139	823	2,095	37,979
Total	$ 2,245	$ 11,142	$ 30,734	$ 20,133	$ 904	$ 2,121	$ 67,279

Credit quality of residential mortgages and loans to Bank clients

Credit quality of residential mortgages and loans to Bank clients is assessed at least annually with the loan being performing or non-performing as the key credit quality indicator.

Full or partial write-offs of loans are recorded when management believes that there is no realistic prospect of full recovery. Write-offs, net of recoveries, are deducted from the allowance for credit losses. All impairments are captured in the allowance for credit losses.

The following table presents credit quality of residential mortgages and loans to Bank clients.

As at December 31,	2020 Insured	2020 Uninsured	2020 Total	2019 Insured	2019 Uninsured	2019 Total
Residential mortgages						
Performing	**$ 6,349**	**$ 13,980**	**$ 20,329**	$ 6,613	$ 13,411	$ 20,024
Non-performing[1]	**9**	**46**	**55**	25	27	52
Loans to Bank clients						
Performing	**n/a**	**1,976**	**1,976**	n/a	1,740	1,740
Non-performing[1]	**n/a**	**–**	**–**	n/a	–	–
Total	**$ 6,358**	**$ 16,002**	**$ 22,360**	$ 6,638	$ 15,178	$ 21,816

[1] Non-performing refers to assets that are 90 days or more past due.

The carrying value of government-insured mortgages was 13% of the total mortgage portfolio as at December 31, 2020 (2019 – 14%). Most of these insured mortgages are residential loans as classified in the table above.

(iii) Past due or credit impaired financial assets

The Company provides for credit risk by establishing allowances against the carrying value of impaired loans and recognizing impairment losses on AFS debt securities. In addition, the Company reports as impairment losses certain declines in the fair value of debt securities designated as FVTPL which it deems represent an impairment due to non-recoverability of due amount.

The following table presents past due but not impaired and impaired financial assets.

	Past due but not impaired			
As at December 31, 2020	Less than 90 days	90 days and greater	Total	Total impaired
Debt securities				
FVTPL	**$ –**	**$ –**	**$ –**	**$ 54**
AFS	**–**	**–**	**–**	**1**
Private placements	**30**	**–**	**30**	**170**
Mortgages and loans to Bank clients	**66**	**–**	**66**	**69**
Other financial assets	**56**	**58**	**114**	**2**
Total	**$ 152**	**$ 58**	**$ 210**	**$ 296**

	Past due but not impaired			
As at December 31, 2019	Less than 90 days	90 days and greater	Total	Total impaired
Debt securities				
FVTPL	$ 11	$ –	$ 11	$ 167
AFS	4	1	5	–
Private placements	215	–	215	7
Mortgages and loans to Bank clients	61	–	61	59
Other financial assets	60	42	102	1
Total	$ 351	$ 43	$ 394	$ 234

The following table presents gross carrying value and allowances for loan losses for impaired loans.

As at December 31, 2020	Gross carrying value	Allowances for loan losses	Net carrying value
Private placements	**$ 249**	**$ 79**	**$ 170**
Mortgages and loans to Bank clients	**97**	**28**	**69**
Total	**$ 346**	**$ 107**	**$ 239**

As at December 31, 2019	Gross carrying value	Allowances for loan losses	Net carrying value
Private placements	$ 11	$ 4	$ 7
Mortgages and loans to Bank clients	75	16	59
Total	$ 86	$ 20	$ 66

The following table presents movement of allowance for loan losses during the year.

For the years ended December 31,	2020 Private placements	2020 Mortgages and loans to Bank clients	2020 Total	2019 Private placements	2019 Mortgages and loans to Bank clients	2019 Total
Balance, January 1	**$ 4**	**$ 16**	**$ 20**	$ 43	$ 52	$ 95
Provisions	**94**	**31**	**125**	35	15	50
Recoveries	**(6)**	**(6)**	**(12)**	–	(46)	(46)
Write-offs[1]	**(13)**	**(13)**	**(26)**	(74)	(5)	(79)
Balance, December 31	**$ 79**	**$ 28**	**$ 107**	$ 4	$ 16	$ 20

[1] Includes disposals and impact of changes in foreign exchange rates.

(b) Securities lending, repurchase and reverse repurchase transactions

The Company engages in securities lending to generate fee income. Collateral exceeding the market value of the loaned securities is retained by the Company until the underlying security has been returned to the Company. The market value of the loaned securities is monitored daily and additional collateral is obtained or refunded as the market value of the underlying loaned securities fluctuates. As at December 31, 2020, the Company had loaned securities (which are included in invested assets) with a market value of $889 (2019 – $558). The Company holds collateral with a current market value that exceeds the value of securities lent in all cases.

The Company engages in reverse repurchase transactions to generate fee income, to take possession of securities to cover short positions in similar instruments and to meet short-term funding requirements. As at December 31, 2020, the Company had engaged in reverse repurchase transactions of $716 (2019 – $990) which are recorded as short-term receivables. In addition, the Company had engaged in repurchase transactions of $353 as at December 31, 2020 (2019 – $333) which are recorded as payables.

(c) Credit default swaps

The Company replicates exposure to specific issuers by selling credit protection via credit default swaps ("CDS") to complement its cash debt securities investing. The Company does not write CDS protection more than its government bond holdings. A CDS is a derivative instrument representing an agreement between two parties to exchange the credit risk of a single specified entity or an index based on the credit risk of a group of entities (all commonly referred to as the "reference entity" or a portfolio of "reference entities"), in return for a periodic premium. CDS contracts typically have a five-year term.

The following table presents details of the credit default swap protection sold by type of contract and external agency rating for the underlying reference security.

As at December 31, 2020	Notional amount[1]	Fair value	Weighted average maturity (in years)[2]
Single name CDS[3] – Corporate debt			
A	**$ 136**	**$ 2**	**1**
BBB	**105**	**1**	**2**
Total single name CDS	**$ 241**	**$ 3**	**1**
Total CDS protection sold	**$ 241**	**$ 3**	**1**

As at December 31, 2019	Notional amount[1]	Fair value	Weighted average maturity (in years)[2]
Single name CDS[3] – Corporate debt			
AA	$ 24	$ –	1
A	371	5	1
BBB	107	1	2
Total single name CDS	$ 502	$ 6	1
Total CDS protection sold	$ 502	$ 6	1

[1] Notional amounts represent the maximum future payments the Company would have to pay its counterparties assuming a default of the underlying credit and zero recovery on the underlying issuer obligation.
[2] The weighted average maturity of the CDS is weighted based on notional amounts.
[3] Standard & Poor's assigned credit ratings are used where available followed by Moody's, DBRS, and Fitch. If no external rating is available, an internally developed rating is used.

The Company held no purchased credit protection as at December 31, 2020 and 2019.

(d) Derivatives

The Company's point-in-time exposure to losses related to credit risk of a derivative counterparty is limited to the amount of any net gains that may have accrued with a counterparty. Gross derivative counterparty exposure is measured as the total fair value (including accrued interest) of all outstanding contracts in a gain position excluding any offsetting contracts in a loss position and the impact of collateral on hand. The Company limits the risk of credit losses from derivative counterparties by: using investment grade counterparties; entering into master netting arrangements which permit the offsetting of contracts in a loss position in the case of a counterparty default; and entering into Credit Support Annex agreements, whereby collateral must be provided when the exposure exceeds a certain threshold. All contracts are held with counterparties rated BBB+ or higher. As at December 31, 2020, the percentage of the Company's derivative exposure with counterparties rated AA- or higher was 20 per cent (2019 – 23 per cent). The Company's exposure to credit risk was mitigated by $16,696 fair value of collateral held as security as at December 31, 2020 (2019 – $12,038).

As at December 31, 2020, the largest single counterparty exposure, without considering the impact of master netting agreements or the benefit of collateral held, was $4,110 (2019 – $3,047). The net exposure to this counterparty, after considering master netting agreements and the fair value of collateral held, was $nil (2019 – $nil). As at December 31, 2020, the total maximum credit exposure related to derivatives across all counterparties, without considering the impact of master netting agreements and the benefit of collateral held, was $28,685 (2019 – $20,144).

(e) Offsetting financial assets and financial liabilities

Certain derivatives, securities lent and repurchase agreements have conditional offset rights. The Company does not offset these financial instruments in the Consolidated Statements of Financial Position, as the rights of offset are conditional.

In the case of derivatives, collateral is collected from and pledged to counterparties and clearing houses to manage credit risk exposure in accordance with Credit Support Annexes to swap agreements and clearing agreements. Under master netting agreements, the Company has a right of offset in the event of default, insolvency, bankruptcy or other early termination.

In the case of reverse repurchase and repurchase transactions, additional collateral may be collected from or pledged to counterparties to manage credit exposure according to bilateral reverse repurchase or repurchase agreements. In the event of default by a counterparty, the Company is entitled to liquidate the collateral held to offset against the same counterparty's obligation.

The following table presents the effect of conditional master netting and similar arrangements. Similar arrangements may include global master repurchase agreements, global master securities lending agreements, and any related rights to financial collateral.

		Related amounts not set off in the Consolidated Statements of Financial Position			
As at December 31, 2020	Gross amounts of financial instruments[1]	Amounts subject to an enforceable master netting arrangement or similar agreements	Financial and cash collateral pledged (received)[2]	Net amount including financing entities[3]	Net amounts excluding financing entities
Financial assets					
Derivative assets	**$ 28,685**	**$ (13,243)**	**$ (15,323)**	**$ 119**	**$ 119**
Securities lending	**889**	**–**	**(889)**	**–**	**–**
Reverse repurchase agreements	**716**	**–**	**(715)**	**1**	**1**
Total financial assets	**$ 30,290**	**$ (13,243)**	**$ (16,927)**	**$ 120**	**$ 120**
Financial liabilities					
Derivative liabilities	**$ (16,076)**	**$ 13,243**	**$ 2,482**	**$ (351)**	**$ (71)**
Repurchase agreements	**(353)**	**–**	**353**	**–**	**–**
Total financial liabilities	**$ (16,429)**	**$ 13,243**	**$ 2,835**	**$ (351)**	**$ (71)**

		Related amounts not set off in the Consolidated Statements of Financial Position			
As at December 31, 2019	Gross amounts of financial instruments[1]	Amounts subject to an enforceable master netting arrangement or similar agreements	Financial and cash collateral pledged (received)[2]	Net amount including financing entities[3]	Net amounts excluding financing entities
Financial assets					
Derivative assets	$ 20,144	$ (9,188)	$ (10,889)	$ 67	$ 67
Securities lending	558	–	(558)	–	–
Reverse repurchase agreements	990	–	(989)	1	1
Total financial assets	$ 21,692	$ (9,188)	$ (12,436)	$ 68	$ 68
Financial liabilities					
Derivative liabilities	$ (11,345)	$ 9,188	$ 1,903	$ (254)	$ (53)
Repurchase agreements	(333)	–	330	(3)	(3)
Total financial liabilities	$ (11,678)	$ 9,188	$ 2,233	$ (257)	$ (56)

(1) Financial assets and liabilities include accrued interest of $892 and $1,114, respectively (2019 – $696 and $1,061, respectively).
(2) Financial and cash collateral exclude over-collateralization. As at December 31, 2020, the Company was over-collateralized on OTC derivative assets, OTC derivative liabilities, securities lending and reverse purchase agreements and repurchase agreements in the amounts of $1,373, $627, $74 and $nil, respectively (2019 – $1,149, $526, $44 and $nil, respectively). As at December 31, 2020, collateral pledged (received) does not include collateral-in-transit on OTC instruments or initial margin on exchange traded contracts or cleared contracts.
(3) Includes derivative contracts entered between the Company and its financing trusts which it does not consolidate. The Company does not exchange collateral on derivative contracts entered with these trusts. Refer to note 17.

The Company has certain credit linked note assets and variable surplus note liabilities which have unconditional offset rights. Under the netting agreements, the Company has rights of offset including in the event of the Company's default, insolvency, or bankruptcy. These financial instruments are offset in the Consolidated Statements of Financial Position.

A credit linked note is a security that allows the issuer to transfer a specific credit risk to the buyer. A surplus note is a subordinated debt obligation that often qualifies as surplus (the U.S. statutory equivalent of equity) by some U.S. state insurance regulators. Interest payments on surplus notes are made after all other contractual payments are made. The following table presents the effect of unconditional netting.

As at December 31, 2020	Gross amounts of financial instruments	Amounts subject to an enforceable netting arrangement	Net amounts of financial instruments
Credit linked note[1]	**$ 932**	**$ (932)**	**$ –**
Variable surplus note	**(932)**	**932**	**–**

As at December 31, 2019	Gross amounts of financial instruments	Amounts subject to an enforceable netting arrangement	Net amounts of financial instruments
Credit linked note[1]	$ 782	$ (782)	$ –
Variable surplus note	(782)	782	–

(1) As at December 31, 2020 and 2019, the Company had no fixed surplus notes outstanding, refer to note 18(g).

(f) Risk concentrations

The Company defines enterprise-wide investment portfolio level targets and limits to ensure that portfolios are diversified across asset classes and individual investment risks. The Company monitors actual investment positions and risk exposures for concentration risk and reports its findings to the Executive Risk Committee and the Risk Committee of the Board of Directors.

As at December 31,	2020	2019
Debt securities and private placements rated as investment grade BBB or higher[1]	**97%**	98%
Government debt securities as a per cent of total debt securities	**37%**	37%
Government private placements as a per cent of total private placements	**11%**	12%
Highest exposure to a single non-government debt security and private placement issuer	**$ 1,148**	$ 1,083
Largest single issuer as a per cent of the total equity portfolio	**2%**	2%
Income producing commercial office properties (2020 – 53% of real estate, 2019 – 56%)	**$ 6,745**	$ 7,279
Largest concentration of mortgages and real estate[2] – Ontario Canada (2020 – 28%, 2019 – 27%)	**$ 17,367**	$ 17,038

(1) Investment grade debt securities and private placements include 40% rated A, 16% rated AA and 16% rated AAA (2019 – 41%, 17% and 16%) investments based on external ratings where available.

(2) Mortgages and real estate investments are diversified geographically and by property type.

The following table presents debt securities and private placements portfolio by sector and industry.

	2020		2019	
As at December 31,	Carrying value	% of total	Carrying value	% of total
Government and agency	**$ 85,357**	**33**	$ 77,883	33
Utilities	**47,902**	**18**	44,426	19
Financial	**35,656**	**15**	31,929	13
Consumer	**29,684**	**11**	25,931	11
Energy	**20,963**	**8**	20,196	9
Industrial	**22,070**	**9**	19,024	8
Other	**17,850**	**6**	16,712	7
Total	**$ 259,482**	**100**	$ 236,101	100

(g) Insurance risk

Insurance risk is the risk of loss due to actual experience for mortality and morbidity claims, policyholder behaviour and expenses emerging differently than assumed when a product was designed and priced. A variety of assumptions are made related to these experience factors, for reinsurance costs, and for sales levels when products are designed and priced, as well as in the determination of policy liabilities. 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. Such assumptions require significant professional judgment, and actual experience may be materially different than the assumptions made by the Company. 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 man-made disasters and acts of terrorism. 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. Some reinsurance rates are not guaranteed and may be changed unexpectedly. Adjustments the Company seeks to make to Non-Guaranteed elements to reflect changing experience factors may be challenged by regulatory or legal action and the Company may be unable to implement them or may face delays in implementation.

The Company manages insurance risk through global policies, standards and best practices with respect to product design, pricing, underwriting and claim adjudication, and a global underwriting manual. Each business unit establishes underwriting policies and procedures, including criteria for approval of risks and claims adjudication policies and procedures. The current global life retention limit is US$30 for individual policies (US$35 for survivorship life policies) and is shared across businesses. Lower limits are applied in some markets and jurisdictions. The Company aims to further reduce exposure to claims concentrations by applying geographical aggregate retention limits for certain covers. Enterprise-wide, the Company aims to reduce the likelihood of high aggregate claims by operating globally, insuring a wide range of unrelated risk events, and reinsuring some risk.

(h) Concentration risk

The geographic concentration of the Company's insurance and investment contract liabilities, including embedded derivatives, is shown below. The disclosure is based on the countries in which the business is written.

As at December 31, 2020	Gross liabilities	Reinsurance assets	Net liabilities
U.S. and Canada	**$ 273,848**	**$ (44,645)**	**$ 229,203**
Asia and Other	**114,878**	**(1,191)**	**113,687**
Total	**$ 388,726**	**$ (45,836)**	**$ 342,890**

As at December 31, 2019	Gross liabilities	Reinsurance assets	Net liabilities
U.S. and Canada	$ 255,999	$ (40,944)	$ 215,055
Asia and Other	98,237	(502)	97,735
Total	$ 354,236	$ (41,446)	$ 312,790

(i) Reinsurance risk

In the normal course of business, the Company limits the amount of loss on any one policy by reinsuring certain levels of risk with other insurers. In addition, the Company accepts reinsurance from other reinsurers. Reinsurance ceded does not discharge the Company's liability as the primary insurer. Failure of reinsurers to honour their obligations could result in losses to the Company; consequently, allowances are established for amounts deemed uncollectible. To minimize losses from reinsurer insolvency, the Company monitors the concentration of credit risk both geographically and with any one reinsurer. In addition, the Company selects reinsurers with high credit ratings.

As at December 31, 2020, the Company had $45,836 (2019 – $41,446) of reinsurance assets. Of this, 94 per cent (2019 – 94 per cent) were ceded to reinsurers with Standard and Poor's ratings of A- or above. The Company's exposure to credit risk was mitigated by $27,360 fair value of collateral held as security as at December 31, 2020 (2019 – $26,638). Net exposure after considering offsetting agreements and the benefit of the fair value of collateral held was $18,476 as at December 31, 2020 (2019 – $14,808).

Note 9 Long-Term Debt

(a) Carrying value of long-term debt instruments

As at December 31,	Issue date	Maturity date	Par value	**2020**	2019
3.050% Senior notes[(1),(2)]	August 27, 2020	August 27, 2060	US$ 1,155	**$ 1,460**	$ –
4.70% Senior notes[(1)]	June 23, 2016	June 23, 2046	US$ 1,000	**1,265**	1,290
5.375% Senior notes[(1)]	March 4, 2016	March 4, 2046	US$ 750	**943**	962
2.396% Senior notes[(3)]	June 1, 2020	June 1, 2027	US$ 200	**254**	–
2.484% Senior notes[(1),(3)]	May 19, 2020	May 19, 2027	US$ 500	**632**	–
3.527% Senior notes[(1)]	December 2, 2016	December 2, 2026	US$ 270	**343**	350
4.150% Senior notes[(1)]	March 4, 2016	March 4, 2026	US$ 1,000	**1,267**	1,292
4.90% Senior notes[(4)]	September 17, 2010	September 17, 2020	US$ 500	**–**	649
Total				**$ 6,164**	$ 4,543

(1) These U.S. dollar senior notes have been designated as hedges of the Company's net investment in its U.S. operations which reduces the earnings volatility that would otherwise arise from the re-measurement of these senior notes into Canadian dollars.
(2) Issued by MFC during the year, interest is payable semi-annually. The senior notes may be redeemed at the option of MFC in whole, but not in part, on August 27, 2025, and thereafter on every August 27 at a redemption price equal to par, together with accrued and unpaid interest.
(3) Issued by MFC during the year, interest is payable semi-annually. The senior notes may be redeemed in whole or in part at the option of MFC at any time, at a redemption price equal to the greater of par and a price based on the yield of a corresponding U.S. Treasury bond plus 30 basis points.
(4) The 4.90% senior notes matured on September 17, 2020.

The cash amount of interest paid on long-term debt during the year ended December 31, 2020 was $229 (2019 – $216). Issue costs are amortized over the term of the debt.

(b) Fair value measurement

Fair value of long-term debt instruments is determined using the following hierarchy:

Level 1 – Fair value is determined using quoted market prices where available.

Level 2 – When quoted market prices are not available, fair value is determined with reference to quoted prices of similar debt instruments or estimated using discounted cash flows based on observable market rates.

The Company measures long-term debt at amortized cost in the Consolidated Statements of Financial Position. As at December 31, 2020, the fair value of long-term debt was $7,042 (2019 – $5,078). Fair value of long-term debt was determined using Level 2 valuation techniques (2019 – Level 2).

(c) Aggregate maturities of long-term debt

As at December 31	Less than 1 year	1 to 3 years	3 to 5 years	Over 5 years	Total
2020	**$ –**	**$ –**	**$ –**	**$ 6,164**	**$ 6,164**
2019	649	–	–	3,894	4,543

Note 10 Capital Instruments

(a) Carrying value of capital instruments

As at December 31,	Issuance date	Earliest par redemption date	Maturity date	Par value		2020	2019
JHFC Subordinated notes[1]	December 14, 2006	n/a	December 15, 2036	$	650	**$ 647**	$ 647
2.818% MFC Subordinated debentures[2]	May 12, 2020	May 13, 2030	May 13, 2035	$	1,000	**995**	–
4.061% MFC Subordinated notes[3],[4]	February 24, 2017	February 24, 2027	February 24, 2032	US$	750	**951**	969
2.237% MFC Subordinated debentures[5]	May 12, 2020	May 12, 2025	May 12, 2030	$	1,000	**996**	–
3.00% MFC Subordinated notes[6]	November 21, 2017	November 21, 2024	November 21, 2029	S$	500	**480**	481
3.049% MFC Subordinated debentures[7]	August 18, 2017	August 20, 2024	August 20, 2029	$	750	**748**	747
3.317% MFC Subordinated debentures[7]	May 9, 2018	May 9, 2023	May 9, 2028	$	600	**598**	598
3.181% MLI Subordinated debentures[8]	November 20, 2015	November 22, 2022	November 22, 2027	$	1,000	**999**	998
3.85% MFC Subordinated notes[6]	May 25, 2016	May 25, 2021	May 25, 2026	S$	500	**481**	482
2.389% MLI Subordinated debentures[8],[9]	June 1, 2015	January 5, 2021	January 5, 2026	$	350	**350**	350
2.10% MLI Subordinated debentures[10]	March 10, 2015	June 1, 2020	June 1, 2025	$	750	**–**	750
2.64% MLI Subordinated debentures[11]	December 1, 2014	January 15, 2020	January 15, 2025	$	500	**–**	500
7.375% JHUSA Surplus notes[12]	February 25, 1994	n/a	February 15, 2024	US$	450	**584**	598
Total						**$ 7,829**	$ 7,120

(1) Issued by Manulife Holdings (Delaware) LLC ("MHDLL"), now John Hancock Financial Corporation ("JHFC"), a wholly owned subsidiary of MFC, to Manulife Finance (Delaware) LLC ("MFLLC"), a subsidiary of Manulife Finance (Delaware) L.P. ("MFLP"). MFLP and its subsidiaries are wholly owned unconsolidated related parties to the Company. The note bears interest at a floating rate equal to the 90-day Bankers' Acceptance rate plus 0.72%. With regulatory approval, JHFC may redeem the note, in whole or in part, at any time, at par, together with accrued and unpaid interest. Refer to note 17.

(2) Issued by MFC during the year, interest is payable semi-annually. After May 13, 2030, the interest rate will reset to equal the 90-day Bankers' Acceptance rate plus 1.82%. With regulatory approval, MFC may redeem the debentures, in whole, or in part, on or after May 13, 2025, at a redemption price together with accrued and unpaid interest. If the redemption date is on or after May 13, 2025, but prior to May 13, 2030, the redemption price shall be the greater of: (i) the Canada yield price as defined in the prospectus; and (ii) par. If the redemption date is on or after May 13, 2030, the redemption price shall be equal to par.

(3) On the earliest par redemption date, the interest rate will reset to equal the 5-Year US Dollar Mid-Swap Rate plus 1.647%. With regulatory approval, MFC may redeem the debentures, in whole, but not in part, on the earliest par redemption date, at a redemption price equal to par, together with accrued and unpaid interest.

(4) Designated as a hedge of the Company's net investment in its U.S. operations which reduces the earnings volatility that would otherwise arise from the re-measurement of the subordinated notes into Canadian dollars.

(5) Issued by MFC during the year, interest is payable semi-annually. After May 12, 2025, the interest rate will reset to equal the 90-day Bankers' Acceptance rate plus 1.49%. With regulatory approval, MFC may redeem the debentures, in whole, or in part, on or after May 12, 2025, at a redemption price equal to par, together with accrued and unpaid interest.

(6) On the earliest par redemption date, the interest rate will reset to equal the 5-Year Singapore Dollar Swap Rate plus a specified number of basis points. The specified number of basis points is as follows: 3.00% – 83.2 bps, 3.85% – 197 bps. With regulatory approval, MFC may redeem the debentures, in whole, but not in part, on the earliest par redemption date and thereafter on each interest payment date, at a redemption price equal to par, together with accrued and unpaid interest.

(7) Interest is fixed for the period up to the earliest par redemption date, thereafter, the interest rate will reset to a floating rate equal to the 90-day Bankers' Acceptance rate plus a specified number of basis points. The specified number of basis points is as follows: 3.049% – 105 bps, 3.317% – 78 bps. With regulatory approval, MFC may redeem the debentures, in whole or in part, on or after the earliest par redemption date, at a redemption price equal to par, together with accrued and unpaid interest.

(8) Interest is fixed for the period up to the earliest par redemption date, thereafter the interest rate will reset to a floating rate equal to the 90-day Bankers' Acceptance rate plus a specified number of basis points. The specified number of basis points is as follows: 3.181% – 157 bps, 2.389% – 83 bps. With regulatory approval, MLI may redeem the debentures, in whole or in part, on or after the earliest par redemption date, at a redemption price equal to par, together with accrued and unpaid interest.

(9) MLI redeemed in full the 2.389% subordinated debentures at par, on January 5, 2021, the earliest par redemption date.

(10) MLI redeemed in full the 2.10% subordinated debentures at par, on June 1, 2020, the earliest par redemption date.

(11) MLI redeemed in full the 2.64% subordinated debentures at par, on January 15, 2020, the earliest par redemption date.

(12) Issued by John Hancock Mutual Life Insurance Company, now John Hancock Life Insurance Company (U.S.A.). Any payment of interest or principal on the surplus notes requires prior approval from the Department of Insurance and Financial Services of the State of Michigan. The carrying value of the surplus notes reflects an unamortized fair value increment of US$13 (2019 – US$17), which arose as a result of the acquisition of John Hancock Financial Services, Inc. The amortization of the fair value adjustment is recorded in interest expense.

(b) Fair value measurement

Fair value of capital instruments is determined using the following hierarchy:

Level 1 – Fair value is determined using quoted market prices where available.

Level 2 – When quoted market prices are not available, fair value is determined with reference to quoted prices of similar debt instruments or estimated using discounted cash flows based on observable market rates.

The Company measures capital instruments at amortized cost in the Consolidated Statements of Financial Position. As at December 31, 2020, the fair value of capital instruments was $8,295 (2019 – $7,333). Fair value of capital instruments was determined using Level 2 valuation techniques (2019 – Level 2).

Note 11 Share Capital and Earnings Per Share

The authorized capital of MFC consists of:

- an unlimited number of common shares without nominal or par value; and
- an unlimited number of Class A, Class B and Class 1 preferred shares without nominal or par value, issuable in series.

(a) Preferred shares

The following table presents information about the outstanding preferred shares as at December 31, 2020 and 2019.

As at December 31, 2020	Issue date	Annual dividend rate[1]	Earliest redemption date[2]	Number of shares (in millions)	Face amount	Net amount[3] 2020	Net amount[3] 2019
Class A preferred shares							
Series 2	February 18, 2005	4.65%	n/a	14	$ 350	**$ 344**	$ 344
Series 3	January 3, 2006	4.50%	n/a	12	300	**294**	294
Class 1 preferred shares							
Series 3[4],[5]	March 11, 2011	2.178%	June 19, 2021	6	158	**155**	155
Series 4[6]	June 20, 2016	floating	June 19, 2021	2	42	**41**	41
Series 5[4],[5]	December 6, 2011	3.891%	December 19, 2021	8	200	**195**	195
Series 7[4],[5]	February 22, 2012	4.312%	March 19, 2022	10	250	**244**	244
Series 9[4],[5]	May 24, 2012	4.351%	September 19, 2022	10	250	**244**	244
Series 11[4],[5]	December 4, 2012	4.731%	March 19, 2023	8	200	**196**	196
Series 13[4],[5]	June 21, 2013	4.414%	September 19, 2023	8	200	**196**	196
Series 15[4],[5]	February 25, 2014	3.786%	June 19, 2024	8	200	**195**	195
Series 17[4],[5]	August 15, 2014	3.80%	December 19, 2024	14	350	**343**	343
Series 19[4],[5],[7]	December 3, 2014	3.675%	March 19, 2025	10	250	**246**	246
Series 21[4],[5]	February 25, 2016	5.60%	June 19, 2021	17	425	**417**	417
Series 23[4],[5]	November 22, 2016	4.85%	March 19, 2022	19	475	**467**	467
Series 25[4],[5]	February 20, 2018	4.70%	June 19, 2023	10	250	**245**	245
Total				156	$ 3,900	**$ 3,822**	$ 3,822

(1) Holders of Class A and Class 1 preferred shares are entitled to receive non-cumulative preferential cash dividends on a quarterly basis, as and when declared by the Board of Directors.
(2) Redemption of all preferred shares is subject to regulatory approval. MFC may redeem each series, in whole or in part, at par, on the earliest redemption date or every five years thereafter, except for Class A Series 2, Class A Series 3 and Class 1 Series 4 preferred shares. Class A Series 2 and Series 3 preferred shares are past their respective earliest redemption date and MFC may redeem these shares, in whole or in part, at par at any time, subject to regulatory approval, as noted. MFC may redeem the Class 1 Series 4, in whole or in part, at any time, at $25.00 per share if redeemed on June 19, 2021 and on June 19 every five years thereafter, or at $25.50 per share if redeemed on any other date after June 19, 2016, subject to regulatory approval, as noted.
(3) Net of after-tax issuance costs.
(4) On the earliest redemption date and every five years thereafter, the annual dividend rate will be reset to the five-year Government of Canada bond yield plus a yield specified for each series. The specified yield for Class 1 shares is: Series 3 – 1.41%, Series 5 – 2.90%, Series 7 – 3.13%, Series 9 – 2.86%, Series 11 – 2.61%, Series 13 – 2.22%, Series 15 – 2.16%, Series 17 – 2.36%, Series 19 – 2.30%, Series 21 – 4.97%, Series 23 – 3.83% and Series 25 – 2.55%.
(5) On the earliest redemption date and every five years thereafter, Class 1 preferred shares are convertible at the option of the holder into a new series that is one number higher than their existing series, and the holders are entitled to non-cumulative preferential cash dividends, payable quarterly if and when declared by the Board of Directors, at a rate equal to the three month Government of Canada Treasury bill yield plus the rate specified in footnote 4 above.
(6) The floating dividend rate for the Class 1 Shares Series 4 equals the three-month Government of Canada Treasury bill yield plus 1.41%.
(7) MFC did not exercise its right to redeem all or any of the outstanding Class 1 Shares Series 19 on March 19, 2020, the earliest redemption date. The dividend rate was reset as specified in footnote 4 above to an annual fixed rate of 3.675%, for a five-year period commencing on March 20, 2020.

(b) Common shares

The following table presents changes in common shares issued and outstanding.

For the years ended December 31,	2020 Number of shares (in millions)	2020 Amount	2019 Number of shares (in millions)	2019 Amount
Balance, January 1	**1,949**	**$ 23,127**	1,971	$ 22,961
Repurchased for cancellation	**(10)**	**(121)**	(58)	(677)
Issued under dividend reinvestment plan	**–**	**–**	31	739
Issued on exercise of stock options and deferred share units	**1**	**36**	5	104
Total	**1,940**	**$ 23,042**	1,949	$ 23,127

Normal Course Issuer Bid

On March 13, 2020, the Office of the Superintendent of Financial Institutions ("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. Accordingly, the Company has not repurchased its common shares since March 13, 2020.

MFC's NCIB expired on November 13, 2020. During 2020, MFC purchased and subsequently cancelled 10.2 million (2019 – 57.6 million) of its common shares at an average price of $24.86 (2019 – $23.22) per common share for a total cost of $253 (2019 – $1.3 billion). Of this, the book value of shares purchased was $121 (2019 - $677) which was recorded in common shares, and the excess market value over book value of these shares was $132 (2019 – $662) which was recorded in retained earnings in the Consolidated Statements of Changes in Equity.

Since the commencement of this NCIB on November 14, 2019, MFC purchased for cancellation 16.5 million of its common shares at an average price of $25.26 per share for a total cost of $416.

Dividend Reinvestment Plan

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 of Directors' discretion.

During 2020, the Company purchased common shares for this program in the open market.

(c) Earnings per share

The following table presents basic and diluted earnings per common share of the Company.

For the years ended December 31,	2020	2019
Basic earnings per common share	$ 2.94	$ 2.77
Diluted earnings per common share	2.93	2.77

The following is a reconciliation of the numbers of shares in the calculation of basic and diluted earnings per share.

For the years ended December 31,	2020	2019
Weighted average number of common shares (in millions)	1,941	1,958
Dilutive stock-based awards[1] (in millions)	2	4
Weighted average number of diluted common shares (in millions)	**1,943**	1,962

[1] The dilutive effect of stock-based awards was calculated using the treasury stock method. This method calculates the number of incremental shares by assuming the outstanding stock-based awards are (i) exercised and (ii) then reduced by the number of shares assumed to be repurchased from the issuance proceeds, using the average market price of MFC common shares for the year. Excluded from the calculation was a weighted average of 18 million (2019 – 9 million) anti-dilutive stock-based awards.

(d) Quarterly dividend declaration subsequent to year end

On February 10, 2021, the Company's Board of Directors approved a quarterly dividend of $0.28 per share on the common shares of MFC, payable on or after March 19, 2021 to shareholders of record at the close of business on February 23, 2021.

The Board also declared dividends on the following non-cumulative preferred shares, payable on or after March 19, 2021 to shareholders of record at the close of business on February 23, 2021.

Class A Shares Series 2 – $0.29063 per share
Class A Shares Series 3 – $0.28125 per share
Class 1 Shares Series 3 – $0.136125 per share
Class 1 Shares Series 4 – $0.092465 per share
Class 1 Shares Series 5 – $0.243188 per share
Class 1 Shares Series 7 – $0.2695 per share
Class 1 Shares Series 9 – $0.271938 per share
Class 1 Shares Series 11 – $0.295688 per share
Class 1 Shares Series 13 – $0.275875 per share
Class 1 Shares Series 15 – $0.236625 per share
Class 1 Shares Series 17 – $0.2375 per share
Class 1 Shares Series 19 – $0.229688 per share
Class 1 Shares Series 21 – $0.35 per share
Class 1 Shares Series 23 – $0.303125 per share
Class 1 Shares Series 25 – $0.29375 per share

Note 12 Capital Management

(a) Capital management

The Company monitors and manages its consolidated capital in compliance with the Life Insurance Capital Adequacy Test ("LICAT") guideline, the capital framework issued by the Office of the Superintendent of Financial Institutions ("OSFI"). Under the capital framework, the Company's consolidated capital resources, including available capital, surplus allowance, and eligible deposits, are measured against the base solvency buffer, which is the risk-based capital requirement determined in accordance with the guideline.

The Company's operating activities are primarily conducted within MLI and its subsidiaries. MLI is also regulated by OSFI and is therefore subject to consolidated risk-based capital requirements using the OSFI LICAT framework.

The Company 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 of Directors 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.

The capital management framework considers the requirements of the Company as a whole as well as the needs of each of the Company's subsidiaries. Internal capital targets are set above the regulatory requirements, and consider a number of factors, including expectations of regulators and rating agencies, results of sensitivity and stress testing and the Company's own risk assessments. The Company monitors against these internal targets and initiates actions appropriate to achieving its business objectives.

Consolidated capital, based on accounting standards, is presented in the table below for MFC. For regulatory reporting purposes, LICAT available capital is based on consolidated capital with adjustments for certain deductions, limits and restrictions, as mandated by the LICAT guideline.

Consolidated capital

As at December 31,	**2020**	2019
Total equity	**$ 53,006**	$ 50,106
Adjusted for AOCI loss on cash flow hedges	**(229)**	(143)
Total equity excluding AOCI on cash flow hedges	**53,235**	50,249
Qualifying capital instruments	**7,829**	7,120
Consolidated capital	**$ 61,064**	$ 57,369

(b) Restrictions on dividends and capital distributions

Dividends and capital distributions are restricted under the Insurance Companies Act ("ICA"). These restrictions apply to both MFC and its primary operating subsidiary MLI. The ICA prohibits the declaration or payment of any dividend on shares of an insurance company if there are reasonable grounds for believing a company does not have adequate capital and adequate and appropriate forms of liquidity or 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 direction made to the company by OSFI. The ICA also requires an insurance company to notify OSFI of the declaration of a dividend at least 15 days prior to the date fixed for its payment. Similarly, the ICA prohibits the purchase for cancellation of any shares issued by an insurance company or the redemption of any redeemable shares or other similar capital transactions, if there are reasonable grounds for believing that the company does not have adequate capital and adequate and appropriate forms of liquidity or the payment 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 any direction made to the company by OSFI. These latter transactions would require the prior approval of OSFI.

The ICA requires Canadian insurance companies to maintain adequate levels of capital at all times.

Since MFC is a holding company that conducts all of its operations through regulated insurance subsidiaries (or companies owned directly or indirectly by these subsidiaries), its ability to pay future dividends will depend on the receipt of sufficient funds from its regulated insurance subsidiaries. These subsidiaries are also subject to certain regulatory restrictions under laws in Canada, the United States and certain other countries that may limit their ability to pay dividends or make other upstream distributions.

On March 13, 2020, OSFI set the expectation for all federally regulated financial institutions that dividend increases and share buybacks should be halted for the time being. Refer to note 11(b).

Note 13 Revenue from Service Contracts

The Company provides investment management services, administrative services, distribution and related services to proprietary and third-party investment funds, retirement plans, group benefit plans and other arrangements. The Company also provides real estate management services to tenants of the Company's investment properties.

The Company's service contracts generally impose single performance obligations, each consisting of a series of similar related services for each customer.

The Company's performance obligations within service arrangements are generally satisfied over time as the customer simultaneously receives and consumes the benefits of the services rendered, measured using an output method. Fees typically include variable consideration and the related revenue is recognized to the extent that it is highly probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the uncertainty is subsequently resolved.

Asset-based fees vary with asset values of accounts under management, subject to market conditions and investor behaviors beyond the Company's control. Transaction processing and administrative fees vary with activity volume, also beyond the Company's control. Some fees, including distribution fees, are based on account balances and transaction volumes. Fees related to account balances and transaction volumes are measured daily. Real estate management service fees include fixed portions plus recovery of variable costs of services rendered to tenants. Fees related to services provided are generally recognized as services are rendered, which is when it becomes highly probable that no significant reversal of cumulative revenue recognized will occur. The Company has determined that its service contracts have no significant financing components as fees are collected monthly. The Company has no significant contract assets or contract liabilities.

The following tables present revenue from service contracts by service lines and reporting segments as disclosed in note 19.

For the year ended December 31, 2020	Asia	Canada	U.S.	Global WAM	Corporate and Other	Total
Investment management and other related fees	**$ 171**	**$ 202**	**$ 514**	**$ 2,770**	**$ (201)**	**$ 3,456**
Transaction processing, administration, and service fees	**239**	**814**	**15**	**2,215**	**2**	**3,285**
Distribution fees and other	**227**	**16**	**67**	**718**	**(52)**	**976**
Total included in other revenue	**637**	**1,032**	**596**	**5,703**	**(251)**	**7,717**
Revenue from non-service lines	**709**	**(19)**	**2,115**	**7**	**62**	**2,874**
Total other revenue	**$ 1,346**	**$ 1,013**	**$ 2,711**	**$ 5,710**	**$ (189)**	**$ 10,591**
Real estate management services included in net investment income	**$ 37**	**$ 144**	**$ 143**	**$ –**	**$ 8**	**$ 332**

For the year ended December 31, 2019	Asia	Canada	U.S.	Global WAM	Corporate and Other	Total
Investment management and other related fees	$ 164	$ 161	$ 542	$ 2,773	$ (198)	$ 3,442
Transaction processing, administration, and service fees	223	827	17	2,048	–	3,115
Distribution fees and other	199	52	72	741	(44)	1,020
Total included in other revenue	586	1,040	631	5,562	(242)	7,577
Revenue from non-service lines	629	48	2,023	–	122	2,822
Total other revenue	$ 1,215	$ 1,088	$ 2,654	$ 5,562	$ (120)	$ 10,399
Real estate management services included in net investment income	$ 36	$ 160	$ 137	$ –	$ 9	$ 342

Note 14 Stock-Based Compensation

(a) Stock options

The Company grants stock options under its Executive Stock Option Plan ("ESOP") to selected individuals. The options provide the holder the right to purchase MFC common shares at an exercise price equal to the higher of the prior day, prior five-day or prior ten-day average closing market price of the shares on the Toronto Stock Exchange on the date the options are granted. The options vest over a period not exceeding four years and expire not more than 10 years from the grant date. Effective with the 2015 grant, options may only be exercised after the fifth-year anniversary. A total of 73,600,000 common shares have been reserved for issuance under the ESOP.

Options outstanding

	2020		2019	
For the years ended December 31,	Number of options (in millions)	Weighted average exercise price	Number of options (in millions)	Weighted average exercise price
Outstanding, January 1	**21**	**$ 20.91**	23	$ 20.29
Granted	**5**	**24.38**	3	22.62
Exercised	**(2)**	**18.17**	(4)	18.79
Expired	**–**	**24.27**	–	18.88
Forfeited	**–**	**23.73**	(1)	23.41
Outstanding, December 31	**24**	**$ 21.74**	21	$ 20.91
Exercisable, December 31	**6**	**$ 19.52**	5	$ 17.56

For the year ended December 31, 2020	Options outstanding: Number of options (in millions)	Options outstanding: Weighted average exercise price	Options outstanding: Weighted average remaining contractual life (in years)	Options exercisable: Number of options (in millions)	Options exercisable: Weighted average exercise price	Options exercisable: Weighted average remaining contractual life (in years)
$12.64—$20.99	**6**	**$ 16.77**	**3.75**	**2**	**$ 15.32**	**1.27**
$21.00—$24.83	**18**	**$ 23.53**	**6.90**	**4**	**$ 21.85**	**3.72**
Total	**24**	**$ 21.74**	**6.06**	**6**	**$ 19.52**	**2.84**

The weighted average fair value of each option granted in 2020 has been estimated at $3.66 (2019 – $4.57) using the Black-Scholes option-pricing model. The pricing model uses the following assumptions for these options: risk-free interest rate of 1.50% (2019 – 2.50%), dividend yield of 3.50% (2019 – 3.50%), expected volatility of 23% (2019 – 28.0%) and expected life of 8 (2019 – 6.3) years. Expected volatility is estimated by evaluating a number of factors including historical volatility of the share price over multi-year periods.

Compensation expense related to stock options was $14 for the year ended December 31, 2020 (2019 – $11).

(b) Deferred share units

In 2000, the Company granted deferred share units (“DSUs”) to certain employees under the ESOP. These DSUs vest over a three-year period and each DSU entitles the holder to receive one common share on retirement or termination of employment. When dividends are paid on common shares, holders of DSUs are deemed to receive dividends at the same rate, payable in the form of additional DSUs. In 2020, nil DSUs were granted to employees under the ESOP (2019 – nil). The number of DSUs outstanding was 285,000 as at December 31, 2020 (2019 – 298,000).

In addition, for certain employees and pursuant to the Company’s deferred compensation program, the Company grants DSUs under the Restricted Share Units (“RSUs”) Plan which entitle the holder to receive payment in cash equal to the value of the same number of common shares plus credited dividends on retirement or termination of employment. In 2020, the Company granted 28,000 DSUs to certain employees which vest after 36 months (2019 – 46,000). In 2020, 38,000 DSUs (2019 – 49,000) were granted to certain employees who elected to defer receipt of all or part of their annual bonus. These DSUs vested immediately. Also, in 2020, 2,600 DSUs (2019 – 24,000) were granted to certain employees to defer payment of all or part of their RSUs and/or Performance Share Units (“PSUs”). These DSUs also vested immediately.

Under the Stock Plan for Non-Employee Directors, each eligible director may elect to receive his or her annual director’s retainer and fees in DSUs or common shares in lieu of cash. Upon termination of the Board service, an eligible director who has elected to receive DSUs will be entitled to receive cash equal to the value of the DSUs accumulated in his or her account, or at his or her direction, an equivalent number of common shares. The Company is allowed to issue up to one million common shares under this plan after which awards may be settled using shares purchased in the open market.

The fair value of 214,000 DSUs issued during the year was $22.65 per unit as at December 31, 2020 (2019 – 229,000 at $26.36 per unit).

For the years ended December 31, Number of DSUs (in thousands)	**2020**	2019
Outstanding, January 1	**2,395**	2,538
Issued	**214**	229
Reinvested	**145**	102
Redeemed	**(576)**	(416)
Forfeitures and cancellations	**(9)**	(58)
Outstanding, December 31	**2,169**	2,395

Of the DSUs outstanding as at December 31, 2020, 285,000 (2019 – 298,000) entitle the holder to receive common shares, 811,000 (2019 – 1,055,000) entitle the holder to receive payment in cash and 1,073,000 (2019 – 1,042,000) entitle the holder to receive payment in cash or common shares, at the option of the holder.

Compensation expense related to DSUs was $5 for the year ended December 31, 2020 (2019 – $10).

The carrying and fair value of the DSUs liability as at December 31, 2020 was $43 (2019 – $55) and was included in other liabilities.

(c) Restricted share units and performance share units

For the year ended December 31, 2020, 6.7 million RSUs (2019 – 6.5 million) and 1.1 million PSUs (2019 – 1.1 million) were granted to certain eligible employees under MFC’s Restricted Share Unit Plan. The fair value of the RSUs and PSUs granted during the year was $22.65 per unit as at December 31, 2020 (2019 – $26.36 per unit). Each RSU and PSU entitles the holder to receive payment equal to the market value of one common share, plus credited dividends, at the time of vesting, subject to any performance conditions.

RSUs and PSUs granted in February 2020 will vest after 36 months from their grant date and the related compensation expense is recognized over these periods, except where the employee is eligible to retire prior to a vesting date, in which case the cost is recognized over the period between the grant date and the date on which the employee is eligible to retire. Compensation expense related to RSUs and PSUs was $140 and $15, respectively, for the year ended December 31, 2020 (2019 – $128 and $17, respectively).

The carrying and fair value of the RSUs and PSUs liability as at December 31, 2020 was $194 (2019 – $205) and was included in other liabilities.

(d) Global share ownership plan

The Company's Global Share Ownership Plan allows qualifying employees to apply up to five per cent of their annual base earnings toward the purchase of common shares. The Company matches a percentage of the employee's eligible contributions up to a maximum amount. The Company's contributions vest immediately. All contributions are used to purchase common shares in the open market.

Note 15 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.

(a) Plan characteristics

The Company's final average pay defined benefit pension plans and retiree welfare plans are closed to new members. All employees may participate in capital accumulation plans including defined benefit cash balance plans, 401(k) plans and/or defined contribution plans, depending on the country of employment.

All pension arrangements are governed by local pension committees or management, but significant plan changes require approval from the Company's Board of Directors.

The Company's funding policy for defined benefit pension plans is to make the minimum annual contributions required by regulations in the countries in which the plans are offered. Assumptions and methods prescribed for regulatory funding purposes typically differ from those used for accounting purposes.

The Company's remaining defined benefit pension and/or retiree welfare plans are in the U.S., Canada, Japan and Taiwan (China). There are also disability welfare plans in the U.S. and Canada.

The largest defined benefit pension and retiree welfare plans are the primary plans for employees in the U.S. and Canada. These are the material plans that are discussed in the balance of this note. The Company measures its defined benefit obligations and fair value of plan assets for accounting purposes as at December 31 each year.

U.S. defined benefit pension and retiree welfare plans

The Company operates a qualified cash balance plan that is open to new members, a closed non-qualified cash balance plan, and a closed retiree welfare plan.

Actuarial valuations to determine the Company's minimum funding contributions for the qualified cash balance plan are required annually. Deficits revealed in the funding valuations must generally be funded over a period of up to seven years. It is expected that there will be no required funding for this plan in 2020. There are no plan assets set aside for the non-qualified cash balance plan.

The retiree welfare plan subsidizes the cost of life insurance and medical benefits. The majority of those who retired after 1991 receive a fixed-dollar subsidy from the Company based on service. The plan was closed to all employees hired after 2004. While assets have been set aside in a qualified trust to pay future retiree welfare benefits, this funding is optional. Retiree welfare benefits offered under the plan coordinate with the U.S. Medicare program to make optimal use of available federal financial support.

The qualified pension and retiree welfare plans are governed by the U.S. Benefits Committee, while the non-qualified pension plan is governed by the U.S. Non-Qualified Plans Subcommittee.

Canadian defined benefit pension and retiree welfare plans

The Company's defined benefit plans in Canada include two registered final average pay pension plans, a non-registered supplemental final average pay pension plan and a retiree welfare plan, all of which have been closed to new members.

Actuarial valuations to determine the Company's minimum funding contributions for the registered pension plans are required at least once every three years. Deficits revealed in the funding valuation must generally be funded over a period of ten years. For 2021, the required funding for these plans is expected to be $2. The non-registered supplemental pension plan is not funded.

The retiree welfare plan subsidizes the cost of life insurance, medical and dental benefits. These subsidies are a fixed-dollar amount for those who retired after April 30, 2013 and have been eliminated for those who retire after 2019. There are no assets set aside for this plan.

The registered pension plans are governed by Pension Committees, while the supplemental non-registered plan is governed by the Board of Directors. The retiree welfare plan is governed by management.

(b) Risks

In final average pay pension plans and retiree welfare plans, the Company generally bears the material risks which include interest rate, investment, longevity and health care cost inflation risks. In defined contribution plans, these risks are typically borne by the employee. In cash balance plans, the interest rate, investment and longevity risks are partially transferred to the employee.

Material sources of risk to the Company for all plans include:

- A decline in discount rates that increases the defined benefit obligations by more than the change in value of plan assets;
- Lower than expected rates of mortality; and
- For retiree welfare plans, higher than expected health care costs.

The Company has managed these risks through plan design and eligibility changes that have limited the size and growth of the defined benefit obligations. Investment risks for funded plans are managed by investing significantly in asset classes which are highly correlated with the plans' liabilities.

In the U.S., delegated committee representatives and management review the financial status of the qualified defined benefit pension plan at least monthly, and steps are taken in accordance with an established dynamic investment policy to increase the plan's allocation to asset classes which are highly correlated with the plan's liabilities and reduce investment risk as the funded status improves. As at December 31, 2020, the target asset allocation for the plan was 27% return-seeking assets and 73% liability-hedging assets.

In Canada, internal committees and management review the financial status of the registered defined benefit pension plans on at least a quarterly basis. As at December 31, 2020, the target asset allocation for the plans was 20% return-seeking assets and 80% liability-hedging assets.

(c) Pension and retiree welfare plans

	Pension plans		Retiree welfare plans	
For the years ended December 31,	**2020**	2019	**2020**	2019
Changes in defined benefit obligation:				
Opening balance	**$ 4,817**	$ 4,675	**$ 645**	$ 640
Current service cost	**41**	40	**–**	–
Interest cost	**150**	182	**20**	25
Plan participants' contributions	**–**	1	**3**	3
Actuarial losses (gains) due to:				
Experience	**2**	8	**(14)**	(10)
Demographic assumption changes	**(67)**	–	**(12)**	–
Economic assumption changes	**333**	413	**49**	56
Benefits paid	**(318)**	(358)	**(45)**	(46)
Impact of changes in foreign exchange rates	**(57)**	(144)	**(8)**	(23)
Defined benefit obligation, December 31	**$ 4,901**	$ 4,817	**$ 638**	$ 645

	Pension plans		Retiree welfare plans	
For the years ended December 31,	**2020**	2019	**2020**	2019
Change in plan assets:				
Fair value of plan assets, opening balance	**$ 4,453**	$ 4,187	**$ 598**	$ 610
Interest income	**140**	164	**19**	25
Return on plan assets (excluding interest income)	**310**	529	**33**	25
Employer contributions	**71**	75	**11**	12
Plan participants' contributions	**–**	1	**3**	3
Benefits paid	**(318)**	(358)	**(45)**	(46)
Administration costs	**(7)**	(9)	**(2)**	(2)
Impact of changes in foreign exchange rates	**(54)**	(136)	**(11)**	(29)
Fair value of plan assets, December 31	**$ 4,595**	$ 4,453	**$ 606**	$ 598

(d) Amounts recognized in the Consolidated Statements of Financial Position

	Pension plans		Retiree welfare plans	
As at December 31,	**2020**	2019	**2020**	2019
Development of net defined benefit liability				
Defined benefit obligation	**$ 4,901**	$ 4,817	**$ 638**	$ 645
Fair value of plan assets	**4,595**	4,453	**606**	598
Deficit	**306**	364	**32**	47
Effect of asset limit[1]	**–**	4	**–**	–
Deficit (surplus) and net defined benefit liability (asset)	**306**	368	**32**	47
Deficit is comprised of:				
Funded or partially funded plans	**(446)**	(391)	**(134)**	(120)
Unfunded plans	**752**	759	**166**	167
Deficit (surplus) and net defined benefit liability (asset)	**$ 306**	$ 368	**$ 32**	$ 47

[1] In 2019, the Company recognized an impairment of $4 on the net defined benefit asset for one of its registered pension plans in Canada.

(e) Disaggregation of defined benefit obligation

	U.S. plans				Canadian plans			
	Pension plans		Retiree welfare plans		Pension plans		Retiree welfare plans	
As at December 31,	**2020**	2019	**2020**	2019	**2020**	2019	**2020**	2019
Active members	**$ 551**	$ 550	**$ 27**	$ 31	**$ 211**	$ 301	**$ –**	$ 25
Inactive and retired members	**2,528**	2,529	**445**	447	**1,611**	1,437	**166**	142
Total	**$ 3,079**	$ 3,079	**$ 472**	$ 478	**$ 1,822**	$ 1,738	**$ 166**	$ 167

(f) Fair value measurements

The major categories of plan assets and the allocation to each category are as follows.

	U.S. plans[1]				Canadian plans[2]			
	Pension plans		Retiree welfare plans		Pension plans		Retiree welfare plans	
As at December 31, 2020	Fair value	% of total	Fair value	% of total	Fair value	% of total	Fair value	% of total
Cash and cash equivalents	**$ 17**	**1%**	**$ 30**	**5%**	**$ 10**	**1%**	**$ –**	**–**
Equity securities[3]	**612**	**20%**	**49**	**8%**	**339**	**22%**	**–**	**–**
Debt securities	**2,175**	**71%**	**520**	**86%**	**1,186**	**77%**	**–**	**–**
Other investments[4]	**254**	**8%**	**7**	**1%**	**2**	**0%**	**–**	**–**
Total	**$ 3,058**	**100%**	**$ 606**	**100%**	**$ 1,537**	**100%**	**$ –**	**–**

	U.S. plans[1]				Canadian plans[2]			
	Pension plans		Retiree welfare plans		Pension plans		Retiree welfare plans	
As at December 31, 2019	Fair value	% of total	Fair value	% of total	Fair value	% of total	Fair value	% of total
Cash and cash equivalents	$ 32	1%	$ 35	6%	$ 12	1%	$ –	–
Equity securities[3]	563	19%	45	8%	311	21%	–	–
Debt securities	2,155	72%	511	85%	1,123	78%	–	–
Other investments[4]	255	8%	7	1%	2	0%	–	–
Total	$ 3,005	100%	$ 598	100%	$ 1,448	100%	$ –	–

[1] All the U.S. pension and retiree welfare plan assets have daily quoted prices in active markets, except for the private equity, timber and agriculture assets. In the aggregate, the latter assets represent approximately 7% of all U.S. pension and retiree welfare plan assets as at December 31, 2020 (2019 – 7%).

[2] All the Canadian pension plan assets have daily quoted prices in active markets, except for the group annuity contract assets that represent approximately 0.1% of all Canadian pension plan assets as at December 31, 2020 (2019 – 0.1%).

[3] Equity securities include direct investments in MFC common shares of $1.1 (2019 – $1.3) in the U.S. retiree welfare plan and $nil (2019 – $nil) in Canada.

[4] Other U.S. plan assets include investment in private equity, timberland and agriculture, and managed futures. Other Canadian pension plan assets include investment in the group annuity contract.

(g) Net benefit cost recognized in the Consolidated Statements of Income

Components of the net benefit cost for the pension plans and retiree welfare plans were as follows.

	Pension plans		Retiree welfare plans	
For the years ended December 31,	**2020**	2019	**2020**	2019
Defined benefit current service cost	**$ 41**	$ 40	**$ –**	$ –
Defined benefit administrative expenses	**7**	9	**2**	2
Service cost	**48**	49	**2**	2
Interest on net defined benefit (asset) liability	**10**	18	**1**	–
Defined benefit cost	**58**	67	**3**	2
Defined contribution cost	**84**	80	**–**	–
Net benefit cost	**$ 142**	$ 147	**$ 3**	$ 2

(h) Re-measurement effects recognized in Other Comprehensive Income

	Pension plans		Retiree welfare plans	
For the years ended December 31,	**2020**	2019	**2020**	2019
Actuarial gains (losses) on defined benefit obligations due to:				
Experience	**$ (2)**	$ (8)	**$ 14**	$ 10
Demographic assumption changes	**67**	–	**12**	–
Economic assumption changes	**(333)**	(413)	**(49)**	(56)
Return on plan assets (excluding interest income)	**310**	529	**33**	25
Change in effect of asset limit	**5**	5	**–**	–
Total re-measurement effects	**$ 47**	$ 113	**$ 10**	$ (21)

(i) Assumptions

The key assumptions used by the Company to determine the defined benefit obligation and net benefit cost for the defined benefit pension plans and retiree welfare plans were as follows.

	U.S. Plans				Canadian Plans			
	Pension plans		Retiree welfare plans		Pension plans		Retiree welfare plans	
For the years ended December 31,	**2020**	2019	**2020**	2019	**2020**	2019	**2020**	2019
To determine the defined benefit obligation at end of year[1]:								
Discount rate	**2.4%**	3.2%	**2.4%**	3.2%	**2.5%**	3.1%	**2.6%**	3.1%
Initial health care cost trend rate[2]	**n/a**	n/a	**7.3%**	7.5%	**n/a**	n/a	**5.5%**	5.6%
To determine the defined benefit cost for the year[1]:								
Discount rate	**3.2%**	4.3%	**3.2%**	4.3%	**3.1%**	3.8%	**3.1%**	3.8%
Initial health care cost trend rate[2]	**n/a**	n/a	**7.5%**	7.8%	**n/a**	n/a	**5.6%**	5.7%

(1) Inflation and salary increase assumptions are not shown as they do not materially affect obligations and cost.

(2) The health care cost trend rate used to measure the U.S. based retiree welfare obligation was 7.3% grading to 4.5% for 2032 and years thereafter (2019 – 7.5% grading to 4.5% for 2032) and to measure the net benefit cost was 7.5% grading to 4.5% for 2032 and years thereafter (2019 – 7.8% grading to 5.0% for 2030). In Canada, the rate used to measure the retiree welfare obligation was 5.5% grading to 4.8% for 2026 and years thereafter (2019 – 5.6% grading to 4.8% for 2026) and to measure the net benefit cost was 5.6% grading to 4.8% for 2026 and years thereafter (2019 – 5.7% grading to 4.8% for 2026).

Assumptions regarding future mortality are based on published statistics and mortality tables. The current life expectancies underlying the values of the obligations in the defined benefit pension and retiree welfare plans are as follows.

As at December 31, 2020	U.S.	Canada
Life expectancy (in years) for those currently age 65		
Males	**21.9**	**23.8**
Females	**23.4**	**25.6**
Life expectancy (in years) at age 65 for those currently age 45		
Males	**23.3**	**24.7**
Females	**24.8**	**26.5**

(j) Sensitivity of assumptions on obligations

Assumptions used can have a significant effect on the obligations reported for defined benefit pension and retiree welfare plans. The potential impact on the obligations arising from changes in the key assumptions is set out in the following table. The sensitivities assume all other assumptions are held constant. In actuality, inter-relationships with other assumptions may exist.

As at December 31, 2020	Pension plans	Retiree welfare plans
Discount rate:		
Impact of a 1% increase	**$ (467)**	**$ (67)**
Impact of a 1% decrease	**554**	**82**
Health care cost trend rate:		
Impact of a 1% increase	**n/a**	**20**
Impact of a 1% decrease	**n/a**	**(17)**
Mortality rates[1]		
Impact of a 10% decrease	**143**	**16**

[1] If the actuarial estimates of mortality are adjusted in the future to reflect unexpected decreases in mortality, the effect of a 10% decrease in mortality rates at each future age would be an increase in life expectancy at age 65 of 0.8 years for U.S. males and females and 0.7 years and 0.8 years for Canadian males and females, respectively.

(k) Maturity profile

The weighted average duration (in years) of the defined benefit obligations is as follows.

	Pension plans		Retiree welfare plans	
As at December 31,	**2020**	2019	**2020**	2019
U.S. plans	**9.9**	9.3	**9.8**	9.7
Canadian plans	**12.5**	12.3	**14.7**	14.3

(l) Cash flows – contributions

Total cash payments for all employee future benefits, comprised of cash contributed by the Company to funded defined benefit pension and retiree welfare plans, cash payments directly to beneficiaries in respect of unfunded pension and retiree welfare plans, and cash contributed to defined contribution pension plans, are as follows.

	Pension plans		Retiree welfare plans	
For the years ended December 31,	**2020**	2019	**2020**	2019
Defined benefit plans	**$ 71**	$ 75	**$ 11**	$ 12
Defined contribution plans	**84**	80	**–**	–
Total	**$ 155**	$ 155	**$ 11**	$ 12

The Company's best estimate of expected cash payments for employee future benefits for the year ending December 31, 2021 is $65 for defined benefit pension plans, $85 for defined contribution pension plans and $13 for retiree welfare plans.

Note 16 Income Taxes

(a) Income tax expense

The following table presents income tax expense (recovery) recognized in the Consolidated Statements of Income.

For the years ended December 31,	2020	2019
Current tax		
Current year	**$ 998**	$ 1,246
Adjustments related to prior years	**(83)**	(74)
Total current tax	**915**	1,172
Deferred tax		
Change related to temporary differences	**253**	(454)
Effects of changes in tax rates	**27**	–
Total deferred tax	**280**	(454)
Income tax expense	**$ 1,195**	$ 718

The following table discloses income tax expense (recovery) recognized directly in equity.

For the years ended December 31,	2020	2019
Recognized in other comprehensive income		
Current income tax expense (recovery)	**$ (92)**	$ 92
Deferred income tax expense (recovery)	**87**	366
Total recognized in other comprehensive income	**$ (5)**	$ 458
Recognized in equity, other than other comprehensive income		
Current income tax expense (recovery)	**$ 25**	$ 5
Deferred income tax expense (recovery)	**(25)**	(6)
Total income tax recognized directly in equity	**$ –**	$ (1)

(b) Current tax receivable and payable

As at December 31, 2020, the Company had approximately $993 and $87 of current tax receivable and current tax payable, respectively (2019 – $600 and $121).

(c) Tax reconciliation

The effective income tax rate reflected in the Consolidated Statements of Income varies from the Canadian tax rate of 26.50 per cent for the year ended December 31, 2020 (2019 – 26.75 per cent) for the items outlined in the following table.

For the years ended December 31,	2020	2019
Income before income taxes	**$ 6,770**	$ 6,220
Income tax expense at Canadian statutory tax rate	**$ 1,794**	$ 1,664
Increase (decrease) in income taxes due to:		
Tax-exempt investment income	**(171)**	(260)
Differences in tax rate on income not subject to tax in Canada	**(528)**	(754)
Adjustments to taxes related to prior years	**(96)**	(106)
Tax rate change	**27**	–
Other differences	**169**	174
Income tax expense	**$ 1,195**	$ 718

(d) Deferred tax assets and liabilities

The following table presents the Company's deferred tax assets and liabilities reflected on the Consolidated Statement of Financial Position.

As at December, 31	2020	2019
Deferred tax assets	**$ 4,842**	$ 4,574
Deferred tax liabilities	**(2,614)**	(1,972)
Net deferred tax assets (liabilities)	**$ 2,228**	$ 2,602

The following table presents movement of deferred tax assets and liabilities.

As at December 31, 2020	Balance, January 1, 2020	Disposals	Recognized in Income Statement	Recognized in Other Comprehensive Income	Recognized in Equity	Translation and Other	Balance, December 31, 2020
Loss carryforwards	**$ 705**	**$ –**	**$ (210)**	**$ –**	**$ –**	**$ 2**	**$ 497**
Actuarial liabilities	**8,443**	**–**	**1,063**	**–**	**–**	**(134)**	**9,372**
Pensions and post-employment benefits	**226**	**–**	**–**	**(10)**	**–**	**(1)**	**215**
Tax credits	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Accrued interest	**1**	**–**	**–**	**–**	**–**	**–**	**1**
Real estate	**(1,046)**	**–**	**5**	**(2)**	**1**	**9**	**(1,033)**
Securities and other investments	**(4,704)**	**–**	**(1,254)**	**(59)**	**2**	**72**	**(5,943)**
Sale of investments	**(69)**	**–**	**13**	**–**	**–**	**–**	**(56)**
Goodwill and intangible assets	**(876)**	**–**	**24**	**–**	**–**	**3**	**(849)**
Other	**(78)**	**–**	**79**	**(16)**	**22**	**17**	**24**
Total	**$ 2,602**	**$ –**	**$ (280)**	**$ (87)**	**$ 25**	**$ (32)**	**$ 2,228**

As at December 31, 2019	Balance, January 1, 2019	Disposals	Recognized in Income Statement	Recognized in Other Comprehensive Income	Recognized in Equity	Translation and Other	Balance, December 31, 2019
Loss carryforwards	$ 1,019	$ (18)	$ (278)	$ –	$ (1)	$ (17)	$ 705
Actuarial liabilities	5,466	–	3,093	–	(1)	(115)	8,443
Pensions and post-employment benefits	242	–	4	(20)	–	–	226
Tax credits	261	–	(253)	–	–	(8)	–
Accrued interest	1	–	–	–	–	–	1
Real estate	(959)	–	(110)	–	–	23	(1,046)
Securities and other investments	(2,689)	–	(1,863)	(347)	39	156	(4,704)
Sale of investments	(87)	–	17	–	–	1	(69)
Goodwill and intangible assets	(847)	–	(49)	–	–	20	(876)
Other	97	(37)	(107)	1	(31)	(1)	(78)
Total	$ 2,504	$ (55)	$ 454	$ (366)	$ 6	$ 59	$ 2,602

The total deferred tax assets as at December 31, 2020 of $4,842 (2019 – $4,574) includes $1,005 (2019 – $98) where the Company has suffered losses in either the current or preceding year and where the recognition is dependent on future taxable profits in the relevant jurisdictions and feasible management actions.

As at December 31, 2020, tax loss carryforwards available were approximately $2,479 (2019 – $3,440) of which $2,321 expire between the years 2022 and 2040 while $137 have no expiry date, and capital loss carryforwards available were approximately $21 (2019 – $31) and have no expiry date. A $497 (2019 – $705) tax benefit related to these tax loss carryforwards has been recognized as a deferred tax asset as at December 31, 2020, and a benefit of $99 (2019 – $93) has not been recognized. In addition, the Company has approximately $154 (2019 – $157) of tax credit carryforwards which will expire between the years 2027 and 2029 of which a benefit of $154 (2019 – $157) has not been recognized.

The total deferred tax liability as at December 31, 2020 was $2,614 (2019 – $1,972). This amount includes the deferred tax liability of consolidated entities. The aggregate amount of taxable temporary differences associated with the Company's own investments in subsidiaries is not included in the Consolidated Financial Statements and was $22,782 (2019 – $19,623).

Note 17 Interests in Structured Entities

The Company is involved with both consolidated and unconsolidated structured entities ("SEs") which are established to generate investment and fee income. The Company is also involved with SEs that are used to facilitate financing for the Company. These entities may have some or all the following features: control is not readily identified based on voting rights; restricted activities designed to achieve a narrow objective; high amount of leverage; and/or highly structured capital.

The Company only discloses its involvement in significant consolidated and unconsolidated SEs. In assessing the significance, the Company considers the nature of its involvement with the SE, including whether it is sponsored by the Company (i.e. initially organized and managed by the Company). Other factors considered include the Company's investment in the SE as compared to total investments, its returns from the SE as compared to total net investment income, the SE's size as compared to total funds under management, and its exposure to any other risks from its involvement with the SE.

The Company does not provide financial or other support to its SEs, when it does not have a contractual obligation to do so.

(a) Consolidated SEs

Investment SEs

The Company acts as an investment manager of timberlands and timber companies. The Company's general fund and segregated funds invest in many of these companies. The Company has control over one timberland company which it manages, Hancock Victoria Plantations Holdings PTY Limited ("HVPH"). HVPH is a SE primarily because the Company's employees exercise voting rights over it on behalf of other investors. As at December 31, 2020, the Company's consolidated timber assets relating to HVPH were $949 (2019 – $936). The Company does not provide guarantees to other parties against the risk of loss from HVPH.

Financing SEs

The Company securitizes certain insured and variable rate commercial and residential mortgages and HELOC. This activity is facilitated by consolidated entities that are SEs because their operations are limited to issuing and servicing the Company's funding. Further information regarding the Company's mortgage securitization program is included in note 3.

(b) Unconsolidated SEs

Investment SEs

The following table presents the Company's investments and maximum exposure to loss from significant unconsolidated investment SEs, some of which are sponsored by the Company. The Company does not provide guarantees to other parties against the risk of loss from these SEs.

As at December 31,	Company's investment[1] 2020	2019	Company's maximum exposure to loss[2] 2020	2019
Leveraged leases[3]	**$ 3,371**	$ 3,371	**$ 3,371**	$ 3,371
Timberland companies[4]	**776**	752	**776**	765
Real estate companies[5]	**497**	541	**497**	541
Total	**$ 4,644**	$ 4,664	**$ 4,644**	$ 4,677

(1) The Company's investments in these unconsolidated SEs are included in invested assets and the Company's returns from them are included in net investment income and AOCI.
(2) The Company's maximum exposure to loss from each SE is limited to amounts invested in each, plus unfunded capital commitments, if any. The Company's investment commitments are disclosed in note 18. The maximum loss is expected to occur only upon the entity's bankruptcy/liquidation, or in case a natural disaster in the case of the timber companies.
(3) These entities are statutory business trusts which use capital provided by the Company and senior debt provided by other parties to finance the acquisition of assets. These assets are leased to third-party lessees under long-term leases. The Company owns equity capital in these business trusts. The Company does not consolidate any of the trusts that are party to the lease arrangements because the Company does not have decision-making power over them.
(4) These entities own and operate timberlands. The Company invests in their equity and debt. The Company's returns include investment income, investment advisory fees, forestry management fees and performance advisory fees. The Company does not control these entities because it either does not have the power to govern their financial and operating policies or does not have significant variable returns from them, or both.
(5) These entities, which include the Manulife U.S. REIT, own and manage commercial real estate. The Company invests in their equity. The Company's returns include investment income, investment management fees, property management fees, acquisition/disposition fees and leasing fees. The Company does not control these entities because it either does not have the power to govern their financial and operating policies or does not have significant variable returns from them, or both.

Financing SEs

The Company's interests and maximum exposure to loss from significant unconsolidated financing SEs are as follows.

As at December 31,	Company's interests[1] 2020	2019
Manulife Finance (Delaware), L.P.[2]	**$ 931**	$ 852
Manulife Financial Capital Trust II[3]	**–**	1
Total	**$ 931**	$ 853

(1) The Company's interests include amounts borrowed from the SEs and the Company's investment in their subordinated capital, and foreign currency and interest swaps with them, if any.
(2) This entity is a wholly owned partnership used to facilitate the Company's financing. Refer to notes 10 and 18.
(3) This entity is an open-ended trust that was used to facilitate the Company's financing. The Company redeemed all outstanding $1billion principal amount of MFCT II Senior debenture notes, at par, on December 30, 2019. Using these proceeds, the trust redeemed MFCT II Series 1 held by third parties, at par, on December 31, 2019.

(i) Other invested assets

The Company has investment relationships with a variety of other entities, which result from its direct investment in their debt and/or equity and which have been assessed for control. These other entities' investments include but are not limited to investments in power and infrastructure, oil and gas, private equity, real estate and agriculture, organized as limited partnerships and limited liability companies. Most of these other entities are not sponsored by the Company. The Company's involvement with these other entities is not individually significant. As such, the Company neither provides summary financial data for these entities nor individually assesses whether they are SEs. The Company's maximum exposure to losses because of its involvement with these other entities is limited to its investment in them and amounts committed to be invested but not yet funded. The Company records its income from these entities in net investment income and AOCI. The Company does not provide guarantees to other parties against the risk of loss from these other entities.

(ii) Interest in securitized assets

The Company invests in mortgage/asset-backed securities issued by securitization vehicles sponsored by other parties, including private issuers and government sponsored issuers, to generate investment income. The Company does not own a controlling financial interest in any of the issuers. These securitization vehicles are SEs based on their narrow scope of activities and highly leveraged capital structures. Investments in mortgage/asset-backed securities are reported on the Consolidated Statements of Financial Position as debt securities and private placements, and their fair value and carrying value are disclosed in note 3. The Company's maximum loss from these investments is limited to amounts invested.

Commercial mortgage-backed securities ("CMBS") are secured by commercial mortgages and residential mortgage-backed securities ("RMBS") are secured by residential mortgages. Asset-backed securities ("ABS") may be secured by various underlying assets including credit card receivables, automobile loans and aviation leases. The mortgage/asset-backed securities that the Company invests in primarily originate in North America.

The following table presents investments in securitized holdings by the type and asset quality.

As at December 31,	2020 CMBS	2020 RMBS	2020 ABS	2020 Total	2019 Total
AAA	**$ 1,438**	**$ 7**	**$ 1,020**	**$ 2,465**	$ 2,805
AA	**–**	**–**	**32**	**32**	648
A	**53**	**3**	**605**	**661**	372
BBB	**–**	**–**	**208**	**208**	63
BB and below	**–**	**–**	**76**	**76**	–
Total company exposure	**$ 1,491**	**$ 10**	**$ 1,941**	**$ 3,442**	$ 3,888

(iii) Mutual funds

The Company sponsors and may invest in a range of public mutual funds with a broad range of investment styles. As sponsor, the Company organizes mutual funds that implement investment strategies on behalf of current and future investors. The Company earns fees which are at market rates for providing advisory and administrative services to these mutual funds. Generally, the Company does not control its sponsored mutual funds because either the Company does not have power to govern their financial and operating policies, or its returns in the form of fees and ownership interests are not significant, or both. Certain mutual funds are SEs because their decision-making rights are not vested in voting equity interests and their investors are provided with redemption rights.

The Company's relationships with these mutual funds are not individually significant. As such, the Company neither provides summary financial data for these mutual funds nor individually assesses whether they are SEs. The Company's interest in mutual funds is limited to its investment and fees earned, if any. The Company's investments in mutual funds are recorded as part of its investment in public equities within the Consolidated Statements of Financial Position. For information regarding the Company's invested assets, refer to note 3. The Company does not provide guarantees to other parties against the risk of loss from these mutual funds.

As sponsor, the Company's investment in ("seed") startup capital of mutual funds as at December 31, 2020 was $1,428 (2019 – $1,576). The Company's retail mutual fund assets under management as at December 31, 2020 were $238,068 (2019 – $217,015).

Note 18 Commitments and Contingencies

(a) Legal proceedings

The Company is regularly involved in legal actions, both as a defendant and as a plaintiff. The legal actions where the Company is a party ordinarily relate to its activities as a provider of insurance protection or wealth management products, reinsurance, or in its capacity as an investment adviser, employer, or taxpayer. Other life insurers and asset managers, operating in the jurisdictions in which the Company does business, have been subject to a wide variety of other types of actions, some of which resulted in substantial judgments or settlements against the defendants; it is possible that the Company may become involved in similar actions in the future. In addition, government and regulatory bodies in Canada, the United States, Asia and other jurisdictions where the Company conducts business regularly make inquiries and, from time to time, require the production of information or conduct examinations concerning the Company's compliance with, among other things, insurance laws, securities laws, and laws governing the activities of broker-dealers.

In June 2018, a class action was initiated against John Hancock Life Insurance Company (U.S.A.) ("JHUSA") and John Hancock Life Insurance Company of New York ("JHNY") in the U.S. District Court for the Southern District of New York on behalf of owners of approximately 1,500 Performance Universal Life ("UL") policies issued between 2003 and 2009 whose policies were subject to a Cost of Insurance ("COI") increase announced in 2018. In October 2018, a second and almost identical class action was initiated against JHUSA and JHNY in the U.S. District Court for the Southern District of New York. The two cases were determined to be related, and they were consolidated and assigned to the same judge. Discovery has commenced in these cases. No hearings on substantive matters have been scheduled. It is too early to assess the range of potential outcomes for these two related lawsuits. In addition to the consolidated class action, there are seven non-class lawsuits opposing the Performance UL COI increases that also have been filed. Each of the lawsuits, except one, is brought by plaintiffs owning multiple policies and by entities managing them for investment purposes. Two of the non-class lawsuits are pending in New York state court; two of the lawsuits are pending in the U.S. District Court for the Southern District of New York; and three lawsuits are pending in the U.S. District Court for the Central District of California. Whether individually or on a combined basis, it remains premature, given the procedural status of these cases, as well as the relatively early development of parties' respective legal theories, to suggest a reliable estimate of potential outcomes.

(b) Investment commitments

In the normal course of business, various investment commitments are outstanding which are not reflected in the Consolidated Financial Statements. There were $9,937 (2019 – $8,682) of outstanding investment commitments as at December 31, 2020, of which $638 (2019 – $411) mature in 30 days, $2,634 (2019 – $2,507) mature in 31 to 365 days and $6,665 (2019 – $5,764) mature after one year.

(c) Letters of credit

In the normal course of business, third-party relationship banks issue letters of credit on the Company's behalf. The Company's businesses utilize letters of credit for which third parties are the beneficiaries, as well as for affiliate reinsurance transactions between its subsidiaries. As at December 31, 2020, letters of credit for which third parties are beneficiary, in the amount of $103 (2019 – $57), were outstanding.

(d) Guarantees

(i) Guarantees regarding Manulife Finance (Delaware), L.P. ("MFLP")

MFC has guaranteed the payment of amounts on the $650 subordinated debentures due on December 15, 2041 issued by MFLP, a wholly owned unconsolidated partnership.

(ii) Guarantees regarding The Manufacturers Life Insurance Company

MFC has provided a subordinated guarantee on the day of issuance for the following subordinated debentures issued by MLI: $350 issued on June 1, 2015; and $1,000 issued on November 20, 2015.

The following table presents certain condensed consolidated financial information for MFC and MFLP.

Condensed Consolidated Statements of Income Information

For the year ended December 31, 2020	MFC (Guarantor)	MLI consolidated	Other subsidiaries of MFC on a combined basis	Consolidation adjustments	Total consolidated amounts	MFLP
Total revenue	**$ 547**	**$ 78,929**	**$ 520**	**$ (1,088)**	**$ 78,908**	**$ 32**
Net income (loss) attributed to shareholders	**5,871**	**6,179**	**(500)**	**(5,679)**	**5,871**	**(1)**

For the year ended December 31, 2019	MFC (Guarantor)	MLI consolidated	Other subsidiaries of MFC on a combined basis	Consolidation adjustments	Total consolidated amounts	MFLP
Total revenue	$ 371	$ 79,711	$ 417	$ (929)	$ 79,570	$ 32
Net income (loss) attributed to shareholders	5,602	5,963	(401)	(5,562)	5,602	(1)

Condensed Consolidated Statements of Financial Position

As at December 31, 2020	MFC (Guarantor)	MLI consolidated	Other subsidiaries of MFC on a combined basis	Consolidation adjustments	Total consolidated amounts	MFLP
Invested assets	**$ 47**	**$ 410,919**	**$ 11**	**$ –**	**$ 410,977**	**$ 5**
Total other assets	**64,419**	**102,439**	**3**	**(64,925)**	**101,936**	**1,166**
Segregated funds net assets	**–**	**367,436**	**–**	**–**	**367,436**	**–**
Insurance contract liabilities	**–**	**385,554**	**–**	**–**	**385,554**	**–**
Investment contract liabilities	**–**	**3,288**	**–**	**–**	**3,288**	**–**
Segregated funds net liabilities	**–**	**367,436**	**–**	**–**	**367,436**	**–**
Total other liabilities	**12,131**	**59,683**	**–**	**(749)**	**71,065**	**936**

As at December 31, 2019	MFC (Guarantor)	MLI consolidated	Other subsidiaries of MFC on a combined basis	Consolidation adjustments	Total consolidated amounts	MFLP
Invested assets	$ 21	$ 378,496	$ 10	$ –	$ 378,527	$ 6
Total other assets	57,474	87,774	3	(57,756)	87,495	1,088
Segregated funds net assets	–	343,108	–	–	343,108	–
Insurance contract liabilities	–	351,161	–	–	351,161	–
Investment contract liabilities	–	3,104	–	–	3,104	–
Segregated funds net liabilities	–	343,108	–	–	343,108	–
Total other liabilities	8,357	53,998	–	(704)	61,651	858

(iii) Guarantees regarding John Hancock Life Insurance Company (U.S.A.) ("JHUSA")

Details of guarantees regarding certain securities issued or to be issued by JHUSA are outlined in note 23.

(e) Pledged assets

In the normal course of business, the Company pledges its assets in respect of liabilities incurred, strictly for providing collateral to the counterparty. In the event of the Company's default, the counterparty is entitled to apply the collateral to settle the liability. The pledged assets are returned to the Company if the underlying transaction is terminated or, in the case of derivatives, if there is a decrease in the net exposure due to market value changes.

The amounts pledged are as follows.

	2020		2019	
As at December 31,	Debt securities	Other	Debt securities	Other
In respect of:				
Derivatives	**$ 5,924**	**$ 35**	$ 4,257	$ 17
Secured borrowings[(1)]	**–**	**2,790**	–	–
Regulatory requirements	**452**	**80**	433	67
Repurchase agreements	**353**	**–**	330	–
Non-registered retirement plans in trust	**–**	**424**	–	407
Other	**2**	**302**	3	331
Total	**$ 6,731**	**$ 3,631**	$ 5,023	$ 822

(1) During the year, the Company pledged its mortgage loans with the Federal Home Loan Bank of Indianapolis ("FHLBI"). Of this amount, $937 is required collateral for the US$500 outstanding borrowing to JHUSA under the FHLBI facility; and $1,853 is excess collateral that can be called back by JHUSA at any time.

(f) Participating business

In some territories where the Company maintains participating accounts, there are regulatory restrictions on the amounts of profit that can be transferred to shareholders. Where applicable, these restrictions generally take the form of a fixed percentage of policyholder dividends. For participating businesses operating as separate "closed blocks", transfers are governed by the terms of MLI's and John Hancock Mutual Life Insurance Company's plans of demutualization.

(g) Fixed surplus notes

A third party contractually provides standby financing arrangements for the Company's U.S. operations under which, in certain circumstances, funds may be provided in exchange for the issuance of fixed surplus notes. As at December 31, 2020, the Company had no fixed surplus notes outstanding.

Note 19 Segmented Information

The Company's reporting segments are Asia, Canada, U.S., Global WAM and Corporate and Other. Each reporting segment is responsible for managing its operating results, developing products, defining strategies for services and distribution based on the profile and needs of its business and market. The Company's significant product and service offerings by the reporting segments are mentioned below.

Wealth and asset management businesses (Global WAM) – include mutual funds and exchange-traded funds, group retirement and savings products, and institutional asset management services across all major asset classes. These products and services are distributed through multiple distribution channels, including agents and brokers affiliated with the Company, independent securities brokerage firms and financial advisors pension plan consultants and banks.

Insurance and annuity products (Asia, Canada and U.S.) – includes a variety of individual life insurance, individual and group long-term care insurance and guaranteed and partially guaranteed annuity products. Products are distributed through multiple distribution channels, including insurance agents, brokers, banks, financial planners and direct marketing. Manulife Bank of Canada offers a variety of deposit and credit products to Canadian customers.

Corporate and Other Segment – comprised of investment performance on assets backing capital, net of amounts allocated to operating segments; costs incurred by the corporate office related to shareholder activities (not allocated to operating segments); financing costs; Property and Casualty ("P&C") Reinsurance Business; and run-off reinsurance operations including variable annuities and accident and health.

Reporting segments

As at and for the year ended December 31, 2020	Asia	Canada	U.S.	Global WAM	Corporate and Other	Total
Revenue						
Life and health insurance	**$ 17,983**	**$ 8,833**	**$ 3,011**	**$ –**	**$ 140**	**$ 29,967**
Annuities and pensions	**2,496**	**334**	**120**	**–**	**–**	**2,950**
Net premium income	**20,479**	**9,167**	**3,131**	**–**	**140**	**32,917**
Net investment income (loss)	**6,630**	**8,458**	**17,519**	**39**	**2,754**	**35,400**
Other revenue	**1,346**	**1,013**	**2,711**	**5,710**	**(189)**	**10,591**
Total revenue	**28,455**	**18,638**	**23,361**	**5,749**	**2,705**	**78,908**
Contract benefits and expenses						
Life and health insurance	**17,997**	**10,385**	**16,099**	**–**	**(131)**	**44,350**
Annuities and pensions	**3,430**	**4,380**	**2,929**	**146**	**–**	**10,885**
Net benefits and claims	**21,427**	**14,765**	**19,028**	**146**	**(131)**	**55,235**
Interest expense	**269**	**342**	**54**	**2**	**514**	**1,181**
Other expenses	**5,123**	**3,141**	**2,714**	**4,329**	**414**	**15,721**
Total contract benefits and expenses	**26,819**	**18,248**	**21,796**	**4,477**	**797**	**72,137**
Income (loss) before income taxes	**1,636**	**390**	**1,565**	**1,272**	**1,908**	**6,771**
Income tax recovery (expense)	**(233)**	**(131)**	**(296)**	**(172)**	**(363)**	**(1,195)**
Net income (loss)	**1,403**	**259**	**1,269**	**1,100**	**1,545**	**5,576**
Less net income (loss) attributed to:						
Non-controlling interests	**250**	**–**	**–**	**–**	**–**	**250**
Participating policyholders	**(609)**	**64**	**–**	**–**	**–**	**(545)**
Net income (loss) attributed to shareholders	**$ 1,762**	**$ 195**	**$ 1,269**	**$ 1,100**	**$ 1,545**	**$ 5,871**
Total assets	**$ 145,801**	**$ 167,236**	**$ 288,814**	**$ 236,593**	**$ 41,905**	**$ 880,349**

The following table presents results by reporting segments.

As at and for the year ended December 31, 2019	Asia	Canada	U.S.	Global WAM	Corporate and Other	Total
Revenue						
Life and health insurance	$ 17,107	$ 8,714	$ 6,522	$ –	$ 112	$ 32,455
Annuities and pensions	2,900	361	(138)	–	–	3,123
Net premium income	20,007	9,075	6,384	–	112	35,578
Net investment income (loss)	7,451	9,446	15,556	33	1,107	33,593
Other revenue	1,215	1,088	2,654	5,562	(120)	10,399
Total revenue	28,673	19,609	24,594	5,595	1,099	79,570
Contract benefits and expenses						
Life and health insurance	17,975	10,572	19,320	–	(36)	47,831
Annuities and pensions	3,090	4,312	599	83	–	8,084
Net benefits and claims	21,065	14,884	19,919	83	(36)	55,915
Interest expense	236	508	43	6	526	1,319
Other expenses	5,148	3,237	2,944	4,362	425	16,116
Total contract benefits and expenses	26,449	18,629	22,906	4,451	915	73,350
Income (loss) before income taxes	2,224	980	1,688	1,144	184	6,220
Income tax recovery (expense)	(277)	25	(260)	(122)	(84)	(718)
Net income (loss)	1,947	1,005	1,428	1,022	100	5,502
Less net income (loss) attributed to:						
Non-controlling interests	228	–	–	–	5	233
Participating policyholders	(216)	(117)	–	–	–	(333)
Net income (loss) attributed to shareholders	$ 1,935	$ 1,122	$ 1,428	$ 1,022	$ 95	$ 5,602
Total assets	$ 127,367	$ 159,042	$ 274,993	$ 216,348	$ 31,380	$ 809,130

Geographical location

The results of the Company's reporting segments differ from its geographical location primarily due to the allocation of Global WAM and Corporate and Other segments into the geographical location to which its businesses relate.

The following table presents results by geographical location.

For the year ended December 31, 2020	Asia	Canada	U.S.	Other	Total
Revenue					
Life and health insurance	**$ 18,072**	**$ 8,474**	**$ 3,012**	**$ 409**	**$ 29,967**
Annuities and pensions	**2,496**	**334**	**120**	**–**	**2,950**
Net premium income	**20,568**	**8,808**	**3,132**	**409**	**32,917**
Net investment income (loss)	**7,085**	**8,531**	**19,735**	**49**	**35,400**
Other revenue	**2,300**	**2,671**	**5,600**	**20**	**10,591**
Total revenue	**$ 29,953**	**$ 20,010**	**$ 28,467**	**$ 478**	**$ 78,908**

For the year ended December 31, 2019	Asia	Canada	U.S.	Other	Total
Revenue					
Life and health insurance	$ 17,178	$ 8,388	$ 6,523	$ 366	$ 32,455
Annuities and pensions	2,900	361	(138)	–	3,123
Net premium income	20,078	8,749	6,385	366	35,578
Net investment income (loss)	7,750	9,801	15,816	226	33,593
Other revenue	2,100	2,651	5,641	7	10,399
Total revenue	$ 29,928	$ 21,201	$ 27,842	$ 599	$ 79,570

Note 20 Related Parties

The Company enters into transactions with related parties in the normal course of business and at the terms that would exist in arm's-length transactions.

(a) Transactions with certain related parties

Transactions with MFLP, a wholly owned unconsolidated partnership, and MFCT, a wholly owned unconsolidated trust, are described in notes 10, 17 and 18. Refer to note 3(a) for additional transactions with related parties.

(b) Compensation of key management personnel

The Company's key management personnel are those personnel who have the authority and responsibility for planning, directing and controlling the activities of the Company. Directors (both executive and non-executive) and senior management are considered key personnel. A summary of compensation of key management personnel is as follows.

For the years ended December 31,	**2020**	2019
Short-term employee benefits	**$ 69**	$ 67
Post-employment benefits	**5**	5
Share-based payments	**57**	55
Termination benefits	**–**	8
Other long-term benefits	**3**	2
Total	**$ 134**	$ 137

Note 21 Subsidiaries

The following is a list of Manulife's directly and indirectly held major operating subsidiaries.

As at December 31, 2020 (100% owned unless otherwise noted in brackets beside company name)	Equity Interest	Address	Description
The Manufacturers Life Insurance Company	**$ 63,379**	Toronto, Canada	Leading Canadian-based financial services company that offers a diverse range of financial protection products and wealth management services
Manulife Holdings (Alberta) Limited	$ 23,967	Calgary, Canada	Holding company
John Hancock Financial Corporation		Boston, U.S.A.	Holding company
The Manufacturers Investment Corporation		Boston, U.S.A.	Holding company
John Hancock Reassurance Company Ltd.		Boston, U.S.A.	Captive insurance subsidiary that provides life, annuity and long-term care reinsurance to affiliates

As at December 31, 2020 (100% owned unless otherwise noted in brackets beside company name)	Equity Interest	Address	Description
John Hancock Life Insurance Company (U.S.A.)		Boston, U.S.A.	U.S. life insurance company licensed in all states, except New York
John Hancock Subsidiaries LLC		Boston, U.S.A.	Holding company
John Hancock Financial Network, Inc.		Boston, U.S.A.	Financial services distribution organization
John Hancock Investment Management LLC		Boston, U.S.A.	Investment advisor
John Hancock Investment Management Distributors LLC		Boston, U.S.A.	Broker-dealer
Manulife Investment Management (US) LLC		Boston, U.S.A.	Investment advisor
Hancock Natural Resource Group, Inc.		Boston, U.S.A.	Manager of globally diversified timberland and agricultural portfolios
John Hancock Life Insurance Company of New York		New York, U.S.A.	U.S. life insurance company licensed in New York
John Hancock Variable Trust Advisers LLC		Boston, U.S.A.	Investment advisor for open-end mutual funds
John Hancock Life & Health Insurance Company		Boston, U.S.A.	U.S. life insurance company licensed in all states
John Hancock Distributors LLC		Boston, U.S.A.	Broker-dealer
John Hancock Insurance Agency, Inc.		Boston, U.S.A.	Insurance agency
Manulife Reinsurance Limited		Hamilton, Bermuda	Provides life and financial reinsurance to affiliates
Manulife Reinsurance (Bermuda) Limited		Hamilton, Bermuda	Provides life and annuity reinsurance to affiliates
Manulife Bank of Canada	$ 1,686	Waterloo, Canada	Provides integrated banking products and service options not available from an insurance company
Manulife Investment Management Holdings (Canada) Inc.	$ 945	Toronto, Canada	Holding company
Manulife Investment Management Limited		Toronto, Canada	Provides investment counseling, portfolio and mutual fund management in Canada
First North American Insurance Company	$ 8	Toronto, Canada	Property and casualty insurance company
NAL Resources Management Limited		Calgary, Canada	Management company for oil and gas properties
Manulife Resources Limited	$ 20	Calgary, Canada	Holds oil and gas properties
Manulife Property Limited Partnership		Toronto, Canada	Holds oil and gas royalties
Manulife Property Limited Partnership II	$ 479	Toronto, Canada	Holds oil and gas royalties and foreign bonds and equities
Manulife Western Holdings Limited Partnership		Calgary, Canada	Holds oil and gas properties
Manulife Securities Investment Services Inc.	$ 76	Oakville, Canada	Mutual fund dealer for Canadian operations
Manulife Holdings (Bermuda) Limited	$ 21,794	Hamilton, Bermuda	Holding company
Manufacturers P&C Limited		St. Michael, Barbados	Provides property and casualty reinsurance
Manulife Financial Asia Limited		Hong Kong, China	Holding company
Manulife (Cambodia) PLC		Phnom Penh, Cambodia	Life insurance company
Manulife Myanmar Life Insurance Company Limited		Yangon, Myanmar	Life insurance company
Manufacturers Life Reinsurance Limited		St. Michael, Barbados	Provides life and annuity reinsurance to affiliates
Manulife (Vietnam) Limited		Ho Chi Minh City, Vietnam	Life insurance company
Manulife Investment Fund Management (Vietnam) Company Limited		Ho Chi Minh City, Vietnam	Fund management company
Manulife International Holdings Limited		Hong Kong, China	Holding company
Manulife (International) Limited		Hong Kong, China	Life insurance company
Manulife-Sinochem Life Insurance Co. Ltd. (51%)		Shanghai, China	Life insurance company
Manulife Investment Management International Holdings Limited		Hong Kong, China	Holding company

As at December 31, 2020 (100% owned unless otherwise noted in brackets beside company name)	Equity Interest	Address	Description
Manulife Investment Management (Hong Kong) Limited		Hong Kong, China	Investment management and advisory company marketing mutual funds
Manulife Investment Management (Taiwan) Co., Ltd.		Taipei, Taiwan (China)	Asset management company
Manulife Life Insurance Company (Japan)		Tokyo, Japan	Life insurance company
Manulife Investment Management (Japan) Limited		Tokyo, Japan	Investment management and advisory company and mutual fund business
Manulife Insurance (Thailand) Public Company Limited (85.6%)[1]		Bangkok, Thailand	Life insurance company
Manulife Asset Management (Thailand) Company Limited (93.5%)[1]		Bangkok, Thailand	Investment management company
Manulife Holdings Berhad (60.2%)		Kuala Lumpur, Malaysia	Holding company
Manulife Insurance Berhad (60.2%)		Kuala Lumpur, Malaysia	Life insurance company
Manulife Investment Management (Malaysia) Bhd (60.2%)		Kuala Lumpur, Malaysia	Asset management company
Manulife (Singapore) Pte. Ltd.		Singapore	Life insurance company
Manulife Investment Management (Singapore) Pte. Ltd.		Singapore	Asset management company
The Manufacturers Life Insurance Co. (Phils.), Inc.		Makati City, Philippines	Life insurance company
Manulife Chinabank Life Assurance Corporation (60%)		Makati City, Philippines	Life insurance company
PT Asuransi Jiwa Manulife Indonesia		Jakarta, Indonesia	Life insurance company
PT Manulife Aset Manajemen Indonesia		Jakarta, Indonesia	Investment management and investment advisor
Manulife Investment Management (Europe) Limited	$ 37	London, England	Investment management company for Manulife Financial's international funds
Manulife Assurance Company of Canada	$ 71	Toronto, Canada	Life insurance company
EIS Services (Bermuda) Limited	$ 1,064	Hamilton, Bermuda	Investment holding company
Berkshire Insurance Services Inc.	$ 1,726	Toronto, Canada	Investment holding company
JH Investments (Delaware), LLC		Boston, U.S.A.	Investment holding company
Manulife Securities Incorporated	$ 133	Oakville, Canada	Investment dealer
Manulife Investment Management (North America) Limited	$ 5	Toronto, Canada	Investment advisor

(1) MFC voting rights percentages are the same as the ownership percentages except for Manulife Insurance (Thailand) Public Company Limited and Manulife Asset Management (Thailand) Company Limited where MFC's voting rights are 97.0% and 98.7%, respectively.

Note 22 Segregated Funds

The Company manages segregated funds on behalf of policyholders. Policyholders are provided with the opportunity to invest in different categories of segregated funds that respectively hold a range of underlying investments. The Company retains legal title to the underlying investments; however, returns from these investments belong to the policyholders. Accordingly, the Company does not bear the risk associated with these assets outside of guarantees offered on certain variable life and annuity products. The "Risk Management" section of the Company's 2020 MD&A provides information regarding the variable annuity and segregated fund guarantees.

The composition of net assets by categories of segregated funds was within the following ranges for the years ended December 31, 2020 and 2019.

	Ranges in per cent	
Type of fund	**2020**	2019
Money market funds	**2% to 3%**	2% to 3%
Fixed income funds	**14% to 16%**	14% to 15%
Balanced funds	**23% to 24%**	24% to 25%
Equity funds	**58% to 60%**	58% to 60%

Money market funds consist of investments that have a term to maturity of less than one year. Fixed income funds primarily consist of investments in fixed grade income securities and may contain smaller investments in diversified equities or high-yield bonds. Relative to fixed income funds, balanced funds consist of fixed income securities and a larger equity investment component. The types of equity funds available to policyholders range from low volatility equity funds to aggressive equity funds. Equity funds invest in a varying mix of Canadian, U.S. and global equities.

The underlying investments of the segregated funds consist of both individual securities and mutual funds (collectively "net assets"), some of which may be structured entities. The carrying value and change in segregated funds net assets are as follows. Fair value related information of segregated funds is disclosed in note 3(g).

Segregated funds net assets

As at December 31,	2020	2019
Investments at market value		
Cash and short-term securities	**$ 4,054**	$ 3,364
Debt securities	**17,913**	16,883
Equities	**14,227**	12,989
Mutual funds	**326,889**	304,753
Other investments	**4,599**	4,785
Accrued investment income	**1,670**	1,678
Other assets and liabilities, net	**(1,543)**	(975)
Total segregated funds net assets	**$ 367,809**	$ 343,477
Composition of segregated funds net assets		
Held by policyholders	**$ 367,436**	$ 343,108
Held by the Company	**373**	369
Total segregated funds net assets	**$ 367,809**	$ 343,477

Changes in segregated funds net assets

For the years ended December 31,	2020	2019
Net policyholder cash flow		
Deposits from policyholders	**$ 38,898**	$ 38,561
Net transfers to general fund	**(1,515)**	(1,000)
Payments to policyholders	**(44,818)**	(49,372)
	(7,435)	(11,811)
Investment related		
Interest and dividends	**16,775**	18,872
Net realized and unrealized investment gains (losses)	**24,514**	37,643
	41,289	56,515
Other		
Management and administration fees	**(3,942)**	(3,926)
Impact of changes in foreign exchange rates	**(5,580)**	(10,897)
	(9,522)	(14,823)
Net additions	**24,332**	29,881
Segregated funds net assets, beginning of year	**343,477**	313,596
Segregated funds net assets, end of year	**$ 367,809**	$ 343,477

Segregated funds assets may be exposed to a variety of financial and other risks. These risks are primarily mitigated by investment guidelines that are actively monitored by professional and experienced portfolio advisors. The Company is not exposed to these risks beyond the liabilities related to guarantees associated with certain variable life and annuity products. Accordingly, the Company's exposure to loss from segregated fund products is limited to the value of these guarantees.

These guarantees are recorded within the Company's insurance contract liabilities. Assets supporting these guarantees are recognized in invested assets according to their investment type.

Note 23 Information Provided in Connection with Investments in Deferred Annuity Contracts and *Signature*Notes Issued or Assumed by John Hancock Life Insurance Company (U.S.A.)

The following condensed consolidated financial information, presented in accordance with IFRS, and the related disclosure have been included in these Consolidated Financial Statements with respect to JHUSA in compliance with Regulation S-X and Rule 12h-5 of the United States Securities and Exchange Commission (the "Commission"). These financial statements are incorporated by reference in the MFC and its subsidiaries registration statements that are described below and which relate to MFC's guarantee of certain securities to be issued by its subsidiaries.

JHUSA maintains a book of deferred annuity contracts that feature a market value adjustment, some of which are registered with the Commission. The deferred annuity contracts may contain variable investment options along with fixed investment period options, or may offer only fixed investment period options. The fixed investment period options enable the participant to invest fixed amounts of money for fixed terms at fixed interest rates, subject to a market value adjustment if the participant desires to terminate a fixed investment period before its maturity date. The annuity contract provides for the market value adjustment to keep the parties whole with respect to the fixed interest bargain for the entire fixed investment period. These fixed investment period options that contain a market value adjustment feature are referred to as "MVAs".

JHUSA may also sell medium-term notes to retail investors under its *Signature*Notes program.

Effective December 31, 2009, John Hancock Variable Life Insurance Company (the "Variable Company") and John Hancock Life Insurance Company (the "Life Company") merged with and into JHUSA. In connection with the mergers, JHUSA assumed the Variable Company's rights and obligations with respect to the MVAs issued by the Variable Company and the Life Company's rights and obligations with respect to the *Signature*Notes issued by the Life Company.

MFC fully and unconditionally guaranteed the payment of JHUSA's obligations under the MVAs and under the *Signature*Notes (including the MVAs and *Signature*Notes assumed by JHUSA in the merger), and such MVAs and the *Signature*Notes were registered with the Commission. The *Signature*Notes and MVAs assumed or issued by JHUSA are collectively referred to in this note as the "Guaranteed Securities". JHUSA is, and each of the Variable Company and the Life Company was, a wholly owned subsidiary of MFC.

MFC's guarantees of the Guaranteed Securities are unsecured obligations of MFC and are subordinated in right of payment to the prior payment in full of all other obligations of MFC, except for other guarantees or obligations of MFC which by their terms are designated as ranking equally in right of payment with or subordinate to MFC's guarantees of the Guaranteed Securities.

The laws of the State of New York govern MFC's guarantees of the *Signature*Notes issued or assumed by JHUSA and the laws of the Commonwealth of Massachusetts govern MFC's guarantees of the MVAs issued or assumed by JHUSA. MFC has consented to the jurisdiction of the courts of New York and Massachusetts. However, because a substantial portion of MFC's assets are located outside the United States, the assets of MFC located in the United States may not be sufficient to satisfy a judgment given by a federal or state court in the United States to enforce the subordinate guarantees. In general, the federal laws of Canada and the laws of the Province of Ontario, where MFC's principal executive offices are located, permit an action to be brought in Ontario to enforce such a judgment provided that such judgment is subsisting and unsatisfied for a fixed sum of money and not void or voidable in the United States and a Canadian court will render a judgment against MFC in a certain dollar amount, expressed in Canadian dollars, subject to customary qualifications regarding fraud, violations of public policy, laws limiting the enforcement of creditor's rights and applicable statutes of limitations on judgments. There is currently no public policy in effect in the Province of Ontario that would support avoiding the recognition and enforcement in Ontario of a judgment of a New York or Massachusetts court on MFC's guarantees of the *Signature*Notes issued or assumed by JHUSA or a Massachusetts court on guarantees of the MVAs issued or assumed by JHUSA.

MFC is a holding company. MFC's assets primarily consist of investments in its subsidiaries. MFC's cash flows primarily consist of dividends and interest payments from its operating subsidiaries, offset by expenses and shareholder dividends and MFC stock repurchases. As a holding company, MFC's ability to meet its cash requirements, including, but not limited to, paying any amounts due under its guarantees, substantially depends upon dividends from its operating subsidiaries.

These subsidiaries are subject to certain regulatory restrictions under laws in Canada, the United States and certain other countries, which may limit their ability to pay dividends or make contributions or loans to MFC. For example, some of MFC's subsidiaries are subject to restrictions prescribed by the ICA on their ability to declare and pay dividends. The restrictions related to dividends imposed by the ICA are described in note 12.

In the United States, insurance laws in Michigan, New York, and Massachusetts, the jurisdictions in which certain of MFC's U.S. insurance company subsidiaries are domiciled, impose general limitations on the payment of dividends and other upstream distributions or loans by these insurance subsidiaries. These limitations are described in note 12.

In Asia, the insurance laws of the jurisdictions in which MFC operates either provide for specific restrictions on the payment of dividends or other distributions or loans by subsidiaries or impose solvency or other financial tests, which could affect the ability of subsidiaries to pay dividends in certain circumstances.

There can be no assurance that any current or future regulatory restrictions in Canada, the United States or Asia will not impair MFC's ability to meet its cash requirements, including, but not limited to, paying any amounts due under its guarantees.

The following condensed consolidated financial information, presented in accordance with IFRS, reflects the effects of the mergers and is provided in compliance with Regulation S-X and in accordance with Rule 12h-5 of the Commission.

Condensed Consolidated Statement of Financial Position

As at December 31, 2020	MFC (Guarantor)	JHUSA (Issuer)	Other subsidiaries	Consolidation adjustments	Consolidated MFC
Assets					
Invested assets	**$ 47**	**$ 112,735**	**$ 298,524**	**$ (329)**	**$ 410,977**
Investments in unconsolidated subsidiaries	**64,209**	**8,078**	**17,194**	**(89,481)**	**–**
Reinsurance assets	**–**	**65,731**	**11,172**	**(31,067)**	**45,836**
Other assets	**210**	**25,489**	**52,648**	**(22,247)**	**56,100**
Segregated funds net assets	**–**	**191,955**	**178,224**	**(2,743)**	**367,436**
Total assets	**$ 64,466**	**$ 403,988**	**$ 557,762**	**$ (145,867)**	**$ 880,349**
Liabilities and equity					
Insurance contract liabilities	**$ –**	**$ 167,453**	**$ 249,909**	**$ (31,808)**	**$ 385,554**
Investment contract liabilities	**–**	**1,208**	**2,081**	**(1)**	**3,288**
Other liabilities	**718**	**25,594**	**52,761**	**(22,001)**	**57,072**
Long-term debt	**6,164**	**–**	**–**	**–**	**6,164**
Capital instruments	**5,249**	**584**	**1,996**	**–**	**7,829**
Segregated funds net liabilities	**–**	**191,955**	**178,224**	**(2,743)**	**367,436**
Shareholders' equity	**52,335**	**17,194**	**72,120**	**(89,314)**	**52,335**
Participating policyholders' equity	**–**	**–**	**(784)**	**–**	**(784)**
Non-controlling interests	**–**	**–**	**1,455**	**–**	**1,455**
Total liabilities and equity	**$ 64,466**	**$ 403,988**	**$ 557,762**	**$ (145,867)**	**$ 880,349**

Condensed Consolidated Statement of Financial Position

As at December 31, 2019	MFC (Guarantor)	JHUSA (Issuer)	Other subsidiaries	Consolidation adjustments	Consolidated MFC
Assets					
Invested assets	$ 21	$ 107,746	$ 271,100	$ (340)	$ 378,527
Investments in unconsolidated subsidiaries	57,068	7,467	16,983	(81,518)	–
Reinsurance assets	–	61,310	10,080	(29,944)	41,446
Other assets	406	20,859	45,111	(20,327)	46,049
Segregated funds net assets	–	181,982	162,845	(1,719)	343,108
Total assets	$ 57,495	$ 379,364	$ 506,119	$ (133,848)	$ 809,130
Liabilities and equity					
Insurance contract liabilities	$ –	$ 157,398	$ 224,378	$ (30,615)	$ 351,161
Investment contract liabilities	–	1,091	2,014	(1)	3,104
Other liabilities	537	21,311	48,226	(20,086)	49,988
Long-term debt	4,543	–	–	–	4,543
Capital instruments	3,277	599	3,244	–	7,120
Segregated funds net liabilities	–	181,982	162,845	(1,719)	343,108
Shareholders' equity	49,138	16,983	64,444	(81,427)	49,138
Participating policyholders' equity	–	–	(243)	–	(243)
Non-controlling interests	–	–	1,211	–	1,211
Total liabilities and equity	$ 57,495	$ 379,364	$ 506,119	$ (133,848)	$ 809,130

Condensed Consolidated Statement of Income

For the year ended December 31, 2020	MFC (Guarantor)	JHUSA (Issuer)	Other subsidiaries	Consolidation adjustments	Consolidated MFC
Revenue					
Gross premiums	$ –	$ 8,057	$ 34,459	$ (1,108)	$ 41,408
Premiums ceded to reinsurers	–	(6,585)	(3,014)	1,108	(8,491)
Net premium income	–	1,472	31,445	–	32,917
Net investment income (loss)	542	14,204	21,727	(1,073)	35,400
Net other revenue	5	2,869	12,884	(5,167)	10,591
Total revenue	547	18,545	66,056	(6,240)	78,908
Contract benefits and expenses					
Net benefits and claims	–	14,804	44,293	(3,862)	55,235
Commissions, investment and general expenses	17	3,146	13,573	(1,396)	15,340
Other expenses	434	230	1,880	(982)	1,562
Total contract benefits and expenses	451	18,180	59,746	(6,240)	72,137
Income (loss) before income taxes	96	365	6,310	–	6,771
Income tax (expense) recovery	(26)	54	(1,223)	–	(1,195)
Income (loss) after income taxes	70	419	5,087	–	5,576
Equity in net income (loss) of unconsolidated subsidiaries	5,801	1,344	1,763	(8,908)	–
Net income (loss)	$ 5,871	$ 1,763	$ 6,850	$ (8,908)	$ 5,576
Net income (loss) attributed to:					
Non-controlling interests	$ –	$ –	$ 250	$ –	$ 250
Participating policyholders	–	–	(545)	–	(545)
Shareholders	5,871	1,763	7,145	(8,908)	5,871
	$ 5,871	$ 1,763	$ 6,850	$ (8,908)	$ 5,576

Condensed Consolidated Statement of Income

For the year ended December 31, 2019	MFC (Guarantor)	JHUSA (Issuer)	Other subsidiaries	Consolidation adjustments	Consolidated MFC
Revenue					
Gross premiums	$ –	$ 8,599	$ 33,620	$ (1,160)	$ 41,059
Premiums ceded to reinsurers	–	(3,575)	(3,066)	1,160	(5,481)
Net premium income	–	5,024	30,554	–	35,578
Net investment income (loss)	355	12,128	22,108	(998)	33,593
Net other revenue	16	2,866	11,447	(3,930)	10,399
Total revenue	371	20,018	64,109	(4,928)	79,570
Contract benefits and expenses					
Net benefits and claims	–	17,133	41,220	(2,438)	55,915
Commissions, investment and general expenses	20	3,299	13,938	(1,530)	15,727
Other expenses	421	206	2,041	(960)	1,708
Total contract benefits and expenses	441	20,638	57,199	(4,928)	73,350
Income (loss) before income taxes	(70)	(620)	6,910	–	6,220
Income tax (expense) recovery	18	347	(1,083)	–	(718)
Income (loss) after income taxes	(52)	(273)	5,827	–	5,502
Equity in net income (loss) of unconsolidated subsidiaries	5,654	772	499	(6,925)	–
Net income (loss)	$ 5,602	$ 499	$ 6,326	$ (6,925)	$ 5,502
Net income (loss) attributed to:					
Non-controlling interests	$ –	$ –	$ 233	$ –	$ 233
Participating policyholders	–	2	(333)	(2)	(333)
Shareholders	5,602	497	6,426	(6,923)	5,602
	$ 5,602	$ 499	$ 6,326	$ (6,925)	$ 5,502

Consolidated Statement of Cash Flows

For the year ended December 31, 2020	MFC (Guarantor)	JHUSA (Issuer)	Other subsidiaries	Consolidation adjustments	Consolidated MFC
Operating activities					
Net income (loss)	$ 5,871	$ 1,763	$ 6,850	$ (8,908)	$ 5,576
Adjustments:					
Equity in net income of unconsolidated subsidiaries	(5,801)	(1,344)	(1,763)	8,908	–
Increase (decrease) in insurance contract liabilities	–	11,937	25,045	–	36,982
Increase (decrease) in investment contract liabilities	–	48	130	–	178
(Increase) decrease in reinsurance assets excluding coinsurance transactions	–	(3,133)	759	–	(2,374)
Amortization of (premium) discount on invested assets	–	54	100	–	154
Other amortization	7	145	504	–	656
Net realized and unrealized (gains) losses and impairment on assets	1	(9,420)	(13,102)	–	(22,521)
Deferred income tax expense (recovery)	25	(784)	1,039	–	280
Stock option expense	–	3	11	–	14
Cash provided by (used in) operating activities before undernoted items	103	(731)	19,573	–	18,945
Dividends from unconsolidated subsidiary	3,000	411	1,270	(4,681)	–
Changes in policy related and operating receivables and payables	91	8,459	(7,447)	–	1,103
Cash provided by (used in) operating activities	3,194	8,139	13,396	(4,681)	20,048
Investing activities					
Purchases and mortgage advances	–	(34,392)	(77,589)	–	(111,981)
Disposals and repayments	–	29,635	69,215	–	98,850
Changes in investment broker net receivables and payables	–	(431)	(586)	–	(1,017)
Investment in common shares of subsidiaries	(4,483)	–	–	4,483	–
Capital contribution to unconsolidated subsidiaries	–	(1)	–	1	–
Return of capital from unconsolidated subsidiaries	–	22	–	(22)	–
Notes receivable from parent	–	–	1,501	(1,501)	–
Notes receivable from subsidiaries	1,494	–	–	(1,494)	–
Cash provided by (used in) investing activities	(2,989)	(5,167)	(7,459)	1,467	(14,148)
Financing activities					
Issue of long-term debt, net	2,455	–	–	–	2,455
Redemption of long-term debt	(652)	–	–	–	(652)
Issue of capital instruments, net	1,990	–	–	–	1,990
Redemption of capital instruments	–	–	(1,250)	–	(1,250)
Secured borrowings	–	709	667	–	1,376
Change in repurchase agreements and securities sold but not yet purchased	–	–	24	–	24
Changes in deposits from Bank clients, net	–	–	(579)	–	(579)
Lease payments	–	(9)	(125)	–	(134)
Shareholders' dividends paid in cash	(2,340)	–	–	–	(2,340)
Dividends paid to parent	–	(1,270)	(3,411)	4,681	–
Common shares repurchased	(253)	–	–	–	(253)
Common shares issued, net	36	–	4,483	(4,483)	36
Contributions from (distributions to) non-controlling interests, net	–	–	(10)	–	(10)
Capital contributions by parent	–	–	1	(1)	–
Return of capital to parent	–	–	(22)	22	–
Notes payable to parent	–	–	(1,494)	1,494	–
Notes payable to subsidiaries	(1,501)	–	–	1,501	–
Cash provided by (used in) financing activities	(265)	(570)	(1,716)	3,214	663
Cash and short-term securities					
Increase (decrease) during the year	(60)	2,402	4,221	–	6,563
Effect of foreign exchange rate changes on cash and short-term securities	85	(59)	(554)	–	(528)
Balance, beginning of year	22	2,564	16,962	–	19,548
Balance, end of year	47	4,907	20,629	–	25,583
Cash and short-term securities					
Beginning of year					
Gross cash and short-term securities	22	3,058	17,220	–	20,300
Net payments in transit, included in other liabilities	–	(494)	(258)	–	(752)
Net cash and short-term securities, beginning of year	22	2,564	16,962	–	19,548
End of year					
Gross cash and short-term securities	47	5,213	20,907	–	26,167
Net payments in transit, included in other liabilities	–	(306)	(278)	–	(584)
Net cash and short-term securities, end of year	$ 47	$ 4,907	$ 20,629	$ –	$ 25,583
Supplemental disclosures on cash flow information:					
Interest received	$ 522	$ 4,334	$ 7,992	$ (1,112)	$ 11,736
Interest paid	426	109	1,765	(1,112)	1,188
Income taxes paid (refund)	(2)	721	639	–	1,358

Consolidated Statement of Cash Flows

For the year ended December 31, 2019	MFC (Guarantor)	JHUSA (Issuer)	Other subsidiaries	Consolidation adjustments	Consolidated MFC
Operating activities					
Net income (loss)	$ 5,602	$ 499	$ 6,326	$ (6,925)	$ 5,502
Adjustments:					
Equity in net income of unconsolidated subsidiaries	(5,654)	(772)	(499)	6,925	–
Increase (decrease) in insurance contract liabilities	–	11,381	22,346	–	33,727
Increase (decrease) in investment contract liabilities	–	51	119	–	170
(Increase) decrease in reinsurance assets excluding coinsurance transactions	–	(1,236)	679	–	(557)
Amortization of (premium) discount on invested assets	–	40	77	–	117
Other amortization	5	118	503	–	626
Net realized and unrealized (gains) losses and impairment on assets	(12)	(7,105)	(13,148)	–	(20,265)
Deferred income tax expense (recovery)	(18)	(192)	(244)	–	(454)
Stock option expense	–	(1)	12	–	11
Cash provided by (used in) operating activities before undernoted items	(77)	2,783	16,171	–	18,877
Dividends from unconsolidated subsidiary	3,000	623	1,123	(4,746)	–
Changes in policy related and operating receivables and payables	(39)	(146)	1,850	–	1,665
Cash provided by (used in) operating activities	2,884	3,260	19,144	(4,746)	20,542
Investing activities					
Purchases and mortgage advances	–	(24,898)	(55,712)	–	(80,610)
Disposals and repayments	–	22,324	43,009	–	65,333
Changes in investment broker net receivables and payables	–	631	528	–	1,159
Investment in common shares of subsidiaries	(404)	–	–	404	–
Net cash flows from acquisition and disposal of subsidiaries and businesses	–	–	288	–	288
Capital contribution to unconsolidated subsidiaries	–	(1)	–	1	–
Return of capital from unconsolidated subsidiaries	–	177	–	(177)	–
Notes receivable from parent	–	–	(157)	157	–
Notes receivable from subsidiaries	(1)	13	–	(12)	–
Cash provided by (used in) investing activities	(405)	(1,754)	(12,044)	373	(13,830)
Financing activities					
Change in repurchase agreements and securities sold but not yet purchased	–	–	266	–	266
Redemption of capital instruments	–	–	(1,500)	–	(1,500)
Secured borrowings	–	–	107	–	107
Changes in deposits from Bank clients, net	–	–	1,819	–	1,819
Lease payments	–	(8)	(109)	–	(117)
Shareholders' dividends paid in cash	(1,398)	–	–	–	(1,398)
Contributions from (distributions to) non-controlling interests, net	–	–	(22)	–	(22)
Common shares repurchased	(1,339)	–	–	–	(1,339)
Common shares issued, net	104	–	404	(404)	104
Dividends paid to parent	–	(1,123)	(3,623)	4,746	–
Capital contributions by parent	–	–	1	(1)	–
Return of capital to parent	–	–	(177)	177	–
Notes payable to parent	–	–	(12)	12	–
Notes payable to subsidiaries	157	–	–	(157)	–
Cash provided by (used in) financing activities	(2,476)	(1,131)	(2,846)	4,373	(2,080)
Cash and short-term securities					
Increase (decrease) during the year	3	375	4,254	–	4,632
Effect of foreign exchange rate changes on cash and short-term securities	(2)	(128)	(336)	–	(466)
Balance, beginning of year	21	2,317	13,044	–	15,382
Balance, end of year	22	2,564	16,962	–	19,548
Cash and short-term securities					
Beginning of year					
Gross cash and short-term securities	21	2,783	13,411	–	16,215
Net payments in transit, included in other liabilities	–	(466)	(367)	–	(833)
Net cash and short-term securities, beginning of year	21	2,317	13,044	–	15,382
End of year					
Gross cash and short-term securities	22	3,058	17,220	–	20,300
Net payments in transit, included in other liabilities	–	(494)	(258)	–	(752)
Net cash and short-term securities, end of year	$ 22	$ 2,564	$ 16,962	$ –	$ 19,548
Supplemental disclosures on cash flow information:					
Interest received	$ 422	$ 4,252	$ 7,823	$ (948)	$ 11,549
Interest paid	423	83	1,741	(948)	1,299
Income taxes paid (refund)	–	(788)	892	–	104

Note 24 Comparatives

Certain comparative amounts have been reclassified to conform to the current year's presentation.

Additional Actuarial Disclosures

Source of Earnings

Manulife uses a Source of Earnings ("SOE") to identify the primary sources of gains or losses in each reporting period. It is one of the key tools the Company uses to understand and manage its business. The SOE is prepared following OSFI's regulatory guidelines, and in accordance with educational notes published by the Canadian Institute of Actuaries ("CIA"). The SOE attributes each component of earnings to one of ten categories: expected profit from in-force business, the impact of new business, experience gains or losses (comparing actual to expected outcomes), the impact of management actions and changes in assumptions, earnings on surplus funds, other insurance earnings, Global Wealth and Asset Management earnings, Manulife Bank earnings, unallocated overhead expenses, and income taxes. In aggregate, these elements explain the $5,871 million of net income attributed to shareholders in 2020.

Each of these ten categories is described below:

Expected profit from in-force business represents the formula-driven release of Provisions for Adverse Deviation ("PfADs") on non-fee income insurance businesses, the expected net income on fee businesses, and the planned margins on one-year renewable businesses such as Group Benefits. PfADs are a requirement of the Canadian Actuarial Standards of Practice, and represent additional amounts held in excess of the expected cost of discharging policy obligations in order to provide a margin of conservatism. These amounts are released over time as the Company is released from the risks associated with the policy obligations.

The increase in 2020 over 2019 was primarily due to in-force business growth in Asia and the U.S.

Impact of new business represents the financial impact of new business written in the period, including acquisition expenses. Writing new business creates economic value, which is offset by PfADs and other limits on capitalization of this economic value in actuarial liabilities.

The new business gain in 2020 declined compared to 2019, driven by lower new business volumes in North America, as well as in Hong Kong and Japan. This was partially offset by favourable new business product mix in Hong Kong and Asia Other.

Experience gains or losses arise from items such as claims, policy persistency, fee income, and expenses, where the actual experience in the current period differs from the expected results assumed in the insurance and investment contract liabilities. It also includes experience gains or losses associated with actual investment returns and movements in investment markets differing from those expected on assets supporting insurance and investment contract liabilities. For most businesses, the expected future investment returns underlying policy valuations are updated quarterly for investment market movements and this impact is also included in experience gains and losses. This component also includes the impact of currency changes to the extent they are separately quantified. Experience gains do not include the impact of management actions or changes in assumptions during the reporting period, which are reported in "Management actions and changes in assumptions".

The experience losses in 2020 were primarily driven by the unfavourable impact from interest rates movements, as well as the unfavourable investment related experience on general fund liabilities and impacts from gross equity markets exposure, partially offset by favourable policyholder experience. The unfavourable impact of interest rate movements 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. The unfavourable investment related experience on general fund liabilities reflected lower-than-expected returns (including fair value changes) on alternative long-duration assets ("ALDA") primarily driven by investments in oil & gas and real estate, partially offset by the favourable impact of fixed income reinvestment activities.

The experience losses in 2019 were primarily driven by the unfavourable impact from interest rates movements, charges related to changes in the URR, as well as unfavourable policyholder experience, partially offset by favourable investment related experience on general fund liabilities and impacts from gross equity markets exposure. The unfavourable impact of interest rate movements was driven by the narrowing of corporate spreads, the impact of lower risk-free rates and a steepening of the yield curve. The favourable investment related experience on general fund liabilities was driven by fixed income reinvestment activities on the measurement of our policy liabilities, strong returns (including changes in fair value) on ALDA, and strong credit experience.

Management actions and changes in assumptions reflect the income impact of changes to valuation methods and assumptions for insurance and investment contract liabilities and other management-initiated actions in the year that are outside the normal course of business.

The 2020 pre-tax earnings impact of changes in methods and assumptions was a $273 million charge compared to a $61 million charge in 2019. The $273 million charge in 2020 was primarily the result of review of the lapse assumptions for universal life policies in Canada, including both yearly renewable term, and level cost of insurance products, whereby we lowered the ultimate lapse assumptions due to the emergence of more recent data. This was partially offset by favourable mortality and morbidity updates (gains in Canada and Japan, partially offset by losses in the U.S.), 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. Note 6 of the Consolidated Financial Statements provides additional detail on the changes in actuarial methods and assumptions.

Impacts from material management action items reported in the Corporate segment in 2020 included gains from the sale of bonds designated as available for sale ("AFS"), as well as gains resulting from reinsurance transactions in the U.S., Asia and Canada.

Earnings on surplus funds reflect the actual investment returns on assets supporting the Company's surplus (shareholders' equity). These assets comprise a diversified portfolio and returns will vary with the underlying asset categories.

Other represents pre-tax earnings items on insurance business that are not included in any other line of the SOE.

Global Wealth and Asset Management ("Global WAM") represents pre-tax net income from the Global Wealth and Asset Management segment.

Manulife Bank represents pre-tax net income from Manulife Bank.

Unallocated overhead represents pre-tax unallocated overhead expenses from the Corporate and Other segments.

Income taxes represent tax charges to earnings based on the varying tax rates in the jurisdictions in which Manulife conducts business.

Manulife's net income attributed to shareholders for the full year 2020 increased to $5,871 million from $5,602 million the previous year.

For the year ended December 31, 2020 (C$ millions)	Asia	Canada	U.S.	Corporate and Other	Global WAM	Total
Expected Profit from In-force Business	**$1,265**	**$ 1,011**	**$ 1,897**	**$ 108**	**$ –**	**4,281**
Impact of New Business	**713**	**7**	**188**	**1**	**–**	**909**
Experience gains (losses)	**(304)**	**(1,391)**	**(1,000)**	**(6)**	**–**	**(2,701)**
Management actions and changes in assumptions	**(100)**	**134**	**(29)**	**2,896**	**–**	**2,901**
Earnings on surplus	**238**	**333**	**485**	**(556)**	**–**	**500**
Other	**154**	**(1)**	**24**	**(11)**	**–**	**166**
Insurance	**1,966**	**93**	**1,565**	**2,432**	**–**	**6,056**
Global Wealth and Asset Management	**–**	**–**	**–**	**–**	**1,272**	**1,272**
Manulife Bank	**–**	**213**	**–**	**–**	**–**	**213**
Unallocated overhead	**–**	**–**	**–**	**(524)**	**–**	**(524)**
Income (loss) before income taxes	**$1,966**	**$ 306**	**$ 1,565**	**$1,908**	**$1,272**	**7,017**
Income tax (expense) recovery	**(204)**	**(111)**	**(296)**	**(363)**	**(172)**	**(1,146)**
Net income (loss) attributed to shareholders	**$1,762**	**$ 195**	**$ 1,269**	**$1,545**	**$1,100**	**5,871**

For the year ended December 31, 2019 (C$ millions)	Asia	Canada	U.S.	Corporate and Other	Global WAM	Total
Expected Profit from In-force Business	$1,131	$ 1,003	$ 1,798	$ 96	$ –	4,028
Impact of New Business	747	44	205	–	–	996
Experience gains (losses)	(29)	(214)	(1,066)	(55)	–	(1,364)
Management actions and changes in assumptions	(13)	(193)	242	566	–	602
Earnings on surplus	219	342	483	23	–	1,067
Other	157	(3)	26	32	–	212
Insurance	2,212	979	1,688	662	–	5,541
Global Wealth and Asset Management	–	–	–	–	1,144	1,144
Manulife Bank	–	202	–	–	–	202
Unallocated overhead	–	–	–	(479)	–	(479)
Income (loss) before income taxes	$2,212	$ 1,181	$ 1,688	$ 183	$1,144	6,408
Income tax (expense) recovery	(277)	(59)	(260)	(88)	(122)	(806)
Net income (loss) attributed to shareholders	$1,935	$ 1,122	$ 1,428	$ 95	$1,022	5,602

Embedded Value

The embedded value ("EV") as of December 31, 2020 will be disclosed later.

Board of Directors

Current as of March 1, 2021

"Director Since" refers to the year of first election to the Board of Directors of The Manufacturers Life Insurance Company.

John M. Cassaday
Chairman of the Board
Manulife
Toronto, ON, Canada
Director Since: 1993

Nicole Arnaboldi
Corporate Director
Greenwich, CT, U.S.A.
Director Since: 2020

Guy L.T. Bainbridge
Corporate Director
Edinburgh, Midlothian, United Kingdom
Director Since: 2019

Joseph P. Caron
Corporate Director
West Vancouver, BC, Canada
Director Since: 2010

Susan F. Dabarno
Corporate Director
Bracebridge, ON, Canada
Director Since: 2013

Julie E. Dickson
Corporate Director
Ottawa, ON, Canada
Director Since: 2019

Sheila S. Fraser
Corporate Director
Ottawa, ON, Canada
Director Since: 2011

Roy Gori
President and Chief Executive Officer
Manulife
Toronto, ON, Canada
Director Since: 2017

Tsun-yan Hsieh
Chairman
LinHart Group PTE Ltd.
Singapore, Singapore
Director Since: 2011

Donald R. Lindsay
President and Chief Executive Officer
Teck Resources Limited
Vancouver, BC, Canada
Director Since: 2010

John R.V. Palmer
Corporate Director
Toronto, ON, Canada
Director Since: 2009

C. James Prieur
Corporate Director
Chicago, IL, U.S.A.
Director Since: 2013

Andrea S. Rosen
Corporate Director
Toronto, ON, Canada
Director Since: 2011

Leagh E. Turner
President and Chief Operating Officer
Ceridian HCM Holding Inc.
Toronto, ON, Canada
Director Since: 2020

Executive Leadership Team

Current as of March 1, 2021

Roy Gori
President and Chief Executive Officer

Michael J. Doughty
President and Chief Executive Officer, Manulife Canada

Steven A. Finch
Chief Actuary

James D. Gallagher
General Counsel

Marianne Harrison
President and Chief Executive Officer, John Hancock

Scott S. Hartz
Chief Investment Officer

Rahim Hirji
Chief Risk Officer

Naveed Irshad
Head of North American Legacy Business

Rahul M. Joshi
Chief Operations Officer

Pamela O. Kimmet
Chief Human Resources Officer

Karen A. Leggett
Chief Marketing Officer

Paul R. Lorentz
President and Chief Executive Officer, Global Wealth and Asset Management

Anil Wadhwani
President and Chief Executive Officer, Manulife Asia

Shamus E. Weiland
Chief Information Officer

Philip J. Witherington
Chief Financial Officer

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Glossary of Terms

Available-For-Sale (AFS) Financial Assets: Non-derivative financial assets that are designated as available-for-sale or that are not classified as loans and receivables, held-to-maturity investments, or held for trading.

Accumulated Other Comprehensive Income (AOCI): A separate component of shareholders' equity which includes net unrealized gains and losses on AFS securities, net unrealized gains and losses on derivative instruments designated within an effective cash flow hedge, and unrealized foreign currency translation gains and losses. These items have been recognized in other comprehensive income and may be subsequently reclassified to net income. AOCI also includes remeasurement of pension and other post-employment plans and real estate revaluation reserve. These items are recognized in other comprehensive income and will never be reclassified to net income.

Assets Under Management and Administration (AUMA): A measure of the size of the Company. It is comprised of the non-GAAP measures assets under management ("AUM"), which includes both assets of general account and external client assets for which we provide investment management services, and assets under administration ("AUA"), which includes assets for which we provide administrative services only.

Book Value per Share: Ratio obtained by dividing common shareholders' equity by the number of common shares outstanding at the end of the period.

Cash Flow Hedges: A hedge of the exposure to variability in cash flows associated with a recognized asset or liability, a forecasted transaction or a foreign currency risk in an unrecognized firm commitment that is attributable to a particular risk and could affect reported net income.

Constant Currency Basis: Amounts stated on a constant currency basis are calculated by applying the most recent quarter's exchange rates to all prior periods.

Core Earnings (Loss): A measure to help investors better understand the long-term earnings capacity and valuation of the business. Core earnings excludes the direct impact of equity markets and interest rates as well as a number of other items that are considered material and exceptional in nature. While this metric 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.

Deferred Acquisition Costs (DAC): Costs directly attributable to the acquisition of new business, principally agents' compensation, which are capitalized on the Company's Consolidated Statements of Financial Position and amortized into income over a specified period.

Embedded Value: A measure of shareholders' value embedded in the current balance sheet of the Company, excluding any value associated with future new business.

Guarantee Value: Typically within variable annuity products, the guarantee value refers to the level of the policyholder's protected account balance which is unaffected by market fluctuations.

Hedging: The practice of making an investment in a market or financial instrument for the purpose of offsetting or limiting potential losses from other investments or financial exposures.

> **Dynamic Hedging:** A hedging technique which seeks to limit an investment's market exposure by adjusting the hedge as the underlying security changes (hence, "dynamic").
>
> **Macro hedging:** An investment technique used to offset the risk of an entire portfolio of assets. A macro hedge reflects a more broad-brush approach which is not frequently adjusted to reflect market changes.

International Financial Reporting Standards (IFRS): Refers to the international accounting standards in Canada, effective January 1, 2011; this was a change from Canadian Generally Accepted Accounting Principles (CGAAP).

Impaired Assets: Mortgages, debt securities and other investment securities in default where there is no longer reasonable assurance of collection.

In-Force: Refers to the policies that are currently active.

Long-Term Care (LTC) Insurance: Insurance coverage available on an individual or group basis to provide reimbursement for medical and other services to the chronically ill, disabled, or mentally challenged.

Life Insurance Capital Adequacy Test (LICAT): The ratio of the available capital of a life insurance company to its required capital, each as calculated under the Office of the Superintendent of Financial Institutions' (OSFI) published guidelines.

New Business Value (NBV): The change in shareholders' economic value as a result of sales in the 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 Manulife's wealth and asset management businesses and Manulife Bank.

New Business Strain: The initial expense of writing an insurance policy that is incurred when the policy is written, and has an immediate negative impact on the Company's financial position. Over the life of the contract, future income (premiums, investment income, etc.) is expected to repay this initial outlay.

Other than Temporary Impairment (OTTI): A write down that is made if the institution does not expect the fair value of the security to recover prior to its maturity or the expected time of sale.

Premiums and Deposits: A measure of top line growth. The Company calculates premiums and deposits as the aggregate of (i) general fund premiums, net of reinsurance, reported as premiums on the Consolidated Statements of Income, (ii) segregated fund deposits, excluding seed money ("deposits from policyholders"), (iii) investment contract deposits, (iv) mutual fund deposits, (v) deposits into institutional advisory accounts, (vi) premium equivalents for "administration services only" group benefits contracts ("ASO premium equivalents"), (vii) premiums in the Canadian Group Benefits reinsurance ceded agreement, and (viii) other deposits in other managed funds.

Policyholder Experience: The actual cost in a reporting period from contingent events such as mortality, lapse and morbidity compared to the expected cost in that same reporting period using best estimate valuation assumptions.

Provisions for Adverse Deviation (PfAD): The amounts contained in the insurance and investment contract liabilities that represent conservatism against potential future deterioration of best estimate assumptions. These PfADs are released into income over time, and the release of these margins represents the future expected earnings stream.

Insurance and Investment Contract Liabilities: The amount of money set aside today, together with the expected future premiums and investment income, that will be sufficient to provide for future expected policyholder obligations and expenses while also providing some conservatism in the assumptions. Expected assumptions are reviewed and updated annually.

Return on Common Shareholders' Equity: A profitability measure that presents the net income available to common shareholders as a percentage of the average capital deployed to earn the income.

Sales, Gross Flows and Net Flows are measured according to product type:

Individual Insurance: Sales include 100% of new annualized premiums and 10% of both excess and single premiums. 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.

Group Insurance: Sales include new annualized premiums and administrative service only premium equivalents on new cases, as well as the addition of new coverages and amendments to contracts, excluding rate increases.

WAM: Sales include all deposits into mutual funds, college savings 529 plans, group pension/ retirement savings products, private wealth and institutional asset management products.

Gross Flows: A measure for WAM businesses and includes all deposits into mutual funds, college savings 529 plans, group pension/retirement savings products, private wealth and institutional asset management products.

Net Flows: A measure for WAM businesses and includes gross flows less redemptions for the mutual funds, college savings 529 plans, group pension/retirement savings products, private wealth and institutional asset management products.

Consolidated Capital: A non-GAAP measure, serves as a foundation of our capital management activities at the MFC level. For regulatory reporting purposes, the numbers are further adjusted for various additions or deductions to capital as mandated by the guidelines used by OSFI. Consolidated capital is calculated as the sum of: (i) total equity excluding accumulated other comprehensive income ("AOCI") on cash flow hedges; and (ii) liabilities for capital instruments.

Universal Life Insurance: A form of permanent life insurance with flexible premiums. The customer may vary the premium payment and death benefit within certain restrictions. The contract is credited with a rate of interest based on the return of a portfolio of assets held by the Company, possibly with a minimum rate guarantee, which may be reset periodically at the discretion of the Company.

Variable Annuity: Funds are invested in segregated funds (also called separate accounts in the U.S.) and the return to the contract holder fluctuates according to the earnings of the underlying investments. In some instances, guarantees are provided.

Variable Universal Life Insurance: A form of permanent life insurance with flexible premiums in which the cash value and possibly the death benefit of the policy fluctuate according to the investment performance of segregated funds (or separate accounts).

Shareholder Information

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200 Bloor Street East
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Telephone: 416 926-3000
Website: www.manulife.com

ANNUAL MEETING OF SHAREHOLDERS
Shareholders are invited to attend the annual meeting of Manulife Financial Corporation to be held on May 6, 2021 at 11:00 a.m.

STOCK EXCHANGE LISTINGS
Manulife Financial Corporation's common shares are listed on:
Toronto Stock Exchange (MFC)
The New York Stock Exchange (MFC)
The Stock Exchange of Hong Kong (945)
Philippine Stock Exchange (MFC)

INVESTOR RELATIONS
Financial analysts, portfolio managers and other investors requiring financial information may contact our Investor Relations department or access our website at www.manulife.com.
Email: investrel@manulife.com

SHAREHOLDER SERVICES
For information or assistance regarding your share account, including dividends, changes of address or ownership, lost certificates, to eliminate duplicate mailings or to receive shareholder material electronically, please contact our Transfer Agents in Canada, the United States, Hong Kong or the Philippines. If you live outside one of these countries, please contact our Canadian Transfer Agent.

Direct Deposit of Dividends
Shareholders resident in Canada, the United States and Hong Kong may have their Manulife common share dividends deposited directly into their bank account. To arrange for this service please contact our Transfer Agents.

Dividend Reinvestment Program
Canadian and U.S. resident common shareholders may purchase additional common shares without incurring brokerage or administrative fees by reinvesting their cash dividend through participation in Manulife's Dividend Reinvestment and Share Purchase Programs. For more information please contact our stock transfer agents: in Canada – AST Trust Company (Canada); in the United States - American Stock Transfer & Trust Company, LLC

For other shareholder issues please contact Manulife Shareholder Services via e-mail to shareholder_services@manulife.com

More information
Information about Manulife Financial Corporation, including electronic versions of documents and share and dividend information is available online at www.manulife.com

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AUDITORS
Ernst & Young LLP
Chartered Accountants
Licensed Public Accountants
Toronto, Canada

MFC DIVIDENDS

Common Share Dividends Paid for 2020 and 2019

Year 2020	Record Date	Payment Date	Per Share Amount Canadian ($)
Fourth Quarter	February 23, 2021	March 19, 2021	$ 0.28
Third Quarter	November 23, 2020	December 21, 2020	$ 0.28
Second Quarter	August 17, 2020	September 21, 2020	$ 0.28
First Quarter	May 19, 2020	June 19, 2020	$ 0.28
Year 2019			
Fourth Quarter	February 25, 2020	March 19, 2020	$ 0.28
Third Quarter	November 19, 2019	December 19, 2019	$ 0.25
Second Quarter	August 20, 2019	September 19, 2019	$ 0.25
First Quarter	May 14, 2019	June 19, 2019	$ 0.25

Common and Preferred Share Dividend Dates in 2021*

* Dividends are not guaranteed and are subject to approval by the Board of Directors.

Record date	Payment date	
Common and Preferred Shares	Common Shares	Preferred Shares
February 23, 2021	March 19, 2021	March 19, 2021
May 18, 2021	June 21, 2021	June 19, 2021
August 17, 2021	September 20, 2021	September 19, 2021
November 16, 2021	December 20, 2021	December 19, 2021

Manulife

Our diverse range of products and services by market

In Canada
Annuities
ESG fund*
Exchange-traded funds (ETFs)*
Financial planning & advice*
Group life, health & disability insurance
Group retirement savings plans*
Guaranteed interest certificates (GICs)
Individual life, health & travel insurance
Individual retirement savings plans*
Institutional pooled funds*
Mortgage creditor insurance
Mutual funds*
Outsourced chief investment officer (OCIO)*
Retail banking
Segregated funds
Separately managed accounts (SMAs)*

In the U.S.
Annuities
Closed-end funds*
Collective investment trusts (CITs)*
Education savings plans (529)*
ESG funds*
Exchange-traded funds (ETFs)*
Financial planning & advice
Group retirement savings plans*
Individual life insurance
Individual Retirement Accounts (IRAs)*
Institutional commingled funds*
Institutional segregated accounts*
Model portfolios*
Mutual funds*
Outsourced chief investment officer (OCIO)*
Separately managed accounts (SMAs)*
Target-date funds*

In Asia
Annuities
Creditor insurance
Education savings plans
ESG fund*
Group life & health insurance
Group retirement savings plans*
Individual life & health insurance
Individual retirement savings plans*
Investment-linked products
Mutual funds*
Segregated investment mandates*

In Europe
Alternative Investment Funds (AIFs)
ESG fund*
Institutional segregated accounts*
Undertakings for the Collective Investment in Transferable Securities (UCITS)*

Our investment capabilities
Asset allocation & solutions*
Infrastructure equity*
Liability-driven investing (LDI)*
Liquid alternatives*
Private equity & credit*
Public equity & debt*
Real estate equity & debt*
Timberland & farmland*

*Products and services provided by our Global Wealth and Asset Management segment.

About Manulife
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 Canada, Asia, 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 2020, we had more than 37,000 employees, over 118,000 agents, and thousands of distribution partners, serving over 30 million customers. As of December 31, 2020, we had $1.3 trillion (US$1.0 trillion) in assets under management and administration, and in the previous 12 months we made $31.6 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.

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