# Financial Condition Review

## Summary Balance Sheet

| (Canadian $ in millions)<br>As at October 31 | 2022 | 2021 |
|---|---|---|
| **Assets** | | |
| Cash and interest bearing deposits with banks | **93,200** | 101,564 |
| Securities | **273,262** | 232,849 |
| Securities borrowed or purchased under resale agreements | **113,194** | 107,382 |
| Net loans | **551,339** | 458,262 |
| Derivative instruments | **48,160** | 36,713 |
| Other assets | **60,044** | 51,405 |
| Total assets | **1,139,199** | 988,175 |
| **Liabilities and Equity** | | |
| Deposits | **769,478** | 685,631 |
| Derivative instruments | **59,956** | 30,815 |
| Securities lent or sold under repurchase agreements | **103,963** | 97,556 |
| Other liabilities | **126,614** | 109,757 |
| Subordinated debt | **8,150** | 6,893 |
| Equity | **71,038** | 57,523 |
| Total liabilities and equity | **1,139,199** | 988,175 |

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### Overview

Total assets of $1,139.2 billion increased $151.0 billion from October 31, 2021. The stronger U.S. dollar increased assets by $44.7 billion, excluding the impact on derivative assets. Total liabilities of $1,068.2 billion increased $137.5 billion from the prior year. The stronger U.S. dollar increased liabilities by $43.4 billion, excluding the impact of derivative liabilities. Total equity of $71.0 billion increased $13.5 billion from October 31, 2021, including the equity issuance related to the announced acquisition of Bank of the West.

### Cash and Interest Bearing Deposits with Banks

Cash and interest bearing deposits with banks decreased $8.4 billion, primarily due to lower balances held with central banks, partially offset by the impact of the stronger U.S. dollar. The reduction of central bank cash balances reflects the use of the proceeds to purchase U.S. treasury securities as part of our fair value management actions related to the announced acquisition of Bank of the West and was partially offset by higher cash balances in Global Markets. Refer to the Significant Events section for further information on our fair value management actions.

### Securities

| (Canadian $ in millions)<br>As at October 31 | 2022 | 2021 |
|---|---|---|
| Trading | **108,177** | 104,411 |
| Fair value through profit or loss (FVTPL) (1) | **13,641** | 14,210 |
| Fair value through other comprehensive income – Debt and equity (2) | **43,561** | 63,123 |
| Amortized cost (3) | **106,590** | 49,970 |
| Investments in associates and joint ventures | **1,293** | 1,135 |
| Total securities | **273,262** | 232,849 |

(1) Included securities mandatorily measured at FVTPL of $4,410 million ($3,038 million as at October 31, 2021) and designated securities at fair value of $9,231 million ($11,172 million as at October 31, 2021).
(2) Included allowances for credit losses on debt securities recorded at fair value through other comprehensive income of $3 million as at October 31, 2022 ($2 million as at October 31, 2021).
(3) Net of allowances for credit losses of $3 million ($2 million as at October 31, 2021).

Securities increased $40.4 billion, primarily due to the fair value management actions noted above and the impact of the stronger U.S. dollar, partially offset by lower levels of client activity in BMO Capital Markets.

### Securities Borrowed or Purchased Under Resale Agreements

Securities borrowed or purchased under resale agreements increased $5.8 billion, due to the impact of the stronger U.S. dollar and higher levels of client activity in BMO Capital Markets, partially offset by treasury activities in Corporate Services.

### Net Loans

| (Canadian $ in millions)<br>As at October 31 | 2022 | 2021 |
|---|---|---|
| Residential mortgages | **148,880** | 135,750 |
| Non-residential mortgages | **18,625** | 17,195 |
| Consumer instalment and other personal | **86,103** | 77,164 |
| Credit cards | **9,663** | 8,103 |
| Businesses and governments | **290,685** | 222,614 |
| Gross loans | **553,956** | 460,826 |
| Allowance for credit losses | **(2,617)** | (2,564) |
| Total net loans | **551,339** | 458,262 |

Net loans increased $93.1 billion from October 31, 2021. Residential mortgages increased $13.1 billion, primarily due to growth in Canadian P&C. Non-residential mortgages increased $1.4 billion due to growth in U.S. P&C, including the impact of the stronger U.S. dollar, partially offset by lower balances in BMO Capital Markets and Canadian P&C. Consumer instalment and other personal loans increased $8.9 billion, primarily due to growth in Canadian P&C and BMO Wealth Management and the impact of the stronger U.S. dollar. Business and government loans increased $68.1 billion, reflecting growth across all operating groups and the impact of the stronger U.S. dollar. Credit cards increased $1.6 billion, primarily reflecting higher balances in Canadian P&C.

Table 4 in the Supplemental Information provides a comparative summary of loans by geographic location and product. Table 6 in the Supplemental Information provides a comparative summary of net loans in Canada by province and industry. Loan quality is discussed in the Credit Quality Information section, and further details on loans are provided in Notes 4, 6 and 24 of the consolidated financial statements.

## Derivative Financial Assets

Derivative financial assets increased $11.4 billion, reflecting an increase in the value of client-driven trading derivatives in BMO Capital Markets, with increases in the fair value of foreign exchange, interest rate and equity contracts, partially offset by a decrease in the value of commodities contracts. Further details on derivative financial assets are provided in Note 8 of the consolidated financial statements.

## Other Assets

Other assets primarily include customers' liability under acceptances, goodwill and intangible assets, cash collateral, insurance-related assets, premises and equipment, precious metals, current and deferred tax assets, accounts receivable and prepaid expenses. Other assets increased $8.6 billion, primarily due to higher cash collateral balances posted with counterparties and the impact of the stronger U.S. dollar, partially offset by lower customers' liability under acceptances and the write-down of goodwill related to the sale of our EMEA Asset Management business. Further details on other assets are provided in Notes 11 and 12 of the consolidated financial statements.

## Deposits

| (Canadian $ in millions)<br>As at October 31 | **2022** | 2021 |
|---|---|---|
| Banks | **30,901** | 26,611 |
| Businesses and governments | **495,831** | 442,248 |
| Individuals | **242,746** | 216,772 |
| Total deposits | **769,478** | 685,631 |

Deposits increased $83.8 billion. Business and government deposits increased $53.6 billion, reflecting the impact of the stronger U.S. dollar, higher wholesale funding balances to fund customer loan growth and Global Markets client activity, and growth in customer deposits in Canadian P&C and BMO Wealth Management, partially offset by lower source currency commercial deposits in U.S. P&C. Deposits by individuals increased $26.0 billion, primarily due to growth in customer deposits in Canadian P&C, higher broker term deposits reported in Corporate Services and the impact of the stronger U.S. dollar. Deposits by banks increased $4.3 billion, reflecting higher wholesale funding for Global Markets client activity and the impact of the stronger U.S. dollar. Further details on the composition of deposits are provided in Note 13 of the consolidated financial statements and in the Liquidity and Funding Risk section.

## Derivative Financial Liabilities

Derivative financial liabilities increased $29.1 billion, primarily due to an increase in the value of client-driven trading derivatives in BMO Capital Markets, with increases in the fair value of foreign exchange, interest rate, equity and commodities contracts.

## Securities Lent or Sold Under Repurchase Agreements

Securities lent or sold under repurchase agreements increased $6.4 billion due to the impact of the stronger U.S. dollar and higher levels of client activity in BMO Capital Markets.

## Other Liabilities

Other liabilities primarily include securities sold but not yet purchased, securitization and structured entities liabilities, acceptances, insurance-related liabilities and accounts payable. Other liabilities increased $16.9 billion, primarily reflecting an increase in securities sold but not yet purchased due to higher levels of client activity in BMO Capital Markets, higher Federal Home Loan Bank borrowings, the impact of the stronger U.S. dollar and higher accrued interest payable, partially offset by lower cash collateral received on over-the-counter derivatives, as well as insurance-related liabilities and acceptances.

Further details on the composition of other liabilities are provided in Note 14 of the consolidated financial statements.

## Subordinated Debt

Subordinated debt increased $1.3 billion from the prior year, reflecting new issuances net of a redemption and the impact of the stronger U.S. dollar. Further details on the composition of subordinated debt are provided in Note 15 of the consolidated financial statements.

## Equity

| (Canadian $ in millions)<br>As at October 31 | **2022** | 2021 |
|---|---|---|
| Share capital | | |
| Preferred shares and other equity instruments | **6,308** | 5,558 |
| Common shares | **17,744** | 13,599 |
| Contributed surplus | **317** | 313 |
| Retained earnings | **45,117** | 35,497 |
| Accumulated other comprehensive income | **1,552** | 2,556 |
| Total equity | **71,038** | 57,523 |

Total equity increased $13.5 billion from October 31, 2021, primarily due to higher retained earnings and a common share issuance, partially offset by a decrease in accumulated other comprehensive income. Retained earnings increased $9.6 billion, as a result of net income earned in the year, partially offset by dividends and distributions on other equity instruments. Common shares increased $4.1 billion, as a result of the equity issuance related to the announced acquisition of Bank of the West and shares issued under the dividend reinvestment plan. Preferred shares and other equity instruments increased $0.8 billion, reflecting new issuances net of redemptions in the year. Accumulated other comprehensive income decreased $1.0 billion, primarily due to the impact of higher interest rates on cash flow hedges, partially offset by the impact of the stronger U.S. dollar on the translation of net foreign operations and gains on remeasurement of own credit risk on financial liabilities designated at fair value.

The Consolidated Statement of Changes in Equity in the consolidated financial statements provides a summary of items that increase or reduce total equity, while Note 16 of the consolidated financial statements provides details on the components of, and changes in, share capital. Details on our enterprise-wide capital management practices and strategies can be found below.



# Enterprise-Wide Capital Management

## Capital Management

### Objective

BMO is committed to a disciplined approach to capital management that balances the interests and requirements of our shareholders, regulators, depositors, fixed income investors and rating agencies. Our objective is to maintain a strong capital position in a cost-effective structure that:

- Is appropriate given BMO's target regulatory capital ratios and internal assessment of required economic capital
- Underpins BMO's operating groups' business strategies
- Supports depositor, investor and regulator confidence, while building long-term shareholder value
- Is consistent with BMO's target credit ratings.

### Framework


The principles and key elements of our capital management framework are outlined in our Capital Management Corporate Policy and in the annual capital plan, which includes the results of the comprehensive Internal Capital Adequacy Assessment Process (ICAAP).

ICAAP is an integrated process that involves the application of stress testing and other tools to assess capital adequacy on both a regulatory and an economic capital basis. The results of this process are used in the establishment of capital targets and the implementation of capital strategies that take into consideration the strategic direction and risk appetite of the enterprise. The annual capital plan is developed considering the results of ICAAP and in conjunction with the annual business plan, promoting alignment between business and risk strategies, regulatory and economic capital requirements and the availability of capital. Enterprise-wide stress testing and scenario analysis are conducted in order to assess the impact of various stress conditions on our risk profile and capital requirements. Our capital management framework seeks to ensure that the bank is adequately capitalized given the risks we assume in the normal course of business, as well as under stress, and supports the determination of limits, targets and performance measures that are used to manage balance sheet positions, risk levels and capital requirements at both the consolidated entity and operating group levels. We evaluate assessments of actual and forecast capital adequacy against our capital plan throughout the year, and we update the plan to reflect changes in our business activities and risk profile, as well as the operating environment or regulatory requirements or expectations.

We allocate capital to operating groups in order to evaluate business performance, and we consider capital implications in our strategic, tactical and transactional decision-making. By allocating capital to operating groups, setting and monitoring capital limits and metrics, and measuring the groups' performance against these limits and metrics, we seek to optimize risk-adjusted return to our shareholders, while maintaining a well-capitalized position. This approach is intended to protect our stakeholders from the risks inherent in our various businesses, while still providing the flexibility to deploy resources in support of the strategic growth activities of the operating groups.

Refer to the Enterprise-Wide Risk Management section for further discussion of the risks underlying our business activities.

### Governance

The Board of Directors, either directly or in conjunction with its Risk Review Committee, provides ultimate oversight and approval of capital management, including the bank's Capital Management Corporate Policy framework, capital plan and capital adequacy assessments. The Board of Directors regularly reviews the bank's capital position and key capital management activities, and the Risk Review Committee reviews the capital adequacy assessment results determined by ICAAP. The Capital Management Committee provides senior management oversight, including the review of significant capital management policies, issues and activities and, along with the Risk Management Committee, the capital required to support the execution of our enterprise-wide strategy. Finance and Risk Management are responsible for the design and implementation of our corporate policies and frameworks related to capital and risk management, as well as ICAAP. The Corporate Audit Division, as the third line of defence, verifies adherence to controls and identifies opportunities to strengthen our processes. Refer to the Enterprise-Wide Risk Management Framework section for further discussion.

## Regulatory Capital Requirements

Regulatory capital requirements for BMO are determined in accordance with guidelines issued by the Office of the Superintendent of Financial Institutions (OSFI), which are based on the Basel III framework developed by the Basel Committee on Banking Supervision (BCBS). The minimum risk-based capital ratios set out in OSFI's Capital Adequacy Requirements (CAR) Guideline are a Common Equity Tier 1 (CET1) Ratio of 4.5%, a Tier 1 Capital Ratio of 6% and a Total Capital Ratio of 8%. In addition to the minimum capital requirements, OSFI also requires domestic systemically important banks (D-SIBs), including BMO, to hold Pillar 1 and Pillar 2 buffers, which are meant to be used as a normal first response in periods of stress. Pillar 1 buffers include a Capital Conservation Buffer of 2.5%, a D-SIB Common Equity Tier 1 surcharge of 1.0%, and a Countercyclical Buffer (which can range from 0% to 2.5%, depending on a bank's exposure to jurisdictions that have activated the buffer). Pillar 2 buffers include the Domestic Stability Buffer (DSB), which can range from 0% to 2.5% of RWA and was set at 2.5% as of October 31, 2022. The minimum Leverage Ratio set out in OSFI's Leverage Requirements (LR) Guideline is 3.0%. OSFI's capital requirements are summarized in the following table.

| (% of risk-weighted assets or leverage exposures) | Minimum capital requirements | Pillar 1 Capital Buffers (1) | Domestic Stability Buffer (2) | Minimum OSFI capital requirements including capital buffers | BMO Capital and Leverage Ratios as at October 31, 2022 |
|---|---|---|---|---|---|
| Common Equity Tier 1 Ratio | 4.5% | 3.5% | 2.5% | 10.5% | 16.7% |
| Tier 1 Capital Ratio | 6.0% | 3.5% | 2.5% | 12.0% | 18.4% |
| Total Capital Ratio | 8.0% | 3.5% | 2.5% | 14.0% | 20.7% |
| TLAC Ratio | 21.5% | na | 2.5% | 24.0% | 33.1% |
| Leverage Ratio | 3.0% | na | na | 3.0% | 5.6% |
| TLAC Leverage Ratio | 6.75% | na | na | 6.75% | 10.1% |

(1) The minimum 4.5% CET1 Ratio requirement is augmented by a total of 3.5% in Pillar 1 Capital Buffers, which can absorb losses during periods of stress. Pillar 1 Capital Buffers include a Capital Conservation Buffer of 2.5%, a Common Equity Tier 1 surcharge for D-SIBs of 1.0% and a Countercyclical Buffer, as prescribed by OSFI (immaterial for the fourth quarter of 2022). If a bank's capital ratios fall within the range of this combined buffer, restrictions on discretionary distributions of earnings (such as dividends, share repurchases and discretionary compensation) would ensue, with the degree of such restrictions varying according to the position of the bank's ratios within the buffer range.

(2) OSFI requires all D-SIBs to maintain a DSB against Pillar 2 risks associated with systemic vulnerabilities. The DSB can range from 0% to 2.5% of total RWA and was set at 2.5% as at October 31, 2022. Breaches of the DSB will not result in a bank being subject to automatic constraints on capital distributions.

na – not applicable

### Regulatory Capital and Total Loss Absorbing Capacity Ratios

The **Common Equity Tier 1 (CET1) Ratio** is calculated as CET1 Capital, which comprises common shareholders' equity, net of deductions for goodwill, intangible assets, pension assets, certain deferred tax assets and other items, which may include a portion of expected credit loss provisions, divided by risk-weighted assets. The CET1 Ratio is calculated in accordance with OSFI's Capital Adequacy Requirements (CAR) Guideline.

The **Tier 1 Capital Ratio** reflects Tier 1 Capital divided by risk-weighted assets.

The **Total Capital Ratio** reflects Total Capital divided by risk-weighted assets.

The **Leverage Ratio** reflects Tier 1 Capital divided by leverage exposures (LE), which consist of on-balance sheet items and specified off-balance sheet items, net of specified adjustments.

The **Total Loss Absorbing Capacity (TLAC) Ratio** reflects TLAC divided by risk-weighted assets.

The **TLAC Leverage Ratio** reflects TLAC divided by leverage exposures.

Refer to the Glossary of Financial Terms for definitions of ratios and their components.

### Regulatory Capital and Total Loss Absorbing Capacity Elements

BMO maintains a capital structure that is diversified across instruments and tiers to provide an appropriate mix of loss absorbency. The major components of regulatory capital and total loss absorbing capacity are summarized as follows:

**CET1 Capital**

- Common Shareholders' Equity
- May include portion of expected credit loss provisions
- Less regulatory deductions for items such as:
  - Goodwill
  - Intangible assets
  - Defined benefit pension assets
  - Certain deferred tax assets
  - Certain other items

**Additional Tier 1 (AT1) Capital**

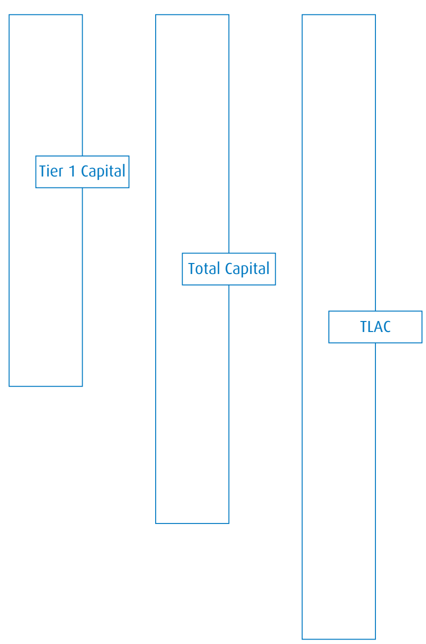
- Preferred shares
- Other AT1 capital instruments
- Less regulatory deductions

**Tier 2 Capital**

- Subordinated debentures
- May include portion of expected credit loss provisions
- Less regulatory deductions

**Other Total Loss Absorbing Capacity (TLAC)**

- Other TLAC instruments (including eligible Bail-in debt)
- Less regulatory deductions



OSFI's CAR Guideline implemented the non-viability contingent capital (NVCC) provisions set out by the BCBS, which require the conversion of certain capital instruments into a variable number of common shares if OSFI announces that a bank is, or is about to become, non-viable, or if the federal or a provincial government in Canada publicly announces that the bank has accepted, or has agreed to accept, a capital injection or equivalent support to avoid non-viability.

Under OSFI's CAR Guideline, non-common share capital instruments that do not meet Basel III requirements, including NVCC requirements, were fully phased out effective the first quarter of fiscal 2022. The impact on the bank was nominal.

Under Canada's Bank Recapitalization (Bail-In) Regime, eligible senior debt issued on or after September 23, 2018 is subject to statutory conversion requirements. Canada Deposit Insurance Corporation has the power to trigger the conversion of bail-in debt into common shares. This statutory conversion supplements NVCC securities, which must be converted in full prior to the conversion of bail-in debt. The minimum TLAC requirements set by OSFI are a risk-based TLAC Ratio of 24.0% of RWA, including the DSB currently set at 2.5%, and a TLAC Leverage Ratio of 6.75%, effective November 1, 2021. As at October 31, 2022, our TLAC Ratio was 33.1% and our TLAC Leverage Ratio was 10.1%, calculated in accordance with OSFI's TLAC Guideline.

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### Risk-Weighted Assets

Risk-weighted assets (RWA) measure a bank's exposures, weighted for their relative risk and calculated in accordance with the regulatory capital rules prescribed by OSFI. RWA are calculated for credit, market and operational risks based on OSFI's prescribed rules.

We primarily use the Advanced Internal Ratings Based (AIRB) Approach to determine credit RWA in our portfolio. The AIRB Approach applies sophisticated techniques to measure RWA at the exposure level based on sound risk management principles, including estimates of the probability of default, loss given default and exposure at default risk parameters, term to maturity and asset class type, as prescribed by the OSFI rules. These risk parameters are determined using historical portfolio data supplemented by benchmarking, as appropriate, and are updated periodically. Validation procedures related to these parameters are in place in order to quantify and differentiate risks appropriately. Credit RWA related to certain Canadian and U.S. portfolios are determined under the Basel III Standardized Approach, using prescribed risk weights based on external ratings, counterparty type or product type.

Our market risk RWA are primarily determined using the more advanced Internal Models Approach, but the Standardized Approach is used for some exposures.

Beginning in fiscal 2020, OSFI has required that BMO, along with the other banks that have been approved to use the Advanced Measurement Approach, change to the Basel II Standardized Approach for determining enterprise operational risk regulatory capital requirements in the interim period prior to implementation of the new Basel III Standardized Measurement Approach as part of the Basel III reforms.

BMO is subject to a capital floor as prescribed in OSFI's CAR Guideline. In calculating regulatory capital ratios, there is a requirement to increase total RWA when the capital floor amount calculated under the Standardized Approach is higher than a similar calculation using the more risk-sensitive advanced approach rules. The capital floor became operative for BMO at the beginning of the second quarter of fiscal 2022.

## Regulatory Capital Developments

On November 7, 2022, OSFI announced a new Assurance on Capital, Leverage and Liquidity Returns Guideline, applicable to the capital, leverage and liquidity returns of federally regulated deposit-taking institutions. The requirements for an internal audit opinion, senior management attestation and external audit opinion will phase in over a three-year period, beginning in fiscal 2023.

On September 13, 2022, OSFI announced that the temporary exclusion of central bank reserves from the Leverage Ratio exposure measure for deposit-taking institutions will end on April 1, 2023.

On August 18, 2022, OSFI issued *Interim arrangements for the regulatory capital and liquidity treatment of crypto asset exposures*, which is intended to ensure that federally regulated financial institutions apply a conservative treatment and set prudent limits in relation to their crypto asset exposures.

On June 22, 2022, OSFI announced that the DSB would remain at 2.50% of total RWA. OSFI has stated that it is reviewing the design and range of the DSB as part of its work to ensure the long-term effectiveness of the capital regime applicable to D-SIBs.

On January 31, 2022, OSFI announced revised capital, leverage, liquidity and disclosure requirements for the domestic implementation of the final Basel III banking reforms. Most of these revised requirements will take effect in the second quarter of 2023, with those related to market risk and credit valuation adjustment risk taking effect in 2024.

Effective November 4, 2021, OSFI announced that financial institutions may resume regular dividend increases and common share repurchases, which had been restricted since March 2020.

## Regulatory Capital Review

BMO is well capitalized, with capital ratios that exceed OSFI's published requirements for large Canadian banks, including a 2.5% DSB. Our CET1 Ratio was 16.7% as at October 31, 2022, compared with 13.7% as at October 31, 2021. The CET1 Ratio increased from the end of fiscal 2021, primarily driven by the benefit of fair value management actions related to the announced acquisition of Bank of the West, strong internal capital generation, the issuance of common shares through a public offering and under the shareholder dividend reinvestment and share repurchase plan (DRIP), and the benefit of the sale of our EMEA Asset Management business, partially offset by higher risk-weighted assets (RWA) and a legal provision related to a lawsuit associated with a predecessor bank, M&I Marshall and Ilsley Bank.

Our Tier 1 Capital and Total Capital Ratios were 18.4% and 20.7%, respectively, as at October 31, 2022, compared with 15.4% and 17.6%, respectively, as at October 31, 2021. The Tier 1 Capital Ratio was higher due to the factors impacting the CET1 Ratio and issuances of Additional Tier 1 (AT1) instruments, partially offset by redemptions. The Total Capital Ratio was higher due to the factors impacting the Tier 1 Capital Ratio, as well as issuances of Tier 2 capital instruments, partially offset by redemptions.

The impact of foreign exchange rate movements on capital ratios was largely offset. Our investments in foreign operations are primarily denominated in U.S. dollars, and the foreign exchange impact of U.S.-dollar-denominated RWA and capital deductions may result in variability in the bank's capital ratios. We may manage the impact of foreign exchange rate movements on our capital ratios, and did so during fiscal 2022. Any such activities could also impact BMO's book value and return on equity.

Our Leverage Ratio was 5.6% as at October 31, 2022, an increase from 5.1% as at October 31, 2021, due to higher Tier 1 Capital, which was partially offset by higher leverage exposures driven by business growth and the impact of foreign exchange rate movements.

While the ratios discussed above reflect our consolidated capital base, we conduct business through a variety of corporate structures, including subsidiaries. A framework is in place, such that capital and funding are managed appropriately at the subsidiary level.

As a U.S. bank intermediate holding company classified as a Category IV institution, our subsidiary BMO Financial Corp. (BFC) is subject to the Comprehensive Capital Analysis and Review (CCAR) and Dodd-Frank Act Stress Test (DFAST) requirements of the Federal Reserve Board (FRB) on a biennial basis, beginning with CCAR 2020.

BFC was required to participate in the FRB's 2022 CCAR exercise. On June 23, 2022, the FRB released its 2022 CCAR and DFAST results, and on August 4, 2022, announced individual large bank capital requirements, which were effective October 1, 2022. For BFC, the FRB determined a CET1 Ratio requirement of 7.9%, including the 4.5% minimum CET1 Ratio and a 3.4% stress capital buffer (SCB). BFC is well capitalized, with a strong CET1 Ratio of 13.1% as at September 30, 2022.

## Regulatory Capital (1)

| (Canadian $ in millions, except as noted)<br>As at October 31 | **2022** | 2021 |
|---|---|---|
| **Common Equity Tier 1 Capital: instruments and reserves** | | |
| Directly issued qualifying common share capital plus related stock surplus | **18,061** | 13,912 |
| Retained earnings | **45,117** | 35,497 |
| Accumulated other comprehensive income (and other reserves) | **1,552** | 2,556 |
| Goodwill and other intangibles (net of related tax liability) | **(6,901)** | (7,130) |
| Other common equity Tier 1 capital deductions | **3,062** | (344) |
| **Common Equity Tier 1 Capital (CET1)** | **60,891** | 44,491 |
| **Additional Tier 1 Capital: instruments** | | |
| Directly issued qualifying Additional Tier 1 instruments plus related stock surplus | **6,308** | 5,558 |
| Directly issued capital instruments subject to phase-out from Additional Tier 1 Capital | **–** | – |
| Additional Tier 1 instruments (and CET1 instruments not otherwise included) issued by subsidiaries and held by third parties (amount allowed in group AT1) | **–** | – |
| *of which: instruments issued by subsidiaries subject to phase-out* | **–** | – |
| **Total regulatory adjustments applied to Additional Tier 1 Capital** | **(78)** | (83) |
| **Additional Tier 1 capital (AT1)** | **6,230** | 5,475 |
| **Tier 1 Capital (T1 = CET1 + AT1)** | **67,121** | 49,966 |
| **Tier 2 Capital: instruments and provisions** | | |
| Directly issued qualifying Tier 2 instruments plus related stock surplus | **8,003** | 6,747 |
| Directly issued capital instruments subject to phase-out from Tier 2 Capital | **–** | 141 |
| Tier 2 instruments (and CET1 and AT1 instruments not otherwise included) issued by subsidiaries and held by third parties (amount allowed in group Tier 2) | **–** | – |
| *of which: instruments issued by subsidiaries subject to phase-out* | **–** | – |
| General allowance | **235** | 398 |
| **Total regulatory adjustments to Tier 2 Capital** | **(50)** | (51) |
| **Tier 2 Capital (T2)** | **8,188** | 7,235 |
| **Total Capital (TC = T1 + T2)** | **75,309** | 57,201 |
| **Risk-Weighted Assets and Leverage Ratio Exposures** | | |
| Risk-Weighted Assets | **363,997** | 325,433 |
| Leverage Ratio Exposures | **1,189,990** | 976,690 |
| **Capital Ratios** (%) | | |
| Common Equity Tier 1 Ratio | **16.7** | 13.7 |
| Tier 1 Capital Ratio | **18.4** | 15.4 |
| Total Capital Ratio | **20.7** | 17.6 |
| TLAC Ratio | **33.1** | 27.8 |
| Leverage Ratio | **5.6** | 5.1 |
| TLAC Leverage Ratio | **10.1** | 9.3 |

(1) Calculated in accordance with OSFI's CAR Guideline and LR Guideline, as applicable. Non-qualifying Additional Tier 1 and Tier 2 Capital instruments were phased out at a rate of 10% per year from January 1, 2013 to January 1, 2022.

Our CET1 Capital was $60.9 billion as at October 31, 2022, compared with $44.5 billion as at October 31, 2021. CET1 Capital increased, driven by the benefit of fair value management actions related to the announced acquisition of Bank of the West, strong retained earnings growth, the issuance of common shares through a public offering under the DRIP, the impact of foreign exchange movements, and the elimination of goodwill and intangible assets related to the EMEA Asset Management business, which was sold during the year, partially offset by a legal provision.

Tier 1 Capital and Total Capital were $67.1 billion and $75.3 billion, respectively, as at October 31, 2022, compared with $50.0 billion and $57.2 billion, respectively, as at October 31, 2021. The increase in Tier 1 Capital was primarily due to the factors impacting CET1 Capital and issuances of AT1 capital instruments, partially offset by preferred share redemptions. Total Capital was higher, primarily due to the factors impacting Tier 1 Capital and issuances of subordinated notes, partially offset by redemptions.

## Risk-Weighted Assets

RWA were $364.0 billion as at October 31, 2022, an increase from $325.4 billion as at October 31, 2021. Credit Risk RWA were $295.5 billion as at October 31, 2022, an increase from $272.9 billion as at October 31, 2021, primarily resulting from increased asset size driven by wholesale and commercial lending growth and the impact of foreign exchange rate movements, partially offset by positive asset quality impacts, risk transfer transactions and the transition of certain portfolios treated under the standardized approach to the advanced approach. As noted above, the impact of foreign exchange rate movements is largely offset in the CET1 Ratio. Market Risk RWA were $13.5 billion as at October 31, 2022, an increase from $12.1 billion as at October 31, 2021, primarily attributable to higher volatility and changes in portfolio composition during the year. Operational Risk RWA were $42.4 billion as at October 31, 2022, an increase from $40.5 billion as at October 31, 2021, primarily due to growth in our average gross income. The capital floor adjustment reflected in our RWA was $12.6 billion as at October 31, 2022, driven by asset quality changes and the transition of certain portfolios to the advanced RWA approach. The capital floor was not operative in the prior year.

| (Canadian $ in millions)<br>As at October 31 | **2022** | 2021 |
|---|---|---|
| Credit Risk | | |
| Wholesale | | |
| Corporate, including specialized lending | **123,595** | 117,876 |
| Corporate small and medium-sized enterprises | **45,479** | 43,562 |
| Sovereign | **4,833** | 5,369 |
| Bank | **4,138** | 4,345 |
| Retail | | |
| Residential mortgages, excluding home equity line of credit | **10,923** | 8,712 |
| Home equity line of credit | **5,915** | 5,241 |
| Qualifying revolving retail | **7,408** | 6,515 |
| Other retail, excluding small and medium-sized enterprises | **16,098** | 15,406 |
| Retail small and medium-sized enterprises | **11,844** | 9,544 |
| Equity | **6,441** | 3,741 |
| Trading book | **11,036** | 13,066 |
| Securitization | **9,530** | 4,570 |
| Other credit risk assets – non-counterparty managed assets | **24,095** | 22,587 |
| Scaling factor for credit risk assets under AIRB Approach (1) | **14,189** | 12,324 |
| Total Credit Risk | **295,524** | 272,858 |
| Market Risk | **13,522** | 12,066 |
| Operational Risk | **42,353** | 40,509 |
| **Risk-Weighted Assets before floor** | **351,399** | 325,433 |
| Floor adjustment (2) | **12,598** | – |
| **Total Risk-Weighted Assets** | **363,997** | 325,433 |

(1) Basel III framework requires an additional 6% scaling factor to be applied to RWA amounts for credit risk under the Advanced Internal Ratings Based (AIRB) Approach.
(2) The bank is subject to capital floor requirements as prescribed in OSFI's CAR Guideline. Total RWA is increased by a floor adjustment amount, which is calculated based on the standardized methodology.

## Economic Capital

Economic capital is an expression of the enterprise's capital demand requirement relative to its view of the economic risks in its underlying business activities. It represents management's estimation of the likely magnitude of economic losses that could occur should severely adverse situations arise. Economic loss is the loss in economic or market value incurred over a specified time horizon at a defined confidence level, relative to the expected loss over the same time horizon. Economic capital is calculated for various types of risk, including credit, market (trading and non-trading), operational, business and insurance, based on a one-year time horizon using a defined confidence level.

## Economic Capital and RWA by Operating Group and Risk Type

(As at October 31, 2022)

BMO Financial Group

| **Operating Groups** | **Personal and Commercial Banking** | **BMO Wealth Management** | **BMO Capital Markets** | **Corporate Services** |
|---|---|---|---|---|
| **Economic Capital by Risk Type** (%) | | | | |
| Credit | 76% | 29% | 60% | 80% |
| Market | 7% | 30% | 24% | 20% |
| Operational/Other | 17% | 41% | 16% | – |
| **RWA by Risk Type** (Canadian $ in millions) | | | | |
| Credit | 187,119 | 20,685 | 72,417 | 27,901 |
| Market | – | 22 | 13,500 | – |
| Operational | 23,576 | 6,314 | 12,463 | – |

## Capital Management Activities

During fiscal 2022, we issued approximately 20.8 million common shares through a public offering to finance a portion of the purchase price for the announced acquisition of Bank of the West and approximately 8.3 million common shares through the DRIP and the exercise of stock options.

During fiscal 2022, we completed Tier 1 and Tier 2 Capital instrument issuances and redemptions, as outlined in the table below.

## Capital Instrument Issuances and Redemptions

| As at October 31, 2022 | Issuance or redemption date | Number of shares | Amount (in millions) |
|---|---|---|---|
| **Common shares issued** | | 29.1 | $ 4,162 |
| **Tier 1 Capital** | | | |
| Redemption of Non-Cumulative 5-Year Rate Reset Class B Preferred Shares, Series 38 | February 25, 2022 | 24.0 | $ 600 |
| Issuance of 5.625% Limited Recourse Capital Notes, Series 2 | March 15, 2022 | | $ 750 |
| Redemption of Non-Cumulative 5-Year Rate Reset Class B Preferred Shares, Series 40 | May 25, 2022 | 20.0 | $ 500 |
| Issuance of Non-Cumulative 5-Year Fixed Rate Reset Class B Preferred Shares, Series 50 | July 27, 2022 | 0.5 | $ 500 |
| Redemption of Non-Cumulative 5-Year Rate Reset Class B Preferred Shares, Series 42 | August 25, 2022 | 16.0 | $ 400 |
| Issuance of 7.325% Limited Recourse Capital Notes, Series 3 | September 13, 2022 | | $ 1,000 |
| **Tier 2 Capital** | | | |
| Issuance of 3.088% Subordinated Notes due 2037 | January 10, 2022 | | USD 1,250 |
| Redemption of Series I Medium-Term Notes, Second Tranche | June 1, 2022 | | $ 850 |
| Issuance of Series L Medium-Term Notes, First Tranche | October 27, 2022 | | $ 750 |

If an NVCC trigger event were to occur, NVCC instruments would be converted into BMO common shares pursuant to automatic conversion formulas, with the conversion price based on the greater of: (i) a floor price of $5.00; and (ii) the current market price of BMO common shares at the time of the trigger event (calculated using a 10-day weighted average). Based on a floor price of $5.00, these NVCC instruments would be converted into approximately 3.9 billion BMO common shares, assuming no accrued interest and no declared and unpaid dividends.

Further details on subordinated debt and share capital are provided in Notes 15 and 16 of the consolidated financial statements.

## Outstanding Shares and NVCC Instruments

| As at October 31 | Number of shares or dollar amount (in millions) | Dividends declared per share | | |
|---|---|---|---|---|
| | | **2022** | 2021 | 2020 |
| **Common shares** | 677 | **$ 5.44** | $4.24 | $ 4.24 |
| **Class B Preferred shares** | | | | |
| Series 25 (1) | – | **–** | $0.34 | $ 0.45 |
| Series 26 (1) | – | **–** | $0.23 | $ 0.52 |
| Series 27* | $ 500 | **$ 0.96** | $0.96 | $ 0.96 |
| Series 29* | $ 400 | **$ 0.91** | $0.91 | $ 0.91 |
| Series 31* | $ 300 | **$ 0.96** | $0.96 | $ 0.96 |
| Series 33* | $ 200 | **$ 0.76** | $0.76 | $ 0.90 |
| Series 35* (2) | – | **–** | – | $ 1.25 |
| Series 36* (2) | – | **–** | – | $58.50 |
| Series 38* (3) | – | **$ 0.30** | $1.21 | $ 1.21 |
| Series 40* (4) | – | **$ 0.56** | $1.13 | $ 1.13 |
| Series 42* (5) | – | **$ 0.83** | $1.10 | $ 1.10 |
| Series 44* | $ 400 | **$ 1.21** | $1.21 | $ 1.21 |
| Series 46* | $ 350 | **$ 1.28** | $1.28 | $ 1.28 |
| Series 50* | $ 500 | **$24.64** | – | – |
| **Additional Tier 1 Capital Notes*** | | | | |
| 4.800% Additional Tier 1 Capital Notes | US$ 500 | **na** | na | na |
| 4.300% Limited Recourse Capital Notes, Series 1 (6) | $1,250 | **na** | na | na |
| 5.625% Limited Recourse Capital Notes, Series 2 (6) | $ 750 | **na** | na | na |
| 7.325% Limited Recourse Capital Notes, Series 3 (6) | $1,000 | **na** | na | na |
| **Medium-Term Notes*** (7) | | | | |
| 3.803% Subordinated Notes | US$1,250 | **na** | na | na |
| 4.338% Subordinated Notes | US$ 850 | **na** | na | na |
| Series J – First Tranche | $1,000 | **na** | na | na |
| Series J – Second Tranche | $1,250 | **na** | na | na |
| Series K – First Tranche | $1,000 | **na** | na | na |
| 3.088% Subordinated Notes | US$1,250 | **na** | na | na |
| Series L – First Tranche | $ 750 | **na** | na | na |
| **Stock options** | | | | |
| Vested | 2.6 | | | |
| Non-vested | 3.3 | | | |

* Convertible into common shares.
(1) Redeemed in August 2021.
(2) Redeemed in November 2020.
(3) Redeemed in February 2022.
(4) Redeemed in May 2022.
(5) Redeemed in August 2022.
(6) Convertible into common shares by virtue of recourse to the Preferred Shares Series 48, Preferred Shares Series 49 and Preferred Shares Series 51, respectively. Refer to Note 16 of the consolidated financial statements for conversion details.
(7) Note 15 of the consolidated financial statements includes details on the NVCC Medium-Term Notes.

na – not applicable

Note 16 of the consolidated financial statements includes details on share capital and other equity instruments.

## Dividends

Dividends per common share declared in fiscal 2022 totalled $5.44, an increase of 28% from the prior year. Annual dividends declared represented 27% of reported net income and 41% of adjusted net income available to common shareholders on a last twelve-month basis.

Our target dividend payout range (common share dividends as a percentage of net income available to shareholders, less preferred share dividends and distributions on other equity instruments, based on earnings over the last twelve months) is 40% to 50%, providing shareholders with a competitive dividend yield. Our target dividend payout range seeks to provide shareholders with stable income, while retaining sufficient earnings to support anticipated business growth, fund strategic investments and support capital adequacy. BMO resumed dividend increases in fiscal 2022, once OSFI lifted its restriction on dividend increases and common share repurchases, which had been in effect from March 13, 2020 to November 4, 2021.

At year-end, our common shares provided a 4% annualized dividend yield based on the year-end closing share price. On December 1, 2022, we announced that the Board of Directors had declared a quarterly dividend on common shares of $1.43 per share, an increase of $0.10 per share or 8% from the prior year. The dividend is payable on February 28, 2023 to shareholders of record on January 30, 2023.

## Shareholder Dividend Reinvestment and Share Purchase Plan

Common shareholders may elect to have their cash dividends reinvested in common shares of BMO, in accordance with the Shareholder Dividend Reinvestment and Share Purchase Plan (DRIP).

During fiscal 2022, common shares to supply the DRIP were issued from treasury at a 2% discount from the then-current market price except in the first quarter, when common shares to supply the DRIP were purchased on the open market. Such shares will continue to be issued from treasury at a 2% discount until further notice. During fiscal 2021, common shares to supply the DRIP were purchased on the open market.

## Eligible Dividends Designation

For the purposes of the *Income Tax Act (Canada)* or any similar provincial and territorial legislation, BMO designates all dividends paid or deemed to be paid on both its common and preferred shares as “eligible dividends”, unless indicated otherwise.

**Caution**

This Enterprise-Wide Capital Management section contains forward-looking statements. Please refer to the Caution Regarding Forward-Looking Statements.

# Off-Balance Sheet Arrangements

We enter into a number of off-balance sheet arrangements in the normal course of operations, and these include structured entities (SEs), credit instruments and guarantees.

## Structured Entities and Securitization

We carry out certain business activities through arrangements involving SEs, using them to obtain sources of liquidity by securitizing certain of our financial assets, secure customer transactions, or pass our credit risk exposure to holders of the vehicles’ securities. For example, we enter into transactions with SEs in which we transfer assets, including mortgage loans, mortgage-backed securities, credit card loans, real estate lines of credit, auto loans and equipment loans, in order to obtain alternate sources of funding or as part of our trading activities. Note 6 of the consolidated financial statements describes the loan securitization activities carried out through third-party programs such as the Canada Mortgage Bond Program. Note 7 of the consolidated financial statements provides further details of our interests in both consolidated and unconsolidated SEs. Under IFRS, we consolidate an SE if we control the entity. We consolidate our own securitization vehicles, certain capital and funding vehicles, and other structured entities established to meet our own as well as our customers’ needs. We do not consolidate our Canadian and U.S. customer securitization vehicles, certain capital vehicles, various BMO-managed funds or various other structured entities where investments are held. Further details on our Canadian and U.S. customer securitization vehicles are provided below.

**BMO-Sponsored Securitization Vehicles**

We sponsor various vehicles that fund assets originated either by us (which are then securitized through a bank securitization vehicle) or by our customers (which are then securitized through three Canadian customer securitization vehicles and one U.S. customer securitization vehicle). We earn fees for providing services related to these customer securitization vehicles, including liquidity, distribution and financial arrangement fees for supporting the ongoing operations of the vehicles. These fees totalled approximately $140 million in fiscal 2022 ($132 million in fiscal 2021).

***Canadian Customer Securitization Vehicles***

These vehicles provide customers with access to financing either from us or from the asset-backed commercial paper (ABCP) markets. Customers sell either their assets or an interest in their assets into these vehicles, which then issue ABCP to either investors or us to fund the purchases. The sellers remain responsible for servicing the transferred assets and are first to absorb any losses realized on those assets. We are not responsible for servicing or absorbing the first loss and none of the sellers are affiliated with BMO.

Our exposure to potential losses arises from the purchase of ABCP issued by the vehicles, any related derivative contracts entered into with the vehicles, and the liquidity support provided to the market-funded vehicles. We use the credit adjudication process in deciding whether to enter into these arrangements, just as we do when extending credit in the form of a loan.

Two of these customer securitization vehicles are market-funded, while the third is funded directly by the bank. We do not control these entities and therefore they are not consolidated. Further information on the consolidation of customer securitization vehicles is provided in Note 7 of the consolidated financial statements.

We provide liquidity facilities to the market-funded vehicles, which may require that we provide additional financing to the vehicles should certain events occur. The total committed and undrawn amount under these liquidity facilities and undrawn amounts of the BMO funded vehicle as at October 31, 2022 totalled $7.1 billion ($5.4 billion as at October 31, 2021). This amount comprises part of the commitments outlined in Note 24 of the consolidated financial statements.

The market-funded vehicles had a total of $4.5 billion of ABCP outstanding as at October 31, 2022 ($3.6 billion in 2021). The ABCP issued by the market-funded vehicles is rated R-1(high) by DBRS and P1 by Moody's. Our holdings of ABCP, as distributing agent of ABCP issued by the market-funded vehicles, totalled $573 million as at October 31, 2022 ($24 million in 2021).

The assets of each of these market-funded vehicles consist primarily of exposure to diversified pools of Canadian automobile-related receivables and Canadian conventional residential mortgages. These two asset classes represent 66% (62% in 2021) of the aggregate assets of these vehicles as at October 31, 2022.

***U.S. Customer Securitization Vehicle***

We sponsor one market-funded customer securitization vehicle in the United States that provides customers with access to financing in the U.S. ABCP market. Customers sell either their assets or an interest in their assets into this vehicle, which then issues ABCP to investors to fund the purchases. The sellers remain responsible for servicing the assets involved in the related financing and are first to absorb any losses realized on those assets. We are not responsible for servicing or absorbing the first loss and none of the sellers are affiliated with BMO.

Our exposure to potential losses arises from the purchase of ABCP issued by the vehicle, any related derivative contracts entered into with the vehicle, and the liquidity support provided to the vehicle. We use the credit adjudication process in deciding whether to enter into these arrangements, just as when extending credit in the form of a loan.

Effective October 31, 2021, we concluded that we no longer control this vehicle, and therefore deconsolidated this vehicle, since our involvement has changed from principal to agent, as reflected primarily by the change in our exposure to its variable returns. Further information on the vehicle is provided in Note 7 of the consolidated financial statements.

The vehicle had US$4.8 billion of ABCP outstanding as at October 31, 2022 (US$3.1 billion in 2021). The ABCP issued by the vehicle is rated A1 by S&P and P1 by Moody's.

We provide committed liquidity support facilities to the vehicle, with the undrawn amount totalling US$8.3 billion as at October 31, 2022 (US$6.5 billion in 2021). This amount comprises part of the commitments outlined in Note 24 of the consolidated financial statements. The vehicle's assets primarily have exposure to diversified pools of U.S. automobile-related receivables, and student loans. These two asset classes represent 88% (82% in 2021) of the aggregate assets of the vehicle as at October 31, 2022.

## Credit Instruments

To meet the financial needs of our clients, we use a variety of off-balance sheet credit instruments. These include guarantees and standby letters of credit, which represent our obligation to make payments to third parties on behalf of a customer if the customer is unable to make the required payments or meet other contractual requirements. We also write documentary and commercial letters of credit, which represent agreements to honour drafts presented by a third party upon completion of specified activities. Credit commitments are off-balance sheet arrangements that represent our commitment to customers to grant them credit in the form of loans or other financings for specific amounts and maturities, subject to certain conditions.

There are a large number of credit instruments outstanding at any time. Our customers are broadly diversified, and we do not anticipate events or conditions that would cause a significant number of customers to fail to perform in accordance with the terms of their contracts. We use the credit adjudication process in deciding whether to enter into these arrangements, just as we do when extending credit in the form of a loan. We monitor off-balance sheet credit instruments in order to avoid undue concentrations in any geographic region or industry.

The maximum amount payable by BMO in relation to these credit instruments was approximately $228 billion as at October 31, 2022 ($202 billion in 2021). However, this amount is not representative of our likely credit exposure or the liquidity requirements for these instruments, as it does not take into account customer behaviour, which suggests that only a portion of our customers would utilize the facilities related to these instruments, nor does it take into account any amounts that could be recovered under recourse and collateral provisions.

For the credit commitments outlined in the preceding paragraphs, in the absence of an event that triggers a default, early termination by BMO may result in a breach of contract.

Further information on these instruments can be found in Note 24 of the consolidated financial statements.

## Guarantees

Guarantees include contracts under which we may be required to make payments to a counterparty based on changes in the value of an asset, liability or equity security that the counterparty holds. Contracts under which we may be required to make payments if a third party does not perform according to the terms of a contract, and contracts under which we provide indirect guarantees of indebtedness, are also considered guarantees. In the normal course of business, we enter into a variety of guarantees, including standby letters of credit, backstop and other liquidity facilities, and derivatives contracts or instruments (including, but not limited to, credit default swaps), as well as indemnification agreements.

The maximum amount payable by BMO in relation to these guarantees was approximately $59 billion as at October 31, 2022 ($40 billion in 2021). However, this amount is not representative of our likely exposure, as it does not take into account customer behaviour, which suggests that only a portion of the guarantees would require us to make any payments, nor does it take into account any amounts that could be recovered under recourse and collateral provisions.

For a more detailed discussion of these arrangements, refer to Note 24 of the consolidated financial statements.

**Caution**

This Off-Balance Sheet Arrangements section contains forward-looking statements. Please refer to the Caution Regarding Forward-Looking Statements.

# Enterprise-Wide Risk Management

As a diversified financial services company providing banking, wealth management, capital markets and insurance services, BMO is exposed to a variety of risks that are inherent in our business activities. A disciplined and integrated approach to managing risk is fundamental to the success of our operations. Our risk management framework provides independent risk oversight across the enterprise and is integral to building competitive advantage.

**Enterprise-Wide Risk Management** outlines BMO's approach to managing the key financial risks and other related risks that are inherent in its business activities, as discussed in the following sections:





Text and tables presented in a blue-tinted font in the Enterprise-Wide Risk Management section of the MD&A form an integral part of the 2022 audited annual consolidated financial statements. They present required disclosures as set out by the International Accounting Standards Board in IFRS 7, *Financial Instruments – Disclosures*, which permits cross-referencing between the notes to the consolidated financial statements and the MD&A. Refer to Notes 1 and 5 of the consolidated financial statements.

## Risks That May Affect Future Results

### Top and Emerging Risks That May Affect Future Results

BMO is exposed to a variety of evolving internal and external events that may have an impact on our overall risk profile. These events have the potential to affect our business, the results of our operations and our financial condition. The fundamental undertaking in the risk management process is to proactively identify, assess, manage, monitor and report on an array of risks arising from these events. The identification of specific types of risk involves several forums for discussion with the Board of Directors, senior management and business leaders, and incorporates both bottom-up and top-down approaches. Risks are assessed, and supported by scenario analysis. These risk assessments inform the development of action plans related to our exposure to certain events.

Particular attention has been given to the following risks, reflecting their potential to materially impact the bank's financial results, operational efficiency, strategic direction or reputation.

**General Economic Conditions**

Our earnings are affected by the general economic conditions prevailing in Canada, the United States and other jurisdictions in which we conduct business. In the past year, global economies continued to recover from the effects of the COVID-19 pandemic. The Canadian economy outperformed global peers at the start of the year, whereas in the United States, real GDP growth began to slow early in the year. Across North America, growth is slowing due to aggressive monetary tightening, weaker global demand, rising interest rates, supply constraints, labour shortages and high inflation rates. However, one partial offsetting factor is that households have retained a significant amount of the savings they accumulated during the pandemic, which is supporting pent-up demand for travel, in-person services and motor vehicles. The recovery faces headwinds generated by ongoing disruptions to global supply chains, the conflict in Ukraine, COVID-19 restrictions in China, volatile oil and natural gas prices, price and wage inflation and labour market challenges. Rising geopolitical tensions are expected to contribute to a decline in growth rates in North American economies through the coming year. Refer to the Geopolitical Risk and Escalating Trade Disputes section for further discussion of these risks.

Management continues to review the economic environment in which we operate, to identify significant changes in key economic indicators. In the event of a significant change in economic conditions, management assesses our portfolio and business strategies and develops contingency plans to address any adverse developments.

**Cyber and Cloud Security Risk**

Our exposure to banking cybersecurity risks arises from the ever-increasing reliance on internet and cloud technologies, coupled with the remote or hybrid work environment, and extensive dependence on advanced digital technologies to process data. Heightened geopolitical tensions are also contributing to elevated global exposures to cybersecurity risks. These risks include the threat of data loss resulting in potential exposure of customer or employee information, identity theft and fraud. Ransomware or denial of service attacks could result in system failure and service disruption. Threat campaigns are becoming better organized and more sophisticated, with reported data breaches, often through third-party suppliers, that can negatively impact the company's brand and reputation. At BMO, we are responding by investing in our Financial Crimes Unit and technological infrastructure, equipping our team to detect and address cybersecurity threats across North America, Europe and Asia in order to help keep our customers' and employees' data secure.

**Technology Resiliency**

As the adoption of digital banking continues to grow, we continue to invest in innovative enhancements to our technological capabilities in order to meet our customers' expectations and keep their data secure. Our customers, employees and suppliers have increasingly come to rely on technology platforms and the Internet of Things to manage and support their personal, business and investment banking activities. Given the extent to which BMO's operations rely on technology, it is important to maintain platforms that can function at high levels of operational reliability and resiliency, particularly with respect to business-critical systems.

In line with our Digital First strategy, we are focusing on technology innovations, such as advanced data management, analytical tools and artificial intelligence, to generate insights that will improve the way we do business and serve our customers.

**Geopolitical Risk and Escalating Trade Disputes**

The escalation of geopolitical tensions in Europe caused by the conflict in Ukraine is having significant global effects, including high energy prices and the erosion of business confidence. Sanctions imposed on Russia by Ukraine's allies have also aggravated supply shortages, particularly energy, across the global economy.

Trade tensions between China and the United States remain elevated, as the competition for technology dominance intensifies and both the United States and China seek to lessen economic dependence on each other. This could adversely affect business investment, and could prove especially problematic for commodity-producing countries such as Canada. Trade disputes have also arisen between Canada and China over the past several years. Within North America, the Canada-United States-Mexico Agreement (CUSMA) has reduced, but not eliminated, uncertainty about continental trading arrangements and disputes between the three countries.

Although it is difficult to predict and mitigate the potential economic and financial effects of trade-related events on the Canadian and U.S. economies, we actively monitor global and North American trends and continually assess our businesses in the context of these trends. Our lending portfolio has limited direct exposure outside North America. However, our customers rely on global trade and sustained economic growth. To mitigate exposure to geopolitical risk, we maintain a diversified portfolio that is continually monitored, in addition to contingency plans that address any possible adverse developments. We stress test our portfolios, business plans and capital adequacy against severely adverse scenarios arising from trade-related shocks, and we establish contingency plans and mitigation strategies to address and offset the consequences of possible adverse political and economic developments.

BMO's credit exposure by geographic region is set out in Tables 4, 5 and 8 to 10 in the Supplemental Information and in Note 4 of the consolidated financial statements.

**Benchmark Interest Rate Reform**

The transition from London interbank rates (LIBORs) and other interbank offered rates (IBORs) to alternative reference rates (ARRs) continues. BMO transitioned all sterling, euro, Swiss franc, Japanese yen and 1-week and 2-month USD LIBOR exposures to ARRs, in advance of the December 31, 2021 discontinuation of these rates.

In addition, BMO ceased issuing new USD LIBOR-based loans and instruments after December 31, 2021, except in permitted circumstances, in compliance with U.S. prudential regulatory supervisory guidance. As we approach the June 30, 2023 cessation date for the remaining USD LIBOR settings, overall USD LIBOR exposures are being reduced, except for fluctuations due to permitted derivatives activity to offset existing LIBOR risk. Existing USD LIBOR derivative exposures are expected to largely transition when central counterparties convert existing LIBOR derivatives to Secured Overnight Financing Rate (SOFR) derivatives by the cessation date.

On December 16, 2021, the Canadian Alternative Reference Rate working group (CARR) recommended the administrator, Refinitiv Benchmark Services UK Limited (RBSL), cease publication of Canadian Dollar Offered Rate (CDOR) settings immediately after June 28, 2024, using a two-stage transition approach. By the end of the first stage on June 30, 2023, CARR expects that all new derivative contracts and securities will use the Canadian Overnight Repo Rate Average (CORRA), with the exception of derivatives that hedge or reduce CDOR exposures from derivatives, or securities transacted before June 30, 2023, or loan agreements entered into before June 28, 2024. All remaining CDOR exposures should be transitioned to CORRA by June 28, 2024, marking the end of the second stage.

On May 16, 2022, following public consultation, RBSL announced that all remaining CDOR settings will cease publication immediately after June 28, 2024, in line with CARR recommendations. The enterprise IBOR Transition Office (ITO) adjusted all affected project plans as a result of the RBSL announcement.

**Climate Change and Other Environmental and Social Risks**

BMO is exposed to risks related to environmental events and extreme weather conditions that could potentially disrupt our operations, impact our customers and counterparties, and result in lower earnings and higher losses. Factors contributing to heightened environmental risks include the impacts of climate change and the continued intensification of development in areas of greater environmental sensitivity. Business continuity management plans provide us with the roadmap and tools that would support the restoration, maintenance and management of critical operations and processes in the event of a business disruption.

BMO is also exposed to risks related to borrowers that may experience financial losses or increases in operating costs as a result of climate-related litigation or policies, such as carbon emissions pricing, or that may experience a decline in revenue as new and emerging technologies disrupt or displace demand for certain commodities, products and services. As a global bank, we aim to help drive the transformation to a net-zero carbon economy by partnering with our clients to accelerate the low-carbon transition, in part through the establishment of the BMO Climate Institute announced in March 2021, and our dedicated Energy Transition Group.

Legal and regulatory, business or reputation risks could arise from actual or perceived actions, or inaction, in our operations and those of our customers in relation to climate change and other environmental and social risk issues, or our disclosures related to these matters. Risks related to these issues could also affect our customers, suppliers or other stakeholders, which could give rise to new business or reputation risks. Globally, climate-related litigation or enforcement measures could arise from new and more stringent obligations to manage and report climate-related risks.

Refer to the Environmental and Social Risk section for further discussion of these risks.

**Canadian Housing Market and Consumer Leverage**
Household debt and housing affordability risks are elevated. Successive hikes in interest rates by central banks have primed the housing market for a correction through to 2023 and are slowing demand. Although housing prices have started to decline, the annual income needed to buy a home has increased significantly due to rising mortgage rates. In addition, the pandemic may have caused permanent changes in consumer behaviours and preferences, as well as changes in how and where work is performed, including the widespread adoption of remote working arrangements. These changes could lead to structural shifts in the demand for housing based on geographic and other characteristics, and could dampen sales activity, home prices and property values within our current mortgage portfolio.

Housing affordability continues to be a challenge, especially in the Greater Toronto Area (GTA) and Greater Vancouver Area (GVA) and their surrounding regions, and represents an ongoing barrier to entry for potential first-time homebuyers. Although unemployment rates remain historically low, inflation and higher interest rates are putting a strain on household budgets, which is reducing overall household purchasing power. Further increases in interest rates, if material, could pressure the finances of households with adjustable-rate mortgages, variable-rate loans that reach their "trigger rate" where the payment no longer covers interest on the loan, and fixed-rate loans that come up for renewal. Prolonged economic uncertainty could also cause households to continue to focus on building savings.

Reductions in home sales activity, particularly in the GTA and GVA, would impact mortgage origination volumes, while lower property values could result in higher provisions for credit losses. BMO's prudent lending practices, which include the application of additional underwriting scrutiny and regulatory stress testing at origination on higher-value and higher loan-to-value transactions, and the setting and close monitoring of regional, property type and customer segment concentration limits, support the soundness of BMO's Canadian real estate lending portfolio. Further, stress test analysis suggests that even significant price declines and extremely challenging economic conditions would result in manageable losses, primarily due to insurance coverage and the significant level of equity held by owners with seasoned loans.

**Inflation**
Inflation rates in North America have increased sharply and are expected to decline slowly over time. Central banks began to implement corrective measures through a series of interest rate increases in 2022. Further interest rate increases will put additional pressure on our customers and increase the risk of an economic recession in North America. Higher inflation rates are having an impact on both our operations and the operations of our clients, and could have a negative effect on our earnings through higher provisions for credit losses and higher operating costs. We continue to monitor inflationary pressures in North America and assess any potential effects on our portfolios, interest margins and operating costs. Refer to the Canadian Housing Market and Consumer Leverage section and the General Economic Conditions section for further discussion of these risks.

## Other Factors That May Affect Future Results

**Fiscal and Monetary Policies and Other Economic Conditions in the Countries in which BMO Conducts Business**
BMO's earnings are affected by the fiscal and monetary policies and other economic conditions prevailing in Canada, the United States and other jurisdictions in which we do business. These policies and conditions may reduce profitability and increase economic uncertainty in specific businesses and markets, which may affect our customers and counterparties, and potentially contribute to a greater risk of default. Changes in fiscal and monetary policies are difficult to predict. Higher levels of government and business debt resulting from the pandemic may create future vulnerabilities that could impact our markets and our operating results. Interest rate fluctuations could have an impact on our earnings, the value of our investments, the credit quality of our loans to customers and counterparty exposure, and the capital markets that we access.

Canadian dollar value changes relative to other currencies have affected, and could continue to affect, the business operations and results of clients with significant earnings or input costs denominated in foreign currencies. Our foreign operation investments are primarily denominated in U.S. dollars, and the foreign exchange impact on our U.S.-dollar-denominated risk-weighted assets and capital deductions may result in variability in our capital ratios. Refer to the Enterprise-Wide Capital Management section. The value of the Canadian dollar relative to the U.S. dollar will also affect the contribution of U.S. operations to Canadian-dollar profitability.

Hedging positions may be taken to manage the pending Bank of the West acquisition, as well as interest rate exposures and foreign exchange impacts, and to partially offset the effects of Canadian dollar/U.S. dollar exchange rate fluctuations on the bank's financial results. Refer to the Foreign Exchange section and the Market Risk section for a more complete discussion of our exposure to foreign exchange and interest rate risk.

**Regulatory Requirements**
The financial services industry is highly regulated, and BMO has experienced increasing complexity in regulatory requirements and expectations, as governments and regulators around the world continue to pursue major reforms intended to strengthen the stability of the financial system and protect key markets and participants. Consequently, there is the potential for increases in regulatory capital requirements and additional compliance costs, which could lower returns and affect growth. These reforms could also affect the cost and availability of funding and the level of the bank's market-making activities. Regulatory reforms may also impact fees and other revenues for certain operating groups. In addition, differences in laws and regulations enacted by a range of national regulatory authorities may provide advantages to our international competitors, which could affect our ability to compete. We monitor such developments, and other potential changes, so that we are well-positioned to respond and implement any necessary changes.

Failure to comply with applicable legal and regulatory requirements and expectations could result in legal proceedings, financial losses, regulatory sanctions, enforcement actions, criminal convictions and penalties, an inability to execute business strategies, a decline in investor and customer confidence, and damage to our reputation. Refer to the Legal and Regulatory Risk section for a more complete discussion of BMO's management of legal and regulatory risk.

**Tax Legislation and Interpretations**
Legislative changes and changes in tax policy, including their interpretation by tax authorities and the courts, may impact earnings. Tax laws, as well as interpretations of tax laws and policy by tax authorities, may change as a result of efforts by the Canadian and U.S. federal governments, other G20 governments and the Organization for Economic Co-operation and Development (OECD) to increase taxes, broaden the tax base globally and

improve tax-related reporting. For example, the Canadian government introduced legislation related to tax measures that would be applicable to certain Canadian companies in a bank or life insurer group, including a one-time 15% tax (referred to as the Canada Recovery Dividend, or CRD) and a permanent 1.5% increase in the tax rate, and has proposed to adopt the OECD Pillar 2 Model Rules, which will levy a 15% minimum tax on operations globally. Refer to the Critical Accounting Estimates and Judgments section for further discussion of income taxes and deferred taxes.

**Pending Bank of the West Acquisition**

BMO is subject to several risks related to the pending acquisition of Bank of the West. Such risks include, but are not limited to: the possibility that the announced acquisition of Bank of the West does not close when expected, or at all, because regulatory approvals or other conditions required for closing are not received or satisfied on a timely basis, or at all, or regulatory approvals are received subject to adverse conditions or requirements; the risk that BMO may be unable to realize, in the anticipated time frame, the benefits anticipated from the proposed transaction, such as it being accretive to adjusted earnings per share and creating opportunities for synergies; the risk that the business of Bank of the West may not perform as expected, or in a manner consistent with historical performance; the risk that BMO may not be able to promptly and effectively integrate Bank of the West and that the costs of integration may be higher than expected; the risk that the total amount of BMO's existing excess capital, completed financing for the transaction and capital generation anticipated before closing may not be sufficient to maintain capital targets without raising additional capital; the risk that our fair value management actions (as described in the Significant Events section) are not effective or result in unforeseen consequences; reputational risks and the reaction of Bank of the West's customers and employees to the transaction; the risk of increased exposure to regional economic and other issues as a result of expanding BMO's presence in the United States; risks related to possible demands on management time by transaction-related issues; and risks related to increased exposure to exchange rate fluctuations. Any of these and other risks related to the pending acquisition of Bank of the West including, but not limited to, the risk that our assumptions about us, Bank of the West and the announced acquisition may prove inaccurate, could adversely impact our financial results or strategic direction.

**Changes to Business Portfolio**

BMO may, from time to time, acquire companies, businesses and assets as part of its overall business strategy. We conduct thorough due diligence before completing such acquisitions. However, some acquisitions may not perform in line with our financial or strategic objectives or expectations. Our ability to successfully complete an acquisition may be subject to regulatory and shareholder approvals, and it may not be possible to determine when, if or on what terms the necessary approvals will be granted. Changes in the competitive and economic environment, as well as other factors, may result in reductions in revenue or profitability, while higher than anticipated integration costs and failure to realize expected cost savings after an acquisition could also adversely affect earnings. Integration costs may increase because of regulatory costs related to an acquisition, operational loss events, other unanticipated expenses that were not identified in the due diligence process, or demands on management time that are more significant than anticipated, as well as unexpected delays in implementing certain plans that in turn lead to delays in achieving full integration. Successful post-acquisition performance depends on retaining the clients and key employees of acquired companies and businesses and on integrating key systems and processes without disruption.

BMO also evaluates potential dispositions of assets and businesses that may no longer meet strategic objectives. When we sell assets or withdraw from a business, we may encounter difficulty in finding buyers or alternative exit strategies on acceptable terms or in a timely manner, which could delay the achievement of strategic objectives. We may also dispose of assets or a business on terms that are less desirable than anticipated or result in adverse operational or financial impacts, or greater disruption than expected, and the impact of the divestiture on revenue growth may be larger than projected. Dispositions may be subject to the satisfaction of conditions and the granting of governmental or regulatory approvals on acceptable terms that, if not satisfied or obtained, may prevent the completion of a disposition as intended, or at all.

**Critical Accounting Estimates and Accounting Standards**

BMO prepares its consolidated financial statements in accordance with IFRS. Changes that the International Accounting Standards Board makes from time to time may materially affect the way we record and report financial results. Significant new accounting policies and future changes in accounting policies are discussed in the Changes in Accounting Policies in 2022 and Future Changes in Accounting Policies sections, as well as in Note 1 of the consolidated financial statements.

The application of IFRS requires management to make significant judgments and estimates that affect the carrying amounts of certain assets and liabilities, certain amounts reported in net income, and other related disclosures. In making these judgments and estimates, we rely on the best information available at the time. However, it is possible that circumstances may change, new information may become available or models may prove to be imprecise.

BMO's financial results could be affected for the period during which any such new information or change in circumstances becomes apparent, and the extent of the impact could be significant. More information is included in the Critical Accounting Estimates and Judgments section.

**Technological Innovation and Competition**

Advancement of technological capabilities is shaping the future of everyday banking for individuals and businesses. The change in customers' behaviour and preferences for on-demand banking in recent years has led to significant progress in open banking, an increase in the use of digital currencies, a growing number of non-bank financial service providers and more banking options for customers and businesses. This shift in the financial services ecosystem creates risks for BMO, including direct competition with technology companies. In response to these challenges, we have set out a Digital First strategy to enhance customer experiences, streamline processes and reduce complexity. We continue to make investments in advanced technologies, including artificial intelligence (AI), and we have designed new talent strategies to attract and retain employees with the skills we need. In addition, we closely monitor evolving technologies and practices in the financial services industry, and we are developing new risk management approaches to identify and manage these risks.

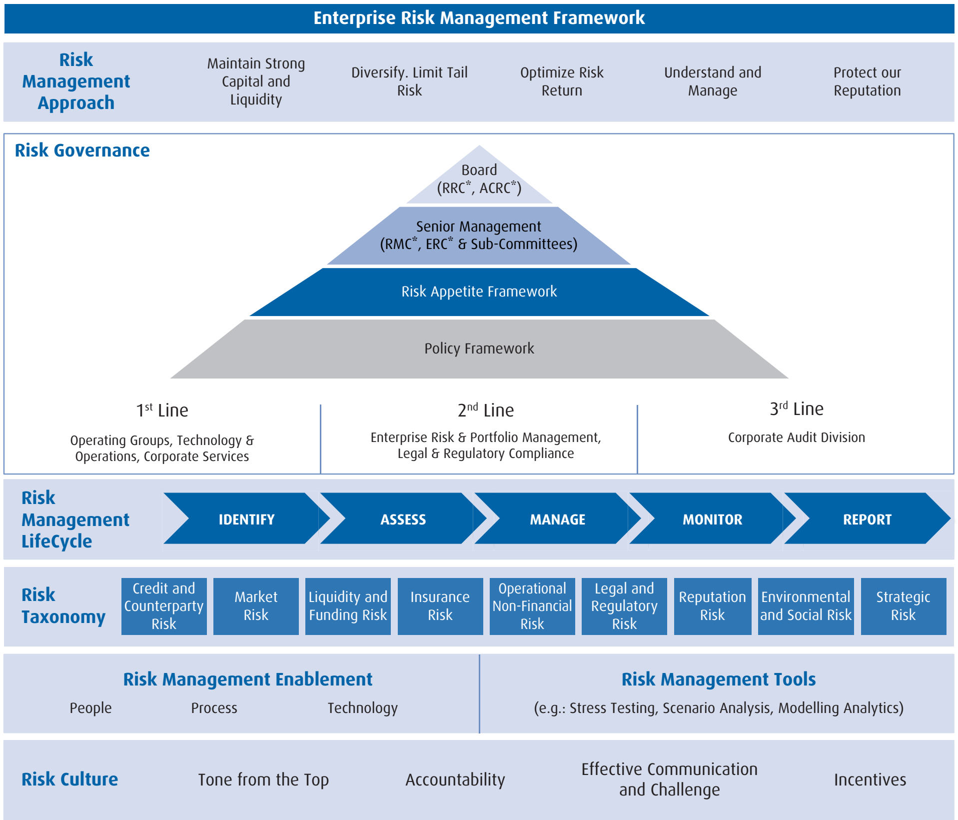
**Caution**

The Risks That May Affect Future Results section and the remainder of this Enterprise-Wide Risk Management section contain forward-looking statements. Please refer to the Caution Regarding Forward-Looking Statements. Other factors beyond BMO's control that may affect its future results are noted in the Caution Regarding Forward-Looking Statements. BMO cautions that the preceding discussion of risks that may affect future results is not exhaustive.

# Enterprise-Wide Risk Management Framework

BMO's integrated and disciplined approach to risk management is fundamental to the success of our business. Our Enterprise Risk and Portfolio Management (ERPM) group oversees the implementation and operation of the Enterprise-Wide Risk Management Framework (ERMF), and provides independent review and oversight across the enterprise on risk-related issues, in order to enable prudent and measured risk-taking that is integrated with business strategy. All elements of the ERMF function together to support informed and effective risk management, while striking an appropriate balance between risk and return.

The ERMF guides risk-taking activities in order to align them with customer needs, shareholder expectations and regulatory requirements. The ERMF also sets out our approach to risk management: maintain strong capital and liquidity positions, diversify and limit tail risk, optimize risk return, understand and manage the risks we face, and protect our reputation. Our approach to risk governance is outlined in the ERMF, which incorporates our Risk Management Life Cycle, guiding our efforts to identify, assess, manage, monitor and report on our exposure to material risks. The ERMF is supported by our people, processes and technology, along with a range of risk management tools, including modelling and analytics, stress testing and scenario analysis, and our Risk Taxonomy. All elements of the ERMF are supported by our risk culture. The ERMF provides for the direct management of each individual risk type, as well as the management of risk on an integrated basis.




*RRC: Risk Review Committee, ACRC: Audit and Conduct Review Committee, RMC: Risk Management Committee, ERC: Enterprise Regulatory Committee

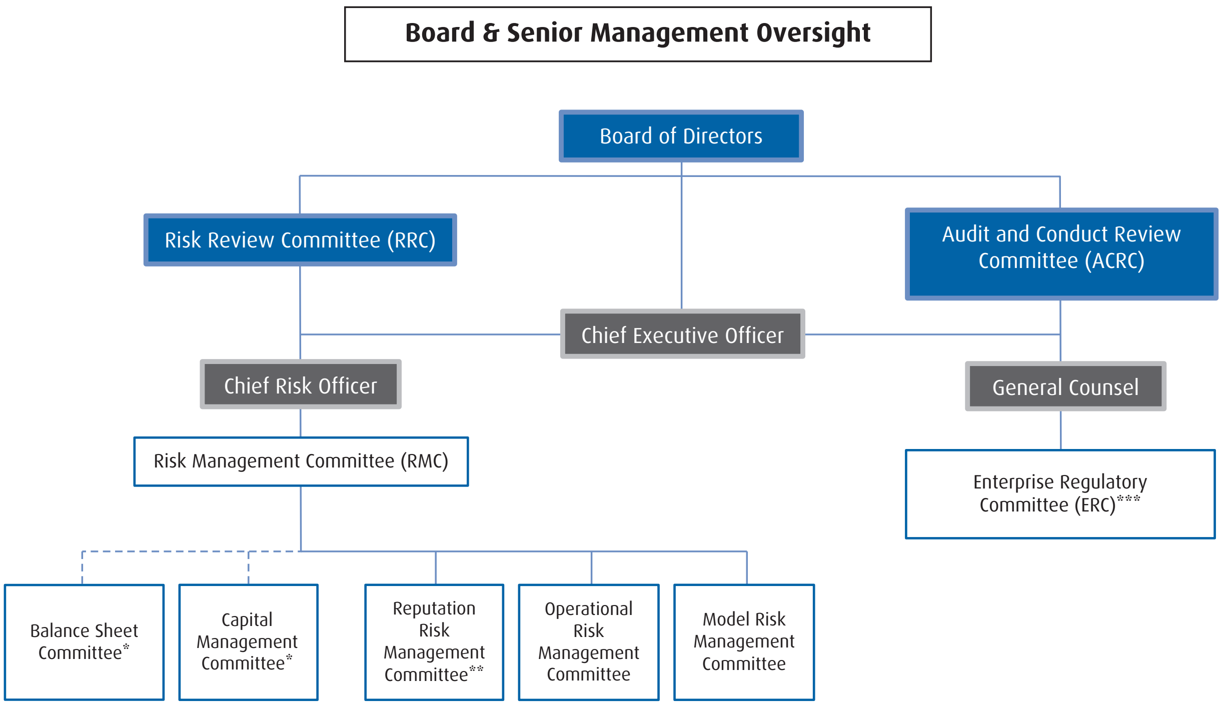
## Risk Governance

The ERMF outlines a governance approach that includes robust Board of Directors and senior management oversight, a Risk Appetite Framework, the Enterprise Policy Framework and the corresponding roles in the three-lines-of-defence operating model.

**Board of Directors and Senior Management Oversight**

Specific Board-approved policies govern our approach to the management of material risks, and oversight is exercised at all levels of the enterprise through a hierarchy of committees and individual responsibilities, as outlined in the following diagram. The Board seeks to ensure that corporate objectives are supported by a sound risk strategy and an effective ERMF that is appropriate to the nature, scale, complexity and risk profile of our operations. The Board also has overall responsibility for the bank's governance framework and corporate culture. Senior management reviews and discusses significant risk issues and action plans as they arise in the implementation of the enterprise-wide strategy, exercising oversight and governance of the risks taken across the enterprise and the processes through which exposures to such risks are identified, assessed, managed, monitored, and reported in accordance with policies, and held within approved limits and risk tolerances.

The ERMF is reviewed on a regular basis by the Risk Review Committee (RRC) of the Board, in order to exercise oversight and guide risk-taking activities.




* The Balance Sheet Committee (BSC) and Capital Management Committee (CMC) are sub-committees of the Asset and Liability Management Committee (ALCO). However, in matters related to Structural Market Risk, Liquidity & Funding Risk, and the Internal Capital Adequacy Assessment Process (ICAAP), BSC and CMC report to RMC.

** Committee is chaired by the General Counsel.

*** Committee is co-chaired by the General Counsel and Chief Risk Officer.

In addition to the oversight exercised by the Board of Directors and senior management, provisions for appropriate risk governance, supported by the three lines of defence, are in place in all significant businesses and entities. In each of the operating groups, as well as in Corporate Services, which includes Technology and Operations, management serves as the first line of defence, responsible for governance and controls, and the implementation and operation of risk management processes and procedures designed to provide effective risk management. ERPM and Legal & Regulatory Compliance, as the second line of defence, oversee the implementation and operation of risk management processes and procedures, and monitor and test risk outcomes against our risk appetite and management expectations, in order to determine whether outcomes are consistent with expected returns. Corporate Audit Division, as the third line of defence, provides independent assessment of the effectiveness of internal controls that support the risk management and governance processes. Individual governance committees establish and monitor more specific risk limits, consistent with Board-approved limits.

**Board of Directors** is responsible for supervising the management of the business and affairs of BMO. The Board, either directly or through its committees, is responsible for oversight in the following areas: strategic planning; defining risk appetite; identifying and managing risk; managing capital; fostering a culture of integrity; internal controls; succession planning and evaluation of senior management; communication; public disclosure; and corporate governance.

**Risk Review Committee (RRC) of the Board of Directors** assists the Board in fulfilling its risk management oversight responsibilities. This includes maintaining a strong risk culture; overseeing the identification and management of BMO's risks; monitoring adherence by operating groups to risk management corporate policies and standards; compliance with risk-related regulatory requirements; and evaluating the Chief Risk Officer (CRO), including input into succession planning for the CRO. The ERMF is reviewed on a regular basis by the RRC in order to provide guidance for the governance of risk-taking activities.

**Audit and Conduct Review Committee (ACRC) of the Board of Directors** assists the Board in fulfilling its oversight responsibilities for the integrity of BMO's financial reporting; the effectiveness of BMO's internal controls; the qualifications, independence and performance of the independent auditors; BMO's compliance with laws and regulations; transactions involving related parties; conflicts of interest and confidential information; and standards of business conduct and ethics.

**Chief Executive Officer (CEO)** is directly accountable to the Board for all of BMO's risk-taking activities. The CEO is supported by the CRO and the ERPM group.

**Chief Risk Officer (CRO)** reports directly to the CEO and is head of ERPM and chair of RMC. The CRO is responsible for providing independent review and oversight of enterprise-wide risks and leadership on risk issues, developing and maintaining the RMF and fostering a strong risk culture across the enterprise.

**Risk Management Committee (RMC)** brings together senior executive members of BMO management to oversee risk management across the enterprise. RMC reviews and discusses significant risk issues and action plans as they arise in the implementation of the enterprise-wide strategy. RMC exercises risk oversight and governance at the highest levels of management. This committee is chaired by the CRO, and its members include the heads of the operating groups, the CEO, the Chief Financial Officer (CFO) and the General Counsel.

**RMC Sub-Committees** have oversight responsibility for the risk implications and balance sheet impacts of management strategies, governance practices, risk measurement, model risk management and contingency planning. RMC and its sub-committees exercise oversight of the risks taken across the enterprise and the processes through which such risks are identified, assessed, managed, monitored, and reported in accordance with policies, and held within limits and risk tolerances.

**Enterprise Risk and Portfolio Management (ERPM)**, as the second line of defence, provides risk management oversight, effective challenge and independent assessment of risk and risk-taking activities. ERPM supports a disciplined approach to risk-taking by exercising its responsibility for independent transactional approval and portfolio management, policy formulation, risk reporting, stress testing, modelling and risk education. This approach promotes consistency in risk management practices and standards across the enterprise, and verifies that any risks accepted are consistent with BMO's risk appetite.

**Operating Groups and Corporate Services, including Technology and Operations**, are responsible for effectively managing risks by identifying, assessing, managing, monitoring, mitigating and reporting on exposures to risk within their respective operations and lines of business in accordance with their established risk appetite. They exercise business judgment and maintain effective policies, processes and internal controls, so that significant risk issues are escalated and reviewed by ERPM. Individual governance committees and ERPM establish and monitor risk limits that are consistent with, and subordinate to, the Board-approved limits.

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## Risk Appetite Framework

BMO's Risk Appetite Framework consists of a Risk Appetite Statement and a delineation of the roles and responsibilities of senior management and the Board of Directors, and is supported by corporate policies, standards and guidelines, including related risk limits, concentration levels and controls defined therein. Risk appetite defines the amount of risk that the bank is willing to assume given its guiding principles, thereby supporting the pursuit of sound business initiatives, appropriate returns and targeted growth. Risk appetite is integrated with strategic and capital planning and performance management. The Risk Appetite Statement consists of both qualitative and quantitative specifications of our appetite for the assumption of material risks. Key risk metrics are outlined for material risks, with specific thresholds that allow senior management and the Board of Directors to monitor the current risk profile relative to risk appetite. On an annual basis, the RMC submits the Risk Appetite Statement and key risk metrics to the RRC, which in turn reviews and recommends them to the Board of Directors for approval. The Risk Appetite Statement is articulated and applied consistently across the enterprise, with operating groups and key businesses and entities developing their own respective risk appetite statements within this framework.

We believe that risk management is every employee's responsibility. This is guided by five key principles that drive our approach to managing risk across the enterprise and comprise our Risk Appetite Statement.

- **Understand and Manage** by only taking risks that are transparent and understood.
- **Protect BMO's Reputation** by adhering to principles of honesty, integrity, respect and high ethical standards in line with our Code of Conduct.
- **Diversify. Limit Tail Risk** by targeting a business mix that minimizes earnings volatility and exposure to low-probability, high-impact events.
- **Maintain Strong Capital and Liquidity** positions that meet, or exceed, regulatory requirements and market expectations.
- **Optimize Risk Return** by managing risk-adjusted exposures and making decisions that create value for shareholders.

## Risk Limits

Risk limits are set so that risk-taking activities remain within BMO's risk appetite, balancing risk diversification, exposure to loss and risk-adjusted returns. These limits inform business strategies and decisions, and are reviewed and approved by the Board of Directors or management committees, as appropriate, based on the level and granularity of the limits. They include:

- **Credit and Counterparty Risk** – limits on group and single-name exposures and material country, industry and portfolio/product segments.
- **Market Risk** – limits on economic value and earnings exposures to stress scenarios and significant market movements, as well as limits on value at risk and stress related to trading and underwriting activities.
- **Insurance Risk** – limits on policy exposures and reinsurance arrangements.
- **Liquidity and Funding Risk** – minimum limits governing the internal liquidity stress testing scenario, minimum regulatory liquidity ratio requirements, and maximum levels of asset pledging and wholesale funding, as well as limits related to liability diversification and exposure to credit and liquidity facilities.
- **Operational Risk** – key metrics for measuring operational and other non-financial risks that may have financial consequences.

The Board of Directors, after considering recommendations from the RRC and RMC, annually reviews and approves key risk limits and then delegates overall authority for these limits to the CEO. The CEO in turn delegates more specific authorities to the senior executives of the operating groups (first line of defence), who are responsible for the management of risk in their respective operations, and to the CRO. These delegated authorities allow risk officers to set risk tolerances, approve geographic and industry sector exposure limits within defined parameters, and establish underwriting and inventory limits for trading and investment banking activities. The criteria under which more specific authorities may be delegated across the organization, as well as the requirements relating to the documentation, communication and monitoring of those specific delegated authorities, are set out in corporate policies and standards.

## Enterprise Policy Framework

The Enterprise Policy Framework includes a comprehensive set of corporate policies, each of which is approved by the RRC, as well as corporate standards issued pursuant to those corporate policies that have been reviewed by the RMC and approved by senior management. Corporate policies and standards collectively outline the principles, expectations, and roles and responsibilities of senior management for ensuring that exposures to key risks are identified, assessed, managed, monitored and reported. Corporate policies and standards are reviewed and updated at a minimum every two years.

The Enterprise Policy Framework also includes supporting directives and procedures that apply across the first and second lines of defence to operationalize the requirements, roles and responsibilities, and activities outlined in those corporate policies and standards.

## Three-Lines-of-Defence Operating Model

Our ERMF is operationalized through the three-lines-of-defence approach to managing risk, as described below:

- Operating groups and Corporate Services, which includes Technology and Operations, serve as our first line of defence. They are accountable for the risks arising from their businesses, operations and exposures. They are expected to pursue business opportunities within their established risk appetite and to identify, assess, manage (which includes mitigation), monitor and report on all risks in, or arising from, their businesses, operations and exposures. The first line fulfils its responsibilities by applying risk management and reporting methodologies, by establishing appropriate internal controls in accordance with the ERMF and by monitoring the effectiveness of such controls. These processes and controls provide the framework for our lines of business to act within their delegated risk-taking authority and risk limits, as set out in corporate policies and the Risk Appetite Framework. Corporate Services, while part of our first line of defence, may also serve in a governance capacity when specific roles and responsibilities are assigned to individuals or groups under the Enterprise Policy Framework.
- The second line of defence comprises ERPM and Legal & Regulatory Compliance. The second line exercises independent oversight, offers effective challenge and provides independent assessment of risks and risk management practices, including transaction, product and portfolio risk management decisions, processes and controls applied in the first line of defence. The second line establishes enterprise-wide risk management policies, infrastructure, processes, methodologies and practices that the first and second lines use to identify, assess, manage (which includes mitigation), monitor and report risks across the enterprise.
- Corporate Audit Division is the third line of defence. It provides an independent assessment of the effectiveness of internal controls across the enterprise, including controls that support the risk management and governance processes.

## Risk Taxonomy

We maintain a Risk Taxonomy that documents the key risks to which BMO is exposed and provides foundational support across the risk management life cycle in relation to each of the key risks. Our Risk Taxonomy incorporates exposures to financial risks (Credit and Counterparty Risk, Market Risk, Insurance Risk and Liquidity and Funding Risk), non-financial risks (Operational Non-Financial Risk and Legal and Regulatory Risk) and transverse risks, which intersect with both financial and non-financial risks (Strategic Risk, Environmental and Social Risk and Reputation Risk). We maintain sub-categories under each Tier 1 risk in order to support effective risk management practices as part of the overall ERMF. Any failure in managing these risks, or in controlling our exposures to them, could have financial consequences for BMO.

## Risk Management Life Cycle

**Risk Identification, Assessment and Management**

Risk identification is an integral step in recognizing the key inherent risks that BMO faces, assessing the potential for loss and then acting to mitigate this potential. Our Risk Taxonomy documents the key risks, supporting the implementation of our Risk Appetite Framework and assisting in identifying the primary risk categories for which stress capital consumption is estimated. Risk review and approval processes are established based on the nature, size and complexity of the risks involved. Generally, these involve a formal review and approval by either an individual or a committee that is independent of the originator. Delegated authorities and approvals by category are outlined below.

- **Portfolio transactions** – transactions are approved through risk assessment processes for all types of transactions at all levels of the enterprise, which include operating group recommendations and ERPM approval of credit risk, and transactional and position limits for market risk.
- **Structured transactions** – new structured products and transactions with significant legal and regulatory, accounting or tax implications are reviewed by the Global Markets Risk Committee, as appropriate, and are also assessed under the operational risk management process if they involve structural or operational complexity that may give rise to significant operational risk. Transactions that may give rise to reputation risk are reviewed by the Reputation Risk Management Committee.
- **Investment initiatives** – documentation of risk assessments is formalized through the investment spending approval process, and is reviewed and approved by Corporate Services based on the size of an initiative's investment spending and its inherent risk.
- **New products and services** – policies and procedures for the approval of new or modified products and services offered to customers are the responsibility of the first line of defence, including appropriate senior business leaders, and are reviewed and approved by subject matter experts and senior managers in Corporate Services, as well as by other senior management committees.



## Risk Monitoring and Reporting

**Risk-Based Capital Assessment**

Two measures of risk-based capital are used by BMO: economic capital and advanced-approach regulatory capital. Both are aggregate measures of the risk that the bank assumes in pursuit of its financial objectives, and enable the evaluation of returns on a risk-adjusted basis. Our operating model provides for the direct management of each type of risk, as well as the management of material risks on an integrated basis. Measuring the economic profitability of transactions or portfolios involves a combination of both expected and unexpected losses to assess the extent and correlation of risk before authorizing new exposures. Both expected and unexpected loss measures for a current transaction or portfolio reflect current market conditions, the inherent risk in the position and, as appropriate, its credit quality. Risk-based capital methods and material models are reviewed at least annually and updated, as appropriate. The risk-based capital models provide a forward-looking estimate of the difference between the maximum potential loss in economic (or market) value and expected loss, measured over a specified time interval and using a defined confidence level.

**Stress Testing**

Stress testing is a key element of our risk management and capital management frameworks. It is integrated into our enterprise and group risk appetite statements and embedded in our management processes. To evaluate risks, we regularly test a range of scenarios, which vary in frequency, severity and complexity, in portfolios and businesses across the enterprise. In addition, we participate in regulatory stress tests in multiple jurisdictions. Governance of the stress testing framework resides with senior management, including the Enterprise Stress Testing Committee. This committee comprises business, risk and finance executives, and is accountable for reviewing and challenging enterprise-wide scenarios and stress test results. Stress testing and enterprise-wide scenarios associated with the Internal Capital Adequacy Assessment Process (ICAAP), including recommendations for actions that the enterprise could take in order to manage the impact of a stress event, are established by senior management and presented to the Board of Directors. Oversight and governance of the stress testing associated with the Horizontal Capital Review (HCR), which is a U.S. regulatory requirement for BMO Financial Corp. (BFC), are exercised at the BFC level by its Board of Directors.

Quantitative models and tools, along with qualitative evaluations, are utilized to assess the impact of changes in the macroeconomic environment on the income statement and balance sheet and the resilience of the bank's capital position over a forecast horizon. Models utilized for stress testing are approved and governed under the Model Risk Management Framework, and are used to establish a better understanding of our risks and to test our capital adequacy.

**Enterprise Stress Testing**

Enterprise stress testing supports BMO's ICAAP and target-setting through analysis of the potential effects of low-frequency, high-severity events on our earnings, our balance sheet, and our liquidity and capital positions. Scenario selection is a multi-step process that considers material and idiosyncratic risks and the potential impact of new or emerging trends on risk profiles, as well as the macroeconomic environment. Scenarios may be defined by senior management or regulators. The economic impacts are determined by the Economics group, which distills the scenarios into macroeconomic and market variables that include, but are not limited to, GDP growth, yield curve estimates, unemployment rates, real estate prices, stock index growth and changes in corporate profits. These macroeconomic variables drive stress loss models, tools and qualitative assessments that are applied to determine estimated stress impacts. The scenarios are used by operating, risk and finance groups to assess a broad range of financial impacts that BMO could experience as a result of a specific stress, as well as the ordinary course of business and extraordinary actions anticipated in response to that stress.

Stress test results, including mitigating actions, are benchmarked and challenged by the relevant business units and senior management, including the Enterprise Stress Testing Committee.

**Targeted Portfolio and Ad Hoc Stress Testing**

BMO's stress testing framework integrates stress testing at the line of business, portfolio, industry, geographic and product level, and embeds the test results in strategy, business planning and decision-making. Targeted portfolio, industry and geographic analysis is conducted by ERPM and the lines of business to test risk appetite, limits, concentration and strategy. Ad hoc stress testing is conducted in response to changing economic or market conditions and in order to assess business strategies.

Refer to the Environmental and Social Risk section for a discussion of our climate scenario analysis program.

## Risk Culture

The Enterprise Culture and Conduct Framework sets out BMO's approach to managing and mitigating potential misconduct. Misconduct is behaviour that falls short of legal, professional, internal conduct and ethical standards. Similar to BMO's approach to managing other non-financial risks, this framework is supported by the ERMF and our focus on maintaining a strong risk culture. BMO reports on various metrics related to culture and conduct, and engages with other control frameworks across the enterprise and in all of the jurisdictions in which it operates.

Risk culture at BMO is the set of shared norms, attitudes and behaviours related to risk awareness, risk-taking and risk management. Sound risk culture consistently supports appropriate behaviours and judgments about risk-taking, and promotes effective risk management and the alignment of risk-taking activities with BMO's Risk Appetite. Our risk culture informs and supports our overall culture. We have a long-standing commitment to high ethical standards, grounded in our values of integrity, empathy, diversity and responsibility. Our Purpose – to Boldly Grow the Good *in business and life* defines BMO as an organization and is the foundation of our operations. ERPM is responsible for the development and promotion of a healthy, strong risk culture across the enterprise. In pursuing this mandate, ERPM works closely with Legal & Regulatory Compliance and its Ethics & Conduct Office, as well as People & Culture. BMO's risk culture is founded on four guiding principles that together reinforce its effectiveness across the bank: Tone from the Top, Accountability, Effective Communication and Challenge, and Incentives:

- **Tone from the Top:** Our risk culture is grounded in an approach to risk management that encourages openness, constructive challenge and personal accountability. Each member of senior management plays a critical role in fostering this strong risk culture among all employees by effectively communicating this responsibility and by the example of their actions. The Board of Directors oversees BMO's corporate objectives, and seeks to ensure they are supported by a sound risk strategy and an effective ERMF that is appropriate to the nature, scale, complexity and risk profile of our operations.
- **Accountability:** BMO's ERMF is anchored in the three-lines-of-defence approach to managing risk. Our risk culture also encourages the escalation of concerns associated with potential or emerging risks to senior management, so that they can be appropriately evaluated and addressed. BMO encourages and supports an environment in which concerns can be raised without retaliation.
- **Effective Communication and Challenge:** Timely and transparent sharing of information is integral to engaging stakeholders in key decisions and strategy discussions, which brings added rigour and discipline to BMO's decision-making. This not only leads to the timely identification, escalation and resolution of issues, but also encourages open communication, independent challenge and an understanding of the key risks faced by the organization, so that employees are equipped and empowered to make decisions and take action in a coordinated and consistent manner, supported by a strong and effective monitoring and control framework.
- **Incentives:** Compensation and other incentives are aligned with prudent risk-taking. These are designed to reward the appropriate use of capital and respect for the rules and principles of the ERMF, and to discourage excessive risk-taking. Risk managers have input into the design of incentive programs that may have an effect on risk-taking. We also maintain training programs that are designed to foster a deep understanding of BMO's capital management and risk management frameworks across the enterprise, providing employees and management with the tools and insights they need to fulfill their responsibilities for independent oversight, regardless of their role in the organization.

# Credit and Counterparty Risk

**Credit and counterparty risk** is the potential for credit loss due to the failure of an obligor (i.e., a borrower, endorser, guarantor or counterparty) to repay a loan or honour another predetermined financial obligation.

Credit and counterparty risk underlies every lending activity that we enter into, and also arises in the holding of investment securities, transactions related to trading and other capital markets products, and activities related to securitization. Credit risk and counterparty risk represent the most significant measurable risk we face. Proper management of credit risk is integral to our success, since failure to effectively manage credit risk could have an immediate and significant impact on our earnings, financial condition and reputation.

## Credit and Counterparty Risk Governance

The Credit Risk Management Framework seeks to ensure that all material credit risks to which the enterprise is exposed are identified, assessed, managed, monitored, and reported. The Risk Review Committee (RRC) has oversight of the management of all material risks that we face at BMO, including the Credit Risk Management Framework. The framework incorporates governing principles that are defined in a series of corporate policies and standards and are applied through specific operating procedures. These policies and standards are reviewed on a regular basis and modified as necessary, so that they are current and consistent with our risk appetite. The structure, limits (both notional and capital-based), collateral requirements, monitoring, reporting and ongoing management of credit exposures are all governed by these credit risk management principles.

Lending officers in the operating groups are responsible for recommending credit decisions based on the completion of appropriate due diligence, and they assume accountability for the related risks. In some instances, relatively small transactions may be assessed by an automated decision-making process, or they may be approved by first-line underwriters with appropriate training, independence and oversight. Credit officers in Enterprise Risk Portfolio Management (ERPM) approve larger transactions or transactions involving greater risk and are accountable for providing an objective independent assessment of the relevant lending recommendations and risks assumed by the lending officers. All of these individuals in the first and second lines of defence are subject to a lending qualification process and operate in a disciplined environment with clear delegation of decision-making authority, including individually delegated lending limits where appropriate, which are reviewed annually or more frequently, as needed. The Board of Directors annually delegates to the CEO discretionary lending limits for further specific delegation to senior officers. Credit decision-making is conducted at the management level appropriate to the size and risk of each transaction, in accordance with an extensive range of corporate policies, standards and procedures governing the conduct of activities in which credit risk arises. Corporate Audit Division reviews and tests management processes and controls and samples credit transactions in order to assess adherence to acceptable lending standards as set out in BMO's Risk Appetite Statement, as well as compliance with all applicable corporate policies, standards and procedures.

For corporate and commercial borrowers presenting a higher than normal risk of default, we have in place formal policies that outline the framework for managing such accounts and specialized groups that manage them. We strive to identify borrowers facing financial difficulty early, and every effort is made to bring such accounts back to an acceptable level of risk through the exercise of good business judgment and the implementation of sound and constructive workout solutions. Borrowers are managed on a case-by-case basis, which involves the application of judgment by the specialized groups.

All credit risk exposures are subject to regular monitoring. Performing corporate and commercial accounts are reviewed on a regular basis, no less frequently than annually, with most subject to internal monitoring of triggers that, if breached, result in an interim review. The frequency of review increases in accordance with the likelihood and size of potential credit losses, and deteriorating higher-risk situations are referred to specialized account management groups for closer attention, as appropriate. In addition, regular portfolio and sector reviews are conducted, including stress testing and scenario analysis based on current, emerging or prospective risks. Reporting is provided at least quarterly, and more frequently where appropriate, to the Board and senior management committees in order to keep them informed of credit risk developments in our portfolios, including changes in credit risk concentrations, watchlist accounts, impaired loans, provisions for credit losses, negative credit migration and significant emerging credit risk issues. This supports RRC and senior management committees in any related decisions they may make.

Counterparty credit risk (CCR) involves a bilateral risk of loss because the market value of a transaction can be positive or negative for either counterparty. CCR exposures are subject to the credit oversight, limit framework and approval process outlined above. However, given the nature of the risk, CCR exposures are also monitored under the market risk framework. In order to reduce our exposure to CCR, transactions are often collateralized, and trades may be cleared through a regulated central counterparty (CCP), which reduces overall systemic risk by standing between counterparties, maximizing netting across trades and insulating counterparties from each other's defaults. CCPs mitigate the risk of default by any member through margin requirements (both initial and variation) and a default management process, including a default fund and other provisions. Our exposures to CCPs are subject to the same credit risk governance, monitoring and rating framework we apply to all other corporate accounts.

Material presented in a blue-tinted font above is an integral part of Note 5 of the 2022 audited annual consolidated financial statements.

## Credit and Counterparty Risk Management

### Collateral Management

Collateral is used for credit risk mitigation purposes in order to minimize losses that would otherwise be incurred in the event of a default. Depending on the type of borrower or counterparty, the assets available and the structure and term of the credit obligations, collateral can take various forms. For corporate and commercial borrowers, collateral can take the form of pledges of the assets of a business, such as accounts receivable, inventory, machinery or real estate, or personal assets pledged in support of guarantees. For trading counterparties, BMO may enter into legally enforceable netting agreements for on-balance sheet credit exposures, when possible. In the securities financing transaction business (including repurchase agreements and securities lending), we obtain eligible financial collateral that we control and can readily liquidate.

Collateral for BMO's derivatives trading counterparty exposures primarily comprises cash and eligible liquid securities that are monitored and revalued on a daily basis. Collateral is obtained under the contractual terms of standardized industry documentation.

With limited exceptions, we utilize the Master Agreement provided by International Swaps and Derivatives Association Inc., frequently with a Credit Support Annex, to document our collateralized trading relationships with counterparties for over-the-counter (OTC) derivatives that are not centrally cleared.

A Credit Support Annex entitles a party to demand a transfer of collateral (or other credit support) when its exposure to OTC derivatives of the other party exceeds an agreed threshold. Collateral to be transferred can include variation margin or initial and variation margin. Credit Support Annexes contain, among other measures, certain thresholds and provisions setting out acceptable types of collateral, a method for their valuation (discounts are often applied to market values), whether or not the collateral can be re-pledged by the recipient and how interest is to be calculated.

Many G20 jurisdictions continue to implement new regulations that require certain counterparties with significant exposures to OTC derivatives to post or collect prescribed types and amounts of collateral for uncleared OTC derivatives transactions. For additional discussion, refer to the Derivative Transactions section.

To document our contractual securities financing relationships with counterparties, we utilize master repurchase agreements for repurchase transactions, and master securities lending agreements for securities lending transactions.

On a periodic basis, collateral is subject to revaluation based on the specific asset type. For loans, the value of collateral is initially established at the time of origination, and the frequency of revaluation is dependent on the type of collateral. For commercial real estate collateral, a full external appraisal of the property is typically obtained at the time of loan origination, unless the exposure is below a specified threshold amount, in which case an internal evaluation and a site inspection are conducted. Internal evaluations may consider property tax assessments, purchase prices, real estate listings or realtor opinions. The case for an updated appraisal is reviewed annually, with consideration given to the borrower risk rating, existing tenants and lease contracts, as well as current market conditions.

In the event a loan is classified as impaired, and depending on its size, a current external appraisal, valuation or restricted use appraisal is obtained and updated every 12 months, as long as the loan remains classified as impaired. In Canada, for residential real estate that has a loan-to-value (LTV) ratio of less than 80%, an independent property valuation is routinely obtained at the time of loan origination. For U.S. residential loans secured by real estate, an independent property valuation is obtained for all loans that will be retained in BMO's loan portfolio. For certain real estate loans originated for sale to government-sponsored agencies, the requirement may be waived based on an existing valuation already on file with that agency.

We may use an external service provided by Canada Mortgage and Housing Corporation or an automated valuation model from a third-party appraisal management provider to assist in determining either the current value of a property or the need for a full property appraisal.

For insured residential mortgages in Canada with an LTV ratio greater than 80%, the default insurer is responsible for confirming the current value of the property.

### Portfolio Management and Concentrations of Credit and Counterparty Risk

Our credit risk governance policies require an acceptable level of diversification to help ensure we avoid undue concentrations of credit risk. Concentrations of credit risk may exist when a relatively large number of clients are engaged in similar activities, are located in the same geographic region or have similar economic characteristics such that their ability to meet contractual obligations could be similarly affected by changes in economic, political or other conditions. Limits may be specified for several portfolio dimensions, including industry, specialty segment (e.g., commercial real estate), country, product and single-name concentrations. We use a range of tools to reduce the credit risk exposures in our loan portfolio. These include asset sales, traditional securitizations, or the purchase of credit protection in the form of credit default swaps or credit insurance and risk transfer transactions. Credit risk is mitigated by obtaining protection from better-rated counterparties or high-quality collateral. Credit risk mitigation activities support our management of capital, and individual and portfolio credit concentration.

Our credit assets consist of a well-diversified portfolio representing millions of clients, the majority of them individual consumers and small to medium-sized businesses. On a drawn loans and commitments basis, our most significant exposure as at October 31, 2022 was to individual consumers, comprising $308,446 million ($280,087 million in 2021).

### Wrong-Way Risk

Wrong-way risk occurs when our exposure to a counterparty or the magnitude of our potential loss is highly correlated with the counterparty's probability of default. Specific wrong-way risk arises when the credit quality of the counterparty and the market risk factors affecting collateral or other risk mitigants display a high correlation, and general wrong-way risk arises when the credit quality of the counterparty, for non-specific reasons, is highly correlated with macroeconomic or other factors that affect the value of the risk mitigant. Our procedures require that specific wrong-way risk be identified in transactions and accounted for in the assessment of risk, including any heightened level of exposure.

Material presented in a blue-tinted font above is an integral part of Note 5 of the 2022 audited annual consolidated financial statements.

## Credit and Counterparty Risk Measurement

BMO quantifies credit risk at both the individual borrower or counterparty level and the portfolio level. In order to limit earnings volatility, manage expected credit losses and minimize unexpected losses, credit risk is assessed and measured using the following risk-based parameters:

- **Exposure at Default (EAD)** represents an estimate of the outstanding amount of a credit exposure at the time a default may occur.
- **Loss Given Default (LGD)** is a measure of BMO's economic loss, such as the amount that may not be recovered in the event of a default, presented as a proportion of the exposure at default.
- **Probability of Default (PD)** represents the likelihood that a borrower or counterparty will go into default over a one-year time horizon.
- **Expected Loss (EL)** is a measure of BMO's loss that is expected to occur in the normal course of business in a given period of time. EL is calculated as a function of EAD, LGD and PD.

Under Basel III, the Office of the Superintendent of Financial Institutions (OSFI) permits three approaches for the measurement of credit risk: Standardized, Foundation Internal Ratings Based and Advanced Internal Ratings Based (AIRB). BMO primarily uses the AIRB Approach to determine credit risk-weighted assets (RWA) in its portfolios, including portfolios of the bank's subsidiary BMO Financial Corp. Refer to the Supplementary Regulatory Capital Information disclosure for details regarding the total EAD of Retail and Wholesale exposures under AIRB capital treatment. The remaining exposures reflect waivers and exemptions to the AIRB Approach and are measured under the Standardized Approach, subject to OSFI's approval. We continue to transition all material exposures in this category to the AIRB Approach. For securitization exposures, we apply the Basel hierarchy of approaches, including the Securitization Internal Ratings Based Approach and the External Ratings Based Approach, as well as the Standardized Approach.

BMO's regulatory capital and economic capital frameworks both use EAD to assess credit and counterparty risk. Exposures are classified as follows:
- Drawn exposures include loans, acceptances, deposits with regulated financial institutions and certain securities. For off-balance sheet amounts and undrawn amounts, EAD includes an estimate of any further amounts that may be drawn at the time of default.
- Undrawn commitments cover all unutilized authorizations associated with the drawn loans noted above, including any authorizations that are unconditionally cancellable. EAD for undrawn commitments is model-generated, based on internal empirical data.
- OTC derivatives are those in proprietary accounts that result in exposure to credit risk in addition to market risk. EAD for OTC derivatives is calculated inclusive of collateral.
- Other off-balance sheet exposures include items such as guarantees, standby letters of credit and documentary credits. EAD for other off-balance sheet items is based on management's best estimate.
- Repo-style transactions include repos, reverse repos and securities lending transactions, which represent both asset and liability exposures. EAD for repo-style transactions is the calculated exposure, net of collateral.

Capital is calculated based on exposures that, where applicable, have been redistributed to a more favourable PD band or LGD measure, or a different Basel asset class, as a result of the application of credit risk mitigation and a consideration of credit risk mitigants, including collateral and netting.

Total credit exposures at default by type and industry sector, as at October 31, 2022 and 2021, based on the Basel III classifications, are as follows:

| (Canadian $ in millions) | Drawn (3) | | Commitments (undrawn) (3) | | OTC derivatives (4) | | Other off-balance sheet items (3) | | Repo-style transactions (4) (5) | | Total (1) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **2022** | 2021 | **2022** | 2021 | **2022** | 2021 | **2022** | 2021 | **2022** | 2021 | **2022** | 2021 |
| Individual | **245,673** | 224,348 | **62,697** | 55,655 | **–** | – | **76** | 84 | **–** | – | **308,446** | 280,087 |
| Financial institutions | **175,770** | 187,011 | **22,535** | 26,933 | **19,030** | 16,331 | **7,887** | 6,808 | **24,311** | 28,968 | **249,533** | 266,051 |
| Governments | **99,498** | 67,207 | **1,863** | 1,606 | **5,500** | 4,011 | **434** | 400 | **3,173** | 3,226 | **110,468** | 76,450 |
| Manufacturing | **36,274** | 27,002 | **20,237** | 16,470 | **1,643** | 1,649 | **2,067** | 1,784 | **–** | – | **60,221** | 46,905 |
| Real estate | **53,531** | 43,524 | **13,325** | 9,830 | **459** | 1,032 | **1,295** | 1,189 | **–** | – | **68,610** | 55,575 |
| Retail trade | **24,040** | 16,270 | **5,235** | 4,646 | **248** | 289 | **548** | 592 | **–** | – | **30,071** | 21,797 |
| Service industries | **54,750** | 44,367 | **18,603** | 16,126 | **695** | 1,238 | **3,169** | 2,998 | **–** | – | **77,217** | 64,729 |
| Wholesale trade | **20,220** | 14,372 | **7,859** | 5,199 | **336** | 282 | **773** | 694 | **–** | – | **29,188** | 20,547 |
| Oil and gas | **4,084** | 6,075 | **4,967** | 5,468 | **6,066** | 10,281 | **1,341** | 1,377 | **–** | – | **16,458** | 23,201 |
| Utilities | **9,954** | 7,412 | **13,740** | 10,864 | **2,087** | 1,273 | **4,364** | 2,950 | **–** | – | **30,145** | 22,499 |
| Others (2) | **48,441** | 37,071 | **17,548** | 17,177 | **1,649** | 1,588 | **5,248** | 4,732 | **–** | – | **72,886** | 60,568 |
| Total exposure at default (6) | **772,235** | 674,659 | **188,609** | 169,974 | **37,713** | 37,974 | **27,202** | 23,608 | **27,484** | 32,194 | **1,053,243** | 938,409 |

(1) Credit exposure excluding equity, securitization and other assets, such as non-significant investments, goodwill, deferred tax assets and intangibles.
(2) Includes remaining industries that individually comprise less than 2% of total exposures.
(3) Represents gross credit exposures without accounting for collateral.
(4) Credit exposure at default is inclusive of collateral.
(5) Impact of collateral on the credit exposure for repo-style transactions is $215,806 million ($208,635 million in 2021).
(6) Excludes exposures arising from derivative and repo-style transactions that are cleared through CCPs totalling $13,698 million ($18,440 million in 2021).

Material presented in a blue-tinted font above is an integral part of Note 5 of the 2022 audited annual consolidated financial statements.

## Risk Rating Systems

BMO's risk rating systems are designed to assess and measure the risk of any exposure.

Credit risk-based parameters are monitored, reviewed and validated regularly. Monitoring is on a quarterly basis for both the wholesale and retail models. Refer to the Model Risk section for a discussion of model risk mitigation processes.

### Retail (Consumer and Small Business)

The retail portfolios comprise a diversified group of individual customer accounts and include residential mortgages, personal loans, credit cards, auto loans and small business loans. These loans are managed in pools of homogeneous risk exposures for risk rating purposes. Decision support systems are developed using established statistical techniques and expert systems for underwriting and monitoring purposes. Adjudication models, behavioural scorecards, decision trees and expert knowledge are combined to generate optimal credit decisions in a centralized and automated environment.

The retail risk rating system assesses risk based on individual loan characteristics. We have a range of internally developed PD, LGD and EAD models for each of the major retail portfolios. The major product lines within each of the retail portfolios are modelled separately, so that the risk-based parameters capture the distinct nature of each product. The models, in general, are based on internal historical data recorded over a multi-year period that includes at least one full economic cycle, in compliance with regulatory requirements. Adjustments are incorporated into the parameters, as appropriate, to account for uncertainties. The retail parameters are tested and calibrated on an annual basis, if required, to incorporate additional data points and recent experience in the parameter estimation process. Risk drivers used in the retail credit models may include customer attributes such as delinquency status and credit scores, and account attributes such as loan amount and utilization.

A PD estimate is assigned to each homogeneous pool to reflect the long-run average of one-year default rates over the economic cycle.

An LGD estimate is calculated by discounting future recovery payments to the time of default, including collection costs.

An EAD estimate is calculated as the balance at default divided by the credit limit at the beginning of the year. For non-revolving products, such as mortgages, EAD is equal to 100% of the current outstanding balance and has no undrawn component.

For capital purposes, the LGD and EAD estimates are calibrated to reflect downturn conditions. The PD, LGD and EAD estimates are updated annually and recalibrated as required by comparing the estimates to observed historical experience.

### Retail Credit Probability of Default Bands by Risk Rating

| Risk profile | Probability of default band |
|---|---|
| Exceptionally low | ≤ 0.05% |
| Very low | > 0.05% to 0.20% |
| Low | > 0.20% to 0.75% |
| Medium | > 0.75% to 7.00% |
| High | > 7.00% to 99.99% |
| Default | 100% |

### Wholesale (Sovereign, Bank, Corporate and Commercial)

Within our wholesale portfolios, an enterprise-wide risk rating framework is applied to all sovereign, bank, corporate and commercial counterparties. One key element of this framework is the assignment of appropriate borrower or counterparty risk ratings (BRRs). We have a range of internally designed general and sector-specific BRR models, as well as portfolio-level LGD and EAD models for each of the sovereign, bank, corporate and commercial portfolios.

The BRR models capture the key financial and non-financial characteristics of the borrowers and generate a borrower-level rating that reflects the rank order of the default risk. The models are primarily based on internal data, supplemented by judgment as necessary, for low-default portfolios.

BRRs are assessed and assigned at the time of loan origination, and reassessed when borrowers request changes to credit facilities or events trigger a review, such as an external rating change or covenant breach. BRRs are reviewed no less frequently than annually, and more frequent reviews are conducted for borrowers with less acceptable risk ratings. The assigned ratings are mapped to a PD reflecting the likelihood of default over a one-year time horizon. As a borrower migrates between risk ratings, the PD associated with the borrower also changes.

We employ a master scale with 14 BRRs above default, and PDs are assigned to each rating within an asset class to reflect the long-run average of one-year default rates over the economic cycle, supplemented by external benchmarking, as necessary.

An LGD estimate captures the priority of claim, collateral, product and sector characteristics of the credit facility extended to a borrower. LGD estimates are at the facility level.

An EAD estimate captures the facility type, sector and utilization rate characteristics of the credit facility extended to a borrower. EAD estimates are at the facility level. An EAD credit conversion factor is calculated for eligible facilities by comparing amounts drawn at the time of default and one year prior to default. The authorization and the amount drawn, one year prior to default, are used to split each facility into its respective drawn and undrawn portion, where applicable.

LGD and EAD models have been developed for each asset class using internal data recorded over a multi-year period that includes at least one full economic cycle, in compliance with regulatory requirements. Results are benchmarked using external data when necessary and adjustments are incorporated into the parameters, as appropriate, to account for uncertainties. For capital purposes, the LGD and EAD parameters are calibrated to reflect downturn conditions. The PD, LGD and EAD estimates are updated annually and recalibrated as required by comparing the estimates to observed historical experience.

As demonstrated in the table below, our internal risk rating system can be aligned with those of external rating agencies.

Material presented in a blue-tinted font above is an integral part of Note 5 of the 2022 audited annual consolidated financial statements.

### Wholesale Borrower Risk Rating Scale

| BMO rating | Moody's Investors Service implied equivalent | Standard & Poor's implied equivalent |
|---|---|---|
| **Acceptable** | | |
| I-1 to I-7 | Aaa to Baa3 | AAA to BBB- |
| S-1 to S-4 | Ba1 to B1 | BB+ to B+ |
| **Watchlist** | | |
| P-1 to P-3 | B2 to Ca | B to CC |
| **Default / Impaired** | | |
| D-1 to D-4 | C | C to D |

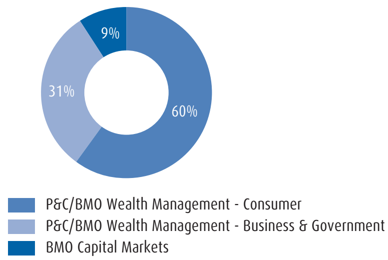
## Credit Quality Information

### Portfolio Review

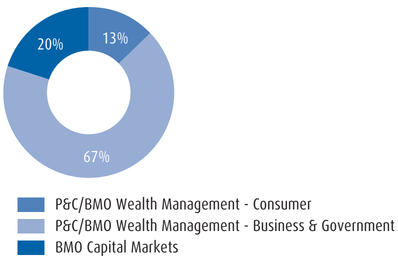
Total enterprise-wide outstanding credit risk exposures were $1,053.2 billion as at October 31, 2022, with $550.5 billion recorded in Canada, $456.1 billion in the United States and $46.6 billion in other jurisdictions. This represented an increase of $114.8 billion or 12% from the prior year.

BMO's loan book continues to be well-diversified by industry and geographic region. Gross loans and acceptances increased $92.3 billion or 19% from the prior year to $567.2 billion as at October 31, 2022. The geographic mix of BMO's Canadian and U.S. portfolios represented 62.6% and 35.4% of total loans, respectively, compared with 66.0% and 32.4% in the prior year. The loan portfolio is well-diversified, with the consumer loan portfolio representing 43.1% of the total portfolio, a decrease from 46.5% in the prior year, and business and government loans representing 56.9% of the total portfolio, an increase from 53.5% in the prior year.

**Canada and Other Countries**




**U.S.**




### Real Estate Secured Lending

Residential mortgage and home equity line of credit (HELOC) exposures continue to be of interest in the current environment. We regularly perform stress testing on our residential mortgage and HELOC portfolios to evaluate the potential effects of high-impact events. These stress tests incorporate scenarios ranging from moderately to severely adverse. The credit losses forecast in these tests vary with the severity of the scenario and are currently considered to be manageable.

### Leveraged Finance

We define leveraged finance loans as loans and mezzanine financing provided to private equity-owned businesses for which our assessment indicates a higher level of credit risk. We have some exposure to leveraged finance loans, which represented 2% of total assets, with $25.1 billion outstanding as at October 31, 2022 (2% and $19.0 billion, respectively, in 2021). Of this amount, 25% of leveraged finance loans, with $6.3 billion outstanding as at October 31, 2022 (27% and $5.2 billion, respectively, in 2021), were well-secured by high-quality assets. The remainder of the portfolio is closely managed, and in some cases, has risk mitigation and structural elements that lower the level of credit risk. In addition, $348 million or 1% of all leveraged finance loans were classified as impaired as at October 31, 2022 ($417 million or 2% in 2021).

### Provision for Credit Losses

Total provision for credit losses was $313 million, compared with $20 million in the prior year, reflecting a deteriorating economic outlook and less favourable credit conditions. Detailed discussions of PCL, including historical PCL trends, are provided in Table 12 in the Supplemental Information and in Note 4 of the consolidated financial statements.

Material presented in a blue-tinted font above is an integral part of Note 5 of the 2022 audited annual consolidated financial statements.

### Gross Impaired Loans

Total gross impaired loans and acceptances (GIL) were $1,991 million, a decrease of 8% from $2,169 million in the prior year. The largest decreases in impaired loans were recorded in the oil and gas, and retail trade industries. GIL as a percentage of gross loans and acceptances was 0.35% in 2022, compared with 0.46% in the prior year.

Factors contributing to the change in GIL are outlined in the table below. Loans classified as impaired during the year decreased to $1,635 million from $1,775 million in 2021, reflecting lower impaired loan formations in the oil and gas, manufacturing and retail trade industries. On a geographic basis, Canada accounted for most impaired loan formations, comprising 71% of total formations in 2022, compared with 75% in 2021.

Detailed breakdowns of impaired loans by geographic region and industry can be found in Table 8 in the Supplemental Information and in Note 4 of the consolidated financial statements.

### Changes in Gross Impaired Loans (1) and Acceptances

| (Canadian $ in millions, except as noted)<br>For the year ended October 31 | **2022** | 2021 |
|---|---|---|
| **GIL, beginning of year** | **2,169** | 3,638 |
| Classified as impaired during the year | **1,635** | 1,775 |
| Transferred to not impaired during the year | **(659)** | (821) |
| Net repayments | **(819)** | (1,618) |
| Amounts written-off | **(363)** | (584) |
| Recoveries of loans and advances previously written-off | **–** | – |
| Disposals of loans | **(54)** | (79) |
| Foreign exchange and other movements | **82** | (142) |
| **GIL, end of year** | **1,991** | 2,169 |
| GIL as a % of gross loans and acceptances | **0.35** | 0.46 |

(1) GIL excludes purchased credit impaired loans.

### Allowance for Credit Losses

We employ a disciplined approach to provisioning and loan loss evaluation across all loan portfolios, with the prompt identification of problem loans being a key risk management objective. We maintain both an allowance on impaired loans and an allowance on performing loans, in accordance with IFRS. An allowance on performing loans is maintained to cover impairment in the existing portfolio for loans that have not yet been individually identified as impaired. Our approach to establishing and maintaining the allowance on performing loans is based on the requirements of IFRS, considering the guideline issued by our regulator, OSFI. Under the IFRS 9 expected credit loss (ECL) methodology, an allowance is recorded for ECL on financial assets regardless of whether there has been an actual loss event. We recognize a loss allowance at an amount generally based on 12 months of ECL, if the credit risk at the reporting date has not increased significantly since initial recognition (Stage 1). We record ECL over the remaining life of performing financial assets that are considered to have experienced a significant increase in credit risk (Stage 2).

ECL is calculated on a probability-weighted basis, based on three different economic scenarios, and is a function of PD, EAD and LGD estimates calibrated to meet the requirements for calculating ECL for a specific financial asset. The timing of the loss is also considered, and ECL is estimated by incorporating forward-looking economic information and by applying experienced credit judgment to reflect factors not captured in ECL models. An allowance on impaired loans is maintained to reduce the carrying value of individually identified impaired loans (Stage 3) to the expected recoverable amount.

We maintain an allowance for credit losses (ACL) at a level that we consider appropriate to absorb credit-related losses. As at October 31, 2022, the total ACL was $2,998 million, an increase of $40 million from the prior year, reflecting higher allowances on impaired loans, partially offset by a lower allowance on performing loans. The allowance on impaired loans was $557 million as at October 31, 2022, and the allowance on performing loans was $2,441 million. These amounts included an allowance on impaired loans of $13 million and an allowance on performing loans of $368 million related to undrawn commitments and letters of credit that are considered other credit instruments and recorded in other liabilities. The allowance on impaired loans increased $46 million from $511 million in the prior year, and our coverage ratio remained adequate, with ACL on impaired loans as a percentage of GIL of 27.3%, compared with 23.0% in 2021. This ratio can change quarter-over-quarter due to variability in the write-down of loans and the related allowance. The allowance on performing loans decreased $6 million to $2,441 million from $2,447 million in the prior year, primarily driven by reduced uncertainty as a result of the improving pandemic environment and portfolio credit improvement, almost fully offset by a deteriorating economic outlook, movements in foreign exchange rates, balance growth and adoption of a higher adverse scenario weight during the second quarter.

Further details on the continuity in ACL by each product type can be found in Tables 9 and 10 in the Supplemental Information, and in Note 4 of the consolidated financial statements.

## International Exposures

BMO's geographic exposures in regions outside of Canada and the United States are subject to a risk management framework that incorporates assessments of the economic and political risk in each region or country, as well as management of exposures within limits based on product, entity and country of ultimate risk. Our exposure to these regions is set out in the table below.

On October 26, 2021, OSFI recommended that Canadian global systemically important banks (G-SIBs) discontinue country-by-country disclosures of European sovereign exposures and begin to disclose sovereign exposures at the regional (continental) level, effective the first quarter of 2022.

The table outlines total net exposure for funded lending and undrawn commitments, securities (including cash products, traded credit and credit default swap activity), repo-style transactions and derivatives. Repo-style transactions and derivatives exposures are reported at mark-to-market value. Derivatives exposures incorporate transaction netting where master netting agreements with counterparties have been entered into, and collateral offsets for counterparties where a Credit Support Annex is in effect.

## Exposure by Region

| (Canadian $ in millions) | As at October 31, 2022 | | | | | | | | | | | | | As at October 31, 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Funded lending and commitments | | | | Securities | | | | Repo-style transactions and derivatives | | | | | |
| Region | Bank | Corporate | Sovereign | Total | Bank | Corporate | Sovereign | Total | Bank | Corporate | Sovereign | Total | Total net exposure | Total net exposure |
| Europe (excluding United Kingdom) | 416 | 2,742 | – | 3,158 | 728 | 44 | 6,718 | 7,490 | 267 | 718 | 184 | 1,169 | 11,817 | 12,477 |
| United Kingdom | 60 | 4,914 | – | 4,974 | 77 | 108 | 377 | 562 | 516 | 1,011 | 32 | 1,559 | 7,095 | 8,236 |
| Latin America | 3,150 | 5,970 | – | 9,120 | – | 31 | – | 31 | 13 | 107 | 14 | 134 | 9,285 | 5,846 |
| Asia-Pacific | 4,763 | 3,081 | 54 | 7,898 | 1,400 | 213 | 3,272 | 4,885 | 162 | 719 | 42 | 923 | 13,706 | 11,766 |
| Africa and Middle East | 1,500 | 318 | – | 1,818 | 6 | 5 | 33 | 44 | 7 | 2 | 432 | 441 | 2,303 | 2,923 |
| Other (1) | – | 5 | 32 | 37 | 33 | – | 3,947 | 3,980 | – | – | 1,885 | 1,885 | 5,902 | 4,775 |
| Total | 9,889 | 17,030 | 86 | 27,005 | 2,244 | 401 | 14,347 | 16,992 | 965 | 2,557 | 2,589 | 6,111 | 50,108 | 46,023 |

(1) Primarily exposure to supranational entities.

## Derivative Transactions

The following table presents the notional amounts of BMO's over-the-counter (OTC) derivative contracts, comprising contracts that are centrally cleared and settled through a designated clearing house or central counterparty (CCP) and contracts that are not centrally cleared.

CCPs are established under the supervision of central banks or other similar regulatory authorities and, as financial market infrastructure, must satisfy certain financial resilience requirements. Generally speaking, in order to centrally clear OTC contracts, we acquire a membership in the CCP and, in addition to providing collateral to protect the CCP against risk related to BMO, we are exposed to risk as a member for our contribution to a default fund. We may also be called on to make additional contributions or provide other support in the event of default by another member.

The notional amounts of our derivatives represent the amount to which a rate or price is applied in order to calculate the amount of cash that must be exchanged under each contract. Notional amounts do not represent assets or liabilities and therefore are not recorded in the Consolidated Balance Sheet. The fair values of OTC derivative contracts are recorded in the Consolidated Balance Sheet.

### Over-the-Counter Derivative Contracts (Notional amounts)

| (Canadian $ in millions) | Non-centrally cleared | | Centrally cleared | | Total | |
|---|---|---|---|---|---|---|
| As at October 31 | **2022** | 2021 | **2022** | 2021 | **2022** | 2021 |
| **Interest Rate Contracts** | | | | | | |
| Swaps | **420,700** | 379,117 | **5,534,061** | 3,772,174 | **5,954,761** | 4,151,291 |
| Forward rate agreements | **3,929** | 2,919 | **18,468** | 144,738 | **22,397** | 147,657 |
| Purchased options | **98,113** | 69,491 | **–** | – | **98,113** | 69,491 |
| Written options | **87,941** | 68,155 | **–** | – | **87,941** | 68,155 |
| Total interest rate contracts | **610,683** | 519,682 | **5,552,529** | 3,916,912 | **6,163,212** | 4,436,594 |
| **Foreign Exchange Contracts** | | | | | | |
| Cross-currency swaps | **119,976** | 85,912 | **–** | – | **119,976** | 85,912 |
| Cross-currency interest rate swaps | **582,092** | 513,421 | **–** | – | **582,092** | 513,421 |
| Forward foreign exchange contracts | **469,503** | 441,107 | **12,270** | 48,319 | **481,773** | 489,426 |
| Purchased options | **72,733** | 54,051 | **–** | 94 | **72,733** | 54,145 |
| Written options | **74,041** | 54,045 | **–** | 102 | **74,041** | 54,147 |
| Total foreign exchange contracts | **1,318,345** | 1,148,536 | **12,270** | 48,515 | **1,330,615** | 1,197,051 |
| **Commodity Contracts** | | | | | | |
| Swaps | **24,487** | 28,892 | **38** | – | **24,525** | 28,892 |
| Purchased options | **5,686** | 4,526 | **–** | – | **5,686** | 4,526 |
| Written options | **5,011** | 3,132 | **–** | – | **5,011** | 3,132 |
| Total commodity contracts | **35,184** | 36,550 | **38** | – | **35,222** | 36,550 |
| **Equity Contracts** | **105,280** | 99,471 | – | 7 | **105,280** | 99,478 |
| **Credit Default Swaps** | | | | | | |
| Purchased | **1,496** | 778 | **15,275** | 11,580 | **16,771** | 12,358 |
| Written | **962** | 179 | **10,137** | 4,979 | **11,099** | 5,158 |
| Total credit default swaps | **2,458** | 957 | **25,412** | 16,559 | **27,870** | 17,516 |
| Total | **2,071,950** | 1,805,196 | **5,590,249** | 3,981,993 | **7,662,199** | 5,787,189 |

# Market Risk

**Market risk** is the potential for adverse changes in the value of our assets and liabilities resulting from changes in market variables such as interest rates, foreign exchange rates, equity and commodity prices and their implied volatilities, and credit spreads, and includes the risk of credit migration and default in our trading book.

Market risk arises from our trading and underwriting activities, as well as our structural banking activities. The magnitude and importance of these activities to the enterprise, along with the potential volatility of market variables, call for diligent governance and a robust market risk management framework that seeks to provide effective identification, measurement, reporting and control of market risk exposures.

## Trading and Underwriting Market Risk Governance

Our market risk-taking activities are subject to an extensive governance framework. The Risk Review Committee (RRC) exercises oversight of the management of market risk on behalf of the Board of Directors and approves limits governing market risk exposures that are consistent with our risk appetite. The Risk Management Committee (RMC) regularly reviews and discusses significant market risk exposures and positions, and provides ongoing senior management oversight of our risk-taking activities. Both of these committees are kept apprised of specific market risk exposures and other factors that could expose us to unusual, unexpected or unquantified risks associated with market exposures, as well as other current and emerging market risks. In addition, all businesses and individuals authorized to conduct trading and underwriting activities on behalf of BMO are required to work within our governance framework and, as part of their first-line-of-defence responsibilities, they must adhere to all relevant corporate policies, standards and procedures, and maintain and manage market risk exposures within specified limits and risk tolerances. In support of our risk governance framework, our market risk management framework comprises processes, infrastructure and supporting documentation, which together support the identification, assessment, independent monitoring and control of our market risk exposures.

## Trading and Underwriting Market Risk

Our trading and underwriting businesses give rise to market risk associated with buying and selling financial products in the course of meeting our customers' needs, including market-making and related financing activities, and assisting clients to raise funds by way of securities issuance.

### Identification and Assessment of Trading and Underwriting Market Risk

As the first step in the management of market risk, thorough assessment processes are in place to identify market risk exposures associated with both new products and the evolving risk profile of existing products, including on- and off-balance sheet positions, trading and non-trading positions, leveraged loan, bond and equity underwriting, and market risk exposures arising from the domestic and foreign operations of our operating groups.

Various metrics and techniques are then employed to measure identified market risk exposures. These metrics primarily include Value at Risk, Stressed Value at Risk and Incremental Risk Charge, as defined below, as well as stress testing. Other techniques include sensitivity analysis of our trading and underwriting portfolios to market risk factors, and the review of position concentrations, notional values and trading revenues.

**Value at Risk (VaR)** measures the maximum loss likely to be experienced in the trading and underwriting portfolios, measured at a 99% confidence level over a one-day holding period. VaR is calculated for specific classes of risk in BMO's trading and underwriting activities related to interest rates, foreign exchange rates, credit spreads, equity and commodity prices and their implied volatilities.

**Stressed Value at Risk (SVaR)** measures the maximum loss likely to be experienced in the trading and underwriting portfolios, measured at a 99% confidence level over a one-day holding period, with model inputs calibrated to historical data from a period of significant financial stress. SVaR is calculated for specific classes of risk in BMO's trading and underwriting activities related to interest rates, foreign exchange rates, credit spreads, equity and commodity prices and their implied volatilities.

**Incremental Risk Charge (IRC)** complements the VaR and SVaR metrics and represents an estimate of the default and migration risks of non-securitization products with exposure to interest rate risk that are held in the trading book, measured over a one-year horizon at a 99.9% confidence level.

Risk models support the measurement of our risk exposure. We use a variety of methods to verify the integrity of our risk models, including the application of back-testing against hypothetical losses and approval by an independent model validation team. This testing is aligned with defined regulatory expectations, and its results confirm the reliability of our models. The data and correlations that underpin our models are updated frequently, so that risk metrics reflect current conditions. Selection of the period of significant financial stress for SVaR incorporates historical events, including the 2008 global financial crisis, the current conflict in Ukraine and the COVID-19 pandemic.

Probabilistic stress testing and scenario analysis are used to determine the potential impact of low-frequency, high-severity events on our portfolios. The scenarios incorporate hypothetical and historical events, and consider the performance of our portfolios under a variety of market conditions. Scenarios are amended, added or removed to refine our risk measurement, and the results are reported to the lines of business, the RMC and the RRC on a regular basis.

VaR, SVaR, IRC and stress testing should not be viewed as definitive predictors of the maximum amount of losses that could occur in any one day, as their results are based on models and estimates and are subject to confidence levels, and the estimates could be exceeded under unforeseen market conditions.

Back-testing processes assume there are no changes in the previous day's closing positions and then isolate the effects of each day's price movements against those closing positions. Our VaR model is back-tested daily, and the one-day 99% confidence level VaR at the local and consolidated BMO levels is compared with the estimated daily profit and loss (P&L) that would be recorded if the portfolio composition remained unchanged. If this P&L result is negative and its absolute value is greater than the previous day's VaR, a back-testing exception occurs. Each exception is investigated, explained and documented.

Material presented in a blue-tinted font above is an integral part of Note 5 of the 2022 audited annual consolidated financial statements.

Although it is a useful indicator of risk, VaR has limitations, as with any model-driven metric. These include the assumption that all positions can be liquidated within the assumed one-day holding period, which may not be the case under illiquid market conditions. Generally, market liquidity horizons are reviewed for suitability and updated where appropriate for relevant risk metrics. Further limitations of the VaR metric include the assumption that historical data can be used as a proxy to forecast future market events, and that VaR calculations are based on portfolio positions at the close of business and do not reflect the impact of intra-day trading activity.

**Monitoring and Control of Trading and Underwriting Market Risk**

Limits are applied to VaR, stress tests and other risk metrics, and the limits are subject to regular monitoring and reporting, with breaches escalated to the appropriate level of management. Risk profiles of our trading and underwriting activities are maintained within our risk appetite and supporting limits, and are monitored and reported to traders, management, senior executives and Board committees. Other significant controls include the independent valuation of financial assets and liabilities, as well as compliance with our Model Risk Management Framework to mitigate model risk.

## Trading Market Risk Measures

### Trading VaR and SVaR

Average Total Trading VaR declined year-over-year, as the impact of pandemic-related market volatility in 2020 no longer factored into the historical period VaR calculations by the middle of 2021. VaR trended higher in the second half of 2022 due to increased market volatility and portfolio changes, primarily in our equity derivatives portfolio. Average Total SVaR increased year-over-year, due to higher equity portfolio risks.



## Total Trading Value at Risk (VaR) Summary (1) (2)

| As at or for the year ended October 31 (Pre-tax Canadian $ equivalent in millions) | 2022 | | | | 2021 | | | |
|---|---|---|---|---|---|---|---|---|
| | **Year-end** | **Average** | **High** | **Low** | Year-end | Average | High | Low |
| Commodity VaR | **1.6** | **3.1** | **5.5** | **1.0** | 1.8 | 2.7 | 6.2 | 1.1 |
| Equity VaR | **14.1** | **13.1** | **18.4** | **8.5** | 10.8 | 14.9 | 24.9 | 10.0 |
| Foreign exchange VaR | **2.3** | **1.8** | **5.2** | **0.5** | 0.5 | 2.2 | 6.4 | 0.5 |
| Interest rate VaR (3) | **22.1** | **18.0** | **26.5** | **12.4** | 15.2 | 27.1 | 52.5 | 9.8 |
| Debt-specific risk | **10.2** | **5.7** | **10.5** | **1.8** | 3.0 | 3.3 | 5.4 | 1.9 |
| Diversification | **(15.0)** | **(15.1)** | **nm** | **nm** | (12.8) | (19.7) | nm | nm |
| Total Trading VaR | **35.3** | **26.6** | **38.2** | **18.1** | 18.5 | 30.5 | 53.5 | 15.3 |
| Total Trading SVaR | **64.4** | **53.6** | **70.8** | **34.2** | 55.8 | 45.7 | 65.4 | 36.3 |

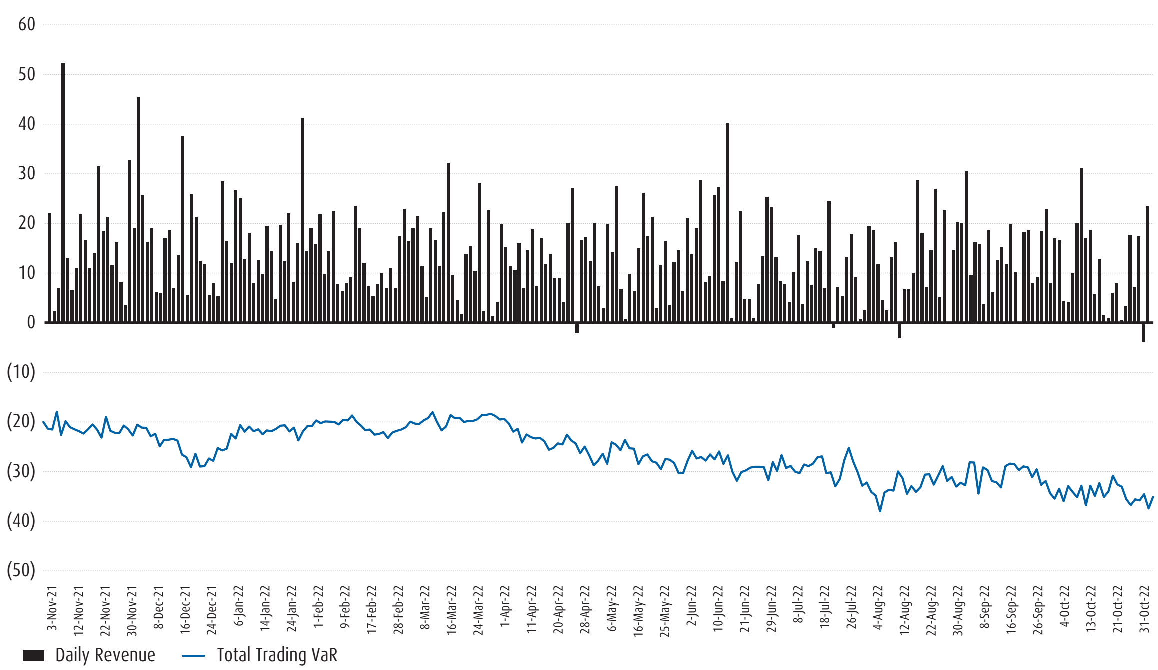
(1) One-day measure using a 99% confidence interval. Gains are presented in brackets and losses are presented as positive numbers.
(2) Stressed VaR is produced weekly.
(3) Interest rate VaR includes general credit spread risk.
nm – not meaningful

## Trading Net Revenue

The charts below present daily net revenues plotted against Total Trading VaR, along with a representation of daily net revenue distribution. In 2022, net trading losses were incurred on four days with none of these losses exceeding Total Trading VaR. A combination of market volatility, which had a negative impact on some of our positions, and lower than usual customer activity contributed to the losses for the four days.

**Trading Net Revenues versus Value at Risk**

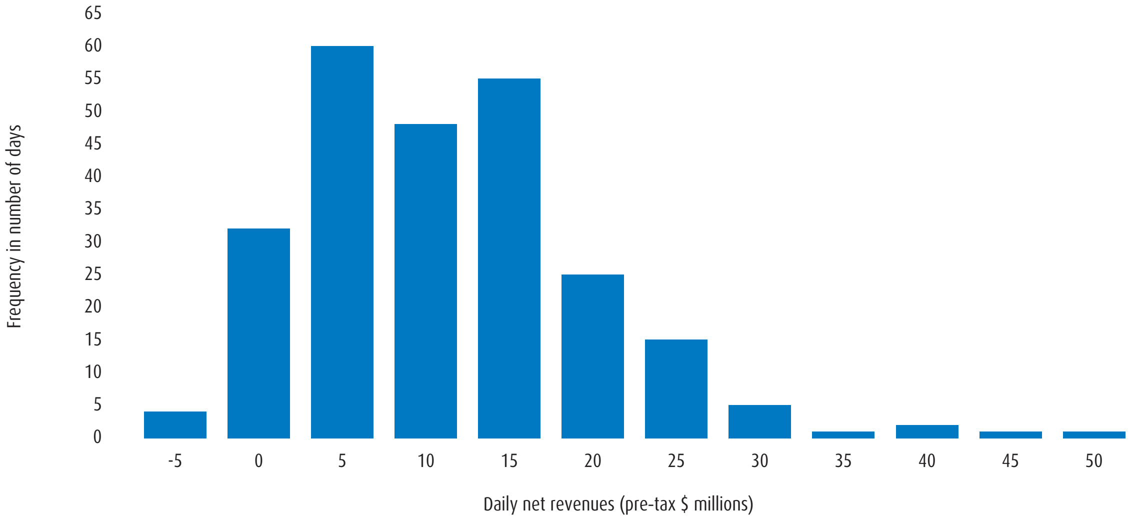
November 1, 2021 to October 31, 2022 (pre-tax basis, Canadian $ in millions)




Material presented in a blue-tinted font above is an integral part of Note 5 of the 2022 audited annual consolidated financial statements.

**Frequency Distribution of Daily Net Revenues**

Nov 1, 2021 to Oct 31, 2022 (Canadian $ in millions)




## Structural (Non-Trading) Market Risk

Structural market risk comprises interest rate risk arising from our banking activities (such as loans and deposits) and foreign exchange risk arising from our foreign currency operations and exposures.

## Structural Market Risk Governance

BMO's Corporate Treasury group is responsible for the ongoing management of structural market risk across the enterprise, with independent oversight provided by the Market Risk group. In addition to Board-approved limits on earnings at risk and economic value sensitivities to changes in interest rates, more granular management limits are in place to guide the daily management of this risk.

The RRC oversees structural market risk management, regularly reviews structural market risk positions and annually approves the structural market risk plan and limits. The RMC and Asset Liability Committee provide ongoing senior management oversight of risk positions and activity.

## Structural Market Risk Measurement

### Interest Rate Risk

Structural interest rate risk arises when changes in interest rates affect the market value, cash flows and earnings of assets and liabilities related to our banking activities. The objective of structural interest rate risk management is to maintain high-quality earnings and maximize sustainable product spreads, while managing any risk to the economic value of our net assets arising from changes in interest rates.

Structural interest rate risk primarily comprises interest rate mismatch risk and product embedded option risk.

Interest rate mismatch risk arises when there are differences in the scheduled maturities, repricing dates or reference rates of assets, liabilities and derivatives. The net interest rate mismatch, representing residual assets funded by common shareholders' equity, is managed to align with a target profile through interest rate swaps and securities.

Product embedded option risk arises when product features allow customers to alter cash flows, such as scheduled maturity or repricing dates, usually in response to changes in market conditions. Product embedded options include loan prepayments, deposit redemption privileges and committed rates on unadvanced mortgages. Product embedded options and associated customer behaviours are captured in risk modelling, and hedging programs may be used to manage this risk to low levels.

Structural interest rate risk is measured using simulations, earnings sensitivity and economic value sensitivity analysis, stress testing and gap analysis, in addition to other risk metrics.

**Earnings Sensitivity** is a measure of the impact of potential changes in interest rates on the projected 12-month pre-tax net income from a portfolio of assets, liabilities and off-balance sheet positions in response to prescribed parallel interest rate movements, with interest rates floored at zero.

**Economic Value Sensitivity** is a measure of the impact of potential changes in interest rates on the market value of a portfolio of assets, liabilities and off-balance sheet positions in response to prescribed parallel interest rate movements, with interest rates floored at zero.

The models that measure structural interest rate risk incorporate projected changes in interest rates and predict the likely reaction of our customers to these changes. For customer loans and deposits with scheduled maturity and repricing dates (such as mortgages and term deposits), the models measure the extent to which customers are likely to use embedded options to alter those scheduled terms. For customer loans and deposits without scheduled maturity and repricing dates (such as credit card loans and chequing accounts), exposure is measured using models that adjust for elasticity in product pricing and reflect historical and forecasted trends in balances. The results generated by these structural market risk models, by their nature, have inherent uncertainty, as they reflect potential future pricing and customer behaviours, which may differ from actual experience. These models have been developed using statistical analysis and are independently validated and periodically updated through regular model performance assessment, back-testing and ongoing dialogue with the lines of business. Models developed to predict customer behaviour are also used to support product pricing. All models are subject to BMO's Model Risk Management Framework, which is described in more detail in the Enterprise-Wide Risk Management Framework section.

Material presented in a blue-tinted font above is an integral part of Note 5 of the 2022 audited annual consolidated financial statements.

Structural interest rate earnings sensitivity and economic value sensitivity to an immediate parallel increase or decrease of 100 basis points in the yield curve are disclosed in the table below. Prior to the third quarter of 2022, earnings and economic value sensitivities to declining interest rates were measured using a decrease of 25 basis points, due to the low interest rate environment that prevailed at that time.

On December 20, 2021, we announced our intention to acquire Bank of the West. To mitigate the impact of movements in the Canadian dollar equivalent of the purchase price on the closing of the acquisition, we entered into interest rate swap arrangements that would offset the impact of foreign exchange rate movements on our capital ratios. Any exposure to interest rate risk related to these arrangements was largely offset through the purchase of a portfolio of matched-duration U.S. treasuries and other balance sheet instruments that generate net interest income. Refer to the Enterprise-Wide Capital Management and Significant Events sections for further discussion.

Structural economic value sensitivity to rising interest rates primarily reflects a lower market value for fixed rate loans. Structural economic value sensitivity to falling interest rates primarily reflects the impact of a higher market value for fixed rate loans and minimum modelled client deposit rates. Structural economic value exposure to rising interest rates and the benefits of falling interest rates decreased relative to October 31, 2021, primarily due to a modestly shorter net duration of BMO's position in anticipation of the Bank of the West acquisition, partially offset by the impact of higher projected interest rate levels following the increase in term market rates during the current year. Structural earnings sensitivity quantifies the potential impact of interest rate changes on structural balance sheet pre-tax net income over the next 12 months. Structural earnings sensitivity to falling interest rates primarily reflects the risk of fixed and floating rate loans repricing at lower rates and the more limited ability to reduce deposit pricing as rates fall. The benefits to structural earnings of rising interest rates primarily reflect the positive impact of reinvesting our net equity and non-rate sensitive deposits into higher term rates. Structural earnings benefits of rising interest rates increased in 2022 relative to 2021, largely due to a modestly shorter net duration of BMO's position in anticipation of the Bank of the West acquisition. Structural earnings exposure to falling interest rates remained relatively unchanged. Earnings exposure to falling interest rates was due to the negative impact of reinvesting net equity and non-rate sensitive deposits into lower term rates, as well as the impact of floor rates on deposit expense.

During 2022, both economic value sensitivity and earnings sensitivity remained within limits established by the Board of Directors.



## Structural Interest Rate Sensitivity (1)

| (Pre-tax Canadian $ equivalent in millions) | Economic value sensitivity | | | | Earnings sensitivity over the next 12 months | | | |
|---|---|---|---|---|---|---|---|---|
| | October 31, 2022 | | | October 31, 2021 | October 31, 2022 | | | October 31, 2021 |
| | **Canada** (3) | **United States** | **Total** | Total | **Canada** (3) | **United States** | **Total** | Total |
| 100 basis point increase | **(683.6)** | **(306.6)** | **(990.2)** | (1,459.1) | **232.0** | **266.9** | **498.9** | 383.7 |
| 25 basis point decrease | **159.7** | **42.0** | **201.6** | 264.9 | **(59.8)** | **(79.8)** | **(139.6)** | (141.6) |
| 100 basis point decrease (2) | **599.1** | **48.7** | **647.9** | na | **(246.0)** | **(349.2)** | **(595.2)** | na |

(1) Losses are presented in brackets and gains are presented as positive numbers.
(2) Due to the low interest rate environment that prevailed between April 30, 2020 and April 30, 2022, economic value sensitivity and earnings sensitivity to declining interest rates are measured using a decrease of 25 basis points. Not applicable for October 31, 2021.
(3) Includes Canadian dollar and other currencies.

na – not applicable

The following table presents net loans and acceptances by interest rate sensitivity:

| (Canadian $ in millions) | **2022** | 2021 |
|---|---|---|
| Fixed rate (1) | | |
| Contractual amounts that will reprice/repay within 3 months | **148,036** | 126,452 |
| Contractual amounts that will reprice/repay after 3 months | **181,768** | 181,130 |
| Floating rate (2) | **215,337** | 145,903 |
| Non-rate sensitive (3) | **19,433** | 18,798 |
| Total | **564,574** | 472,283 |

(1) Includes index-based loans.
(2) Floating rate only includes loans that reprice immediately upon a change in interest rates.
(3) Includes credit card balances that are paid when due, customers' liability under acceptances, credit impaired loans and allowance for credit losses.

Certain comparative figures have been reclassified to conform with the current year's presentation.

## Insurance Market Risk

Insurance market risk includes interest rate and equity market risk arising from our insurance business activities. A 100 basis point increase in interest rates as at October 31, 2022 would result in an increase in earnings before tax of $35 million ($40 million as at July 31, 2022 and $48 million as at October 31, 2021). A 25 basis point decrease in interest rates as at October 31, 2022 would result in a decrease in earnings before tax of $9 million ($9 million as at July 31, 2022 and $12 million as at October 31, 2021). A 10% increase in equity market values as at October 31, 2022 would result in an increase in earnings before tax of $13 million ($17 million as at July 31, 2022 and $22 million as at October 31, 2021). A 10% decrease in equity market values as at October 31, 2022 would result in a decrease in earnings before tax of $13 million ($16 million as at July 31, 2022 and $22 million as at October 31, 2021). We may enter into hedging arrangements to offset the impact of changes in equity market values on our earnings, and we did so during the 2022 fiscal year. The impact of insurance market risk on earnings is reflected in insurance claims, commissions and changes in policy benefit liabilities in our Consolidated Statement of Income, and the corresponding change in the fair value of BMO's policy benefit liabilities is reflected in other liabilities in our Consolidated Balance Sheet. The impact of insurance market risk is not reflected in the table above.

Material presented in a blue-tinted font above is an integral part of Note 5 of the 2022 audited annual consolidated financial statements.

## Non-Trading Foreign Exchange Risk

Structural foreign exchange risk arises primarily from translation risk related to our net investment in U.S. operations and from transaction risk associated with U.S.-dollar-denominated net income.

Translation risk represents the impact that changes in foreign exchange rates could have on our reported shareholders' equity and capital ratios. We may enter into arrangements to offset the impact of foreign exchange rate movements on our capital ratios, and we did so during the 2022 fiscal year. In addition, BMO entered into forward contracts that qualify for hedge accounting during the year to mitigate the impact of movements in the Canadian dollar equivalent of the purchase price on the closing of the announced Bank of the West acquisition. Changes in the fair value of these forward contracts related to the announced acquisition are recorded in other comprehensive income. Refer to the Enterprise-Wide Capital Management and Significant Events sections for further discussion.

Transaction risk represents the impact that fluctuations in the Canadian dollar/U.S. dollar exchange rate could have on the Canadian dollar equivalent of BMO's U.S.-dollar-denominated financial results. Exchange rate fluctuations will affect future results measured in Canadian dollars, and the impact on those results is a function of the periods during which revenues, expenses and provisions for credit losses arise. Hedging positions may be taken to partially offset the pre-tax effects of Canadian dollar/U.S. dollar exchange rate fluctuations on financial results, although we did not enter into any hedging arrangements in the current or prior year. If future results are consistent with results in 2022, each one cent increase (decrease) in the Canadian dollar/U.S. dollar exchange rate would be expected to increase (decrease) the Canadian dollar equivalent of U.S. segment net income before income taxes for the year by $33 million, in the absence of hedging arrangements. Refer to the Foreign Exchange section for a more complete discussion of the effects of changes in foreign exchange rates on our results.

## Linkages between Balance Sheet Items and Market Risk Disclosures

The table below presents items reported on the Consolidated Balance Sheet that are subject to market risk, comprising balances that are subject to either traded risk or non-traded risk measurement techniques.

| | **As at October 31, 2022** | | | | As at October 31, 2021 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **Subject to market risk** | | | | Subject to market risk | | | |
| (Canadian $ in millions) | **Consolidated Balance Sheet** | **Traded risk (1)** | **Non-traded risk (2)** | **Not subject to market risk** | Consolidated Balance Sheet | Traded risk (1) | Non-traded risk (2) | Not subject to market risk | Primary risk factors for non-traded risk balances |
| **Assets Subject to Market Risk** | | | | | | | | | |
| Cash and cash equivalents | **87,466** | **–** | **87,466** | **–** | 93,261 | – | 93,261 | – | Interest rate |
| Interest bearing deposits with banks | **5,734** | **142** | **5,592** | **–** | 8,303 | 94 | 8,209 | – | Interest rate |
| Securities | **273,262** | **108,303** | **164,959** | **–** | 232,849 | 104,412 | 128,437 | – | Interest rate, credit spread, equity |
| Securities borrowed or purchased under resale agreements | **113,194** | **–** | **113,194** | **–** | 107,382 | – | 107,382 | – | Interest rate |
| Loans and acceptances (net of allowance for credit losses) | **551,339** | **3,501** | **547,838** | **–** | 458,262 | 3,665 | 454,597 | – | Interest rate, foreign exchange |
| Derivative instruments | **48,160** | **45,537** | **2,623** | **–** | 36,713 | 34,350 | 2,363 | – | Interest rate, foreign exchange |
| Customers' liabilities under acceptances | **13,235** | **–** | **13,235** | **–** | 14,021 | – | 14,021 | – | Interest rate |
| Other assets | **46,809** | **3,030** | **26,561** | **17,218** | 37,384 | 3,359 | 16,970 | 17,055 | Interest rate |
| Total Assets | **1,139,199** | **160,513** | **961,468** | **17,218** | 988,175 | 145,880 | 825,240 | 17,055 | |
| **Liabilities Subject to Market Risk** | | | | | | | | | |
| Deposits | **769,478** | **26,305** | **743,173** | **–** | 685,631 | 22,665 | 662,966 | – | Interest rate, foreign exchange |
| Derivative instruments | **59,956** | **46,803** | **13,153** | **–** | 30,815 | 27,875 | 2,940 | – | Interest rate, foreign exchange |
| Acceptances | **13,235** | **–** | **13,235** | **–** | 14,021 | – | 14,021 | – | Interest rate |
| Securities sold but not yet purchased | **40,979** | **40,979** | **–** | **–** | 32,073 | 32,073 | – | – | |
| Securities lent or sold under repurchase agreements | **103,963** | **–** | **103,963** | **–** | 97,556 | – | 97,556 | – | Interest rate |
| Other liabilities | **72,400** | **60** | **71,815** | **525** | 63,663 | 85 | 63,165 | 413 | Interest rate |
| Subordinated debt | **8,150** | **–** | **8,150** | **–** | 6,893 | – | 6,893 | – | Interest rate |
| Total Liabilities | **1,068,161** | **114,147** | **953,489** | **525** | 930,652 | 82,698 | 847,541 | 413 | |

(1) Primarily comprises balance sheet items that are subject to the trading and underwriting risk management framework and recorded at fair value through profit or loss.
(2) Primarily comprises balance sheet items that are subject to the structural balance sheet insurance risk management framework and secured financing transactions.

Material presented in a blue-tinted font above is an integral part of Note 5 of the 2022 audited annual consolidated financial statements.

# Insurance Risk

**Insurance risk** is the potential for loss as a result of actual experience differing from that assumed when an insurance product was designed and priced, and comprises claims risk, policyholder behaviour risk and expense risk.

Insurance risk generally entails the inherent unpredictability that can arise from the assumption of long-term policy liabilities or uncertainty regarding future events. Insurance provides protection against the financial consequences of insured risks by transferring those risks to the insurer (under specific terms and conditions) in exchange for premiums. Insurance risk is inherent in all of our insurance products: life insurance, annuities (which include the pension risk transfer business), accident and sickness insurance, and creditor insurance, as well as the reinsurance business. Insurance risk consists of:

- Claims risk – the risk that the actual magnitude or frequency of claims will differ from those assumed in the pricing or underwriting process, including mortality risk, morbidity risk, longevity risk and catastrophic risk;
- Policyholder behaviour risk – the risk that the behaviour of policyholders in regard to premium payments, withdrawals or loans, as well as policy lapses and surrenders and other voluntary terminations, will differ from the behaviour assumed in the pricing process; and
- Expense risk – the risk that actual expenses arising from acquiring and administering policies and processing claims will exceed the expenses assumed in the pricing process.

Our risk governance practices provide effective independent oversight and control of risk within BMO Insurance. BMO Insurance's risk management framework addresses the identification, assessment, management, monitoring and reporting of risks. The framework includes: the Risk Appetite Statement and key risk metrics; insurance risk policies and processes, including limits; capital requirements; stress testing; risk reports; the Own Risk and Solvency Assessment; and ongoing monitoring of experience. Senior management within the various lines of business uses this framework, serving as the first line of defence and assuming the primary responsibility for managing insurance risk. Second-line-of-defence oversight is provided by the CRO, BMO Insurance, who reports to the Head of Market Risk and Chief Risk Officer, BMO Capital Markets. Internal risk committees, the boards of directors of the BMO Insurance subsidiaries and senior management provide senior governance and review. In particular, the Risk Committee of BMO Insurance oversees and reports on risk management activities to the insurance companies' boards of directors on a quarterly basis. In addition, the Audit and Conduct Review Committee of the Board acts as the Audit and Conduct Review Committee for BMO Life Insurance Company.

A robust product approval process is a cornerstone of the BMO Insurance risk management framework, as it identifies, assesses and manages risks associated with new insurance products or changes to existing products. This process, along with guidelines and practices for underwriting and claims management, promotes the effective identification, assessment and management of insurance risk. Reinsurance transactions that transfer or cede insurance risk from BMO Insurance to independent reinsurance companies also mitigate our exposure to insurance risk by diversifying risk and limiting claims. BMO Insurance has exited the Property and Casualty Reinsurance market, with the last remaining treaty terminated in January 2021, significantly reducing our exposure to catastrophic claims and in turn, the risks arising from climate change. However, a certain portion of our exposure to catastrophic claims remains as the portfolio runs off and until all outstanding claims that were made prior to the treaty termination dates are settled and paid.

Given that much of the life insurance portfolio is reinsured and that we have a well-balanced portfolio of life insurance products and annuities forming a natural hedge for exposures to insurance risk, claims related to the COVID-19 pandemic have not had a significant impact on BMO Insurance's overall financial results. In line with BMO's Enterprise Risk Management Framework, as well as the corresponding framework within BMO Insurance, claims related to the COVID-19 pandemic continue to be tracked separately from other types of claims.

**Caution**
This Insurance Risk section contains forward-looking statements. Please refer to the Caution Regarding Forward-Looking Statements.

# Liquidity and Funding Risk

**Liquidity and funding risk** is the potential for loss if we are unable to meet our financial commitments in a timely manner at reasonable prices as they become due. Financial commitments include liabilities to depositors and suppliers, as well as lending, investment and pledging commitments.

Managing liquidity and funding risk is integral to maintaining enterprise soundness and safety, depositor confidence and earnings stability. It is BMO's policy to maintain sufficient liquid assets and funding capacity to meet our financial commitments, even in times of stress.

## Liquidity and Funding Risk Governance

The Corporate Treasury group and the operating groups, as the first line of defence, are responsible for the ongoing identification, assessment and management of liquidity and funding risk. The Corporate Treasury group is responsible for monitoring and reporting liquidity and funding risk across the enterprise, and develops and recommends for approval the Liquidity and Funding Risk Management Framework and the related risk appetite and limits, monitors compliance with relevant corporate policies, and assesses the impact of market events on liquidity and funding requirements on an ongoing basis.

Enterprise Risk and Portfolio Management, as the second line of defence, exercises oversight, independent risk assessment and effective challenge of liquidity and funding management frameworks, policies, limits, monitoring and reporting across the enterprise.

The Risk Management Committee (RMC) and Asset Liability Committee (ALCO) provide senior management oversight, and review and discuss significant liquidity and funding policies, issues and developments that arise in the pursuit of BMO's strategic priorities. The Risk Review Committee (RRC) exercises oversight of the management of liquidity and funding risk, annually approves the applicable policies, limits and contingency plan, and regularly reviews liquidity and funding positions.

Material presented in a blue-tinted font above is an integral part of Note 5 of the 2022 audited annual consolidated financial statements.

## Liquidity and Funding Risk Management

BMO's Liquidity and Funding Risk Management Framework is defined and authorized under Board-approved corporate policies and management-approved standards. These policies and standards set out key management principles, liquidity and funding metrics and related limits, as well as roles and responsibilities for the management of liquidity and funding risk across the enterprise.

We have a robust limit structure in place in order to manage liquidity and funding risk. These limits define risk appetite for the key Stress Net Liquidity Position (Stress NLP) measure, regulatory liquidity ratios, secured and unsecured funding appetite (for both trading and structural activities), and enterprise collateral pledging. Limits also establish the tolerance for concentrations of maturities, as well as requirements for counterparty liability diversification, business pledging activity, and the size and type of uncommitted and committed credit and liquidity facilities that may be outstanding.

Operating within these limits helps to confirm that liquidity and funding risk is appropriately managed. An enterprise-wide contingency plan designed to facilitate effective risk management in the event of a disruption is also in place. Early warning indicators identified in the contingency plan are regularly monitored in order to detect any signs of rising levels of liquidity or funding risk in the market, or other risks specific to BMO.

BMO legal entities include regulated and foreign subsidiaries and branches, and as a result, movements of funds between entities in the corporate group are subject to, among other things, the liquidity, funding and capital adequacy requirements of these entities. As such, liquidity and funding positions are managed on both a consolidated and key legal entity basis. Liquidity and funding risk management policies and limits, informed by the laws and regulations that apply to each entity, are in place for key legal entities, and positions are regularly reviewed at the key legal entity level to confirm compliance with applicable laws and regulations.

BMO continued to maintain a strong liquidity position during 2022. Customer loans and deposits continued to grow, while wholesale funding increased reflecting net issuances. Our liquidity metrics, including the Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR), exceeded internal and regulatory requirements throughout 2022.

## Liquidity and Funding Risk Measurement

A key component of liquidity risk management is the measurement of liquidity risk under stress. We use Stress NLP as a key measure of liquidity risk. Stress NLP represents the amount by which liquid assets exceed potential funding needs under a severe combined enterprise-specific and systemic stress scenario. Potential funding needs may arise from obligations to repay retail, commercial and wholesale deposits that are withdrawn or not renewed, or to fund drawdowns on available credit and liquidity lines, as well as from obligations to pledge collateral due to ratings downgrades or market volatility, along with the continuing need to fund new assets and strategic investments. Potential funding needs are quantified by applying factors to various business activities based on management's view of the relative level of liquidity risk related to each activity. These factors vary by deposit classification (e.g., retail, small business, non-financial corporate or wholesale counterparties) and deposit type (e.g., insured, uninsured, operational or non-operational deposits), as well as by commitment type (e.g., uncommitted or committed credit or liquidity facilities by counterparty type). The stress scenario also considers the time horizon over which liquid assets can be monetized and management's assessment of the liquidity value of those assets under conditions of market stress. These funding needs are assessed under severe systemic and enterprise-specific stress scenarios, and a combination thereof.

Stress testing results are evaluated against our stated risk tolerance and are considered in management's decisions on limit-setting and internal liquidity transfer pricing, and they also help to inform and shape the design of business plans and contingency plans. The Liquidity and Funding Risk Management Framework is integrated with enterprise-wide stress testing.

In addition to Stress NLP, we regularly monitor positions in relation to the limits and liquidity ratios noted in the Liquidity and Funding Risk Management section above. These include regulatory metrics such as LCR, Net Cumulative Cash Flow and NSFR.

## Unencumbered Liquid Assets

Unencumbered liquid assets include high-quality assets that are marketable, can be pledged as security for borrowings, and can be converted to cash in a time frame that meets liquidity and funding requirements. Liquid assets are primarily held in our trading businesses, as well as in supplemental liquidity pools that are maintained for contingent liquidity risk management purposes. The liquidity value recognized for different asset classes under BMO's risk management framework reflects management's assessment of the liquidity value of those assets under a severe stress scenario. Liquid assets held in our trading businesses include cash on deposit with central banks, short-term deposits with other financial institutions, highly-rated debt securities, equity securities and short-term reverse repurchase agreements. Supplemental liquidity pool assets predominantly comprise cash on deposit with central banks, securities, and short-term reverse repurchase agreements of highly-rated Canadian federal and provincial government debt and U.S. federal government and agency debt**.** Substantially all supplemental liquidity pool assets meet the definition of high-quality liquid assets under Basel III. Approximately 65% of the supplemental liquidity pool is held at the parent bank level in assets denominated in Canadian or U.S. dollars, with the majority of the remaining supplemental liquidity pool held at our U.S. bank entity, BMO Harris Bank, in U.S.-dollar-denominated assets. The size of the supplemental liquidity pool is integrated with our assessment of liquidity risk. To meet local regulatory requirements, certain legal entities maintain their own minimum liquidity positions. There may be legal and regulatory restrictions on BMO's ability to use liquid assets held at one legal entity to support the liquidity requirements of another legal entity.

In the ordinary course of business, we may encumber a portion of cash and securities holdings as collateral in support of trading activities and participation in clearing and payment systems in Canada and abroad. In addition, we may receive liquid assets as collateral and may re-pledge these assets in exchange for cash or as collateral in support of trading activities. Net unencumbered liquid assets, defined as on-balance sheet assets, such as BMO-owned cash and securities and securities borrowed or purchased under resale agreements, plus other off-balance sheet eligible collateral received, less assets encumbered as collateral, totalled $335.3 billion as at October 31, 2022, compared with $317.3 billion as at October 31, 2021. The increase in unencumbered liquid assets was primarily due to higher securities balances, partially offset by lower cash balances. Net unencumbered liquid assets are primarily held at the parent bank level, at BMO Harris Bank, and in our broker/dealer operations. In addition to liquid assets, we have access to the Bank of Canada's lending assistance, the Federal Reserve Bank discount window in the United States and European Central Bank standby liquidity facilities. We do not rely on central bank facilities as a source of available liquidity when assessing the soundness of our liquidity position.

Material presented in a blue-tinted font above is an integral part of Note 5 of the 2022 audited annual consolidated financial statements.

In addition to cash and securities holdings, we may also pledge other assets, including mortgages and loans, to raise long-term secured funding. As part of the Liquidity and Funding Risk Management Framework, a Pledging of Assets corporate policy sets out the framework and limits for pledging financial and non-financial assets.

BMO's total encumbered assets and unencumbered liquid assets are summarized in the table below. Refer to Note 24 of the consolidated financial statements for further information on pledged assets.

## Liquid Assets

| | As at October 31, 2022 | | | | | As at October 31, 2021 |
|---|---|---|---|---|---|---|
| (Canadian $ in millions) | **Bank-owned assets** | **Other cash and securities received** | **Total gross assets** (1) | **Encumbered assets** | **Net unencumbered assets** (2) | Net unencumbered assets (2) |
| Cash and cash equivalents | **87,466** | **–** | **87,466** | **87** | **87,379** | 93,151 |
| Deposits with other banks | **5,734** | **–** | **5,734** | **–** | **5,734** | 8,303 |
| Securities and securities borrowed or purchased under resale agreements | | | | | | |
| Sovereigns / Central banks / Multilateral development banks | **143,094** | **101,481** | **244,575** | **132,635** | **111,940** | 76,410 |
| NHA mortgage-backed securities and U.S. agency mortgage-backed securities and collateralized mortgage obligations | **54,601** | **5,565** | **60,166** | **20,188** | **39,978** | 40,422 |
| Corporate and other debt | **22,560** | **19,328** | **41,888** | **8,190** | **33,698** | 35,330 |
| Corporate equity | **53,007** | **50,926** | **103,933** | **63,967** | **39,966** | 48,509 |
| Total securities and securities borrowed or purchased under resale agreements | **273,262** | **177,300** | **450,562** | **224,980** | **225,582** | 200,671 |
| NHA mortgage-backed securities (reported as loans at amortized cost) (3) | **21,881** | **–** | **21,881** | **5,277** | **16,604** | 15,126 |
| Total liquid assets | **388,343** | **177,300** | **565,643** | **230,344** | **335,299** | 317,251 |

(1) Gross assets included bank-owned assets and cash and securities received from third parties.
(2) Net unencumbered liquid assets are defined as total gross assets less encumbered assets.
(3) Under IFRS, National Housing Act (NHA) mortgage-backed securities that include mortgages owned by BMO as the underlying collateral are classified as loans. Unencumbered NHA mortgage-backed securities have liquidity value and are included as liquid assets under BMO's Liquidity and Funding Risk Management Framework. This amount is shown as a separate line item, NHA mortgage-backed securities.

## Asset Encumbrance

| (Canadian $ in millions) As at October 31, 2022 | **Total gross assets** (1) | **Encumbered** (2) **Pledged as collateral** | **Encumbered** (2) **Other encumbered** | **Net unencumbered Other unencumbered** (3) | **Net unencumbered Available as collateral** (4) |
|---|---|---|---|---|---|
| Cash and deposits with other banks | **93,200** | **–** | **87** | **–** | **93,113** |
| Securities (5) | **472,443** | **183,275** | **46,982** | **12,620** | **229,566** |
| Loans | **529,458** | **71,139** | **656** | **299,358** | **158,305** |
| Other assets | | | | | |
| Derivative instruments | **48,160** | **–** | **–** | **48,160** | **–** |
| Customers' liability under acceptances | **13,235** | **–** | **–** | **13,235** | **–** |
| Premises and equipment | **4,841** | **–** | **–** | **4,841** | **–** |
| Goodwill | **5,285** | **–** | **–** | **5,285** | **–** |
| Intangible assets | **2,193** | **–** | **–** | **2,193** | **–** |
| Current tax assets | **1,421** | **–** | **–** | **1,421** | **–** |
| Deferred tax assets | **1,175** | **–** | **–** | **1,175** | **–** |
| Other assets | **31,894** | **13,991** | **–** | **17,903** | **–** |
| Total other assets | **108,204** | **13,991** | **–** | **94,213** | **–** |
| Total assets | **1,203,305** | **268,405** | **47,725** | **406,191** | **480,984** |

| (Canadian $ in millions) As at October 31, 2021 | Total gross assets (1) | Encumbered (2) Pledged as collateral | Encumbered (2) Other encumbered | Net unencumbered Other unencumbered (3) | Net unencumbered Available as collateral (4) |
|---|---|---|---|---|---|
| Cash and deposits with other banks | 101,564 | – | 110 | – | 101,454 |
| Securities (5) | 433,199 | 180,955 | 36,447 | 13,064 | 202,733 |
| Loans | 438,617 | 53,485 | 1,171 | 238,283 | 145,678 |
| Other assets | | | | | |
| Derivative instruments | 36,713 | – | – | 36,713 | – |
| Customers' liability under acceptances | 14,021 | – | – | 14,021 | – |
| Premises and equipment | 4,454 | – | – | 4,454 | – |
| Goodwill | 5,378 | – | – | 5,378 | – |
| Intangible assets | 2,266 | – | – | 2,266 | – |
| Current tax assets | 1,588 | – | – | 1,588 | – |
| Deferred tax assets | 1,287 | – | – | 1,287 | – |
| Other assets | 22,411 | 6,436 | – | 15,975 | – |
| Total other assets | 88,118 | 6,436 | – | 81,682 | – |
| Total assets | 1,061,498 | 240,876 | 37,728 | 333,029 | 449,865 |

(1) Gross assets included on-balance sheet and off-balance sheet assets.
(2) Pledged as collateral refers to the portion of on-balance sheet assets and other cash and securities that is pledged through repurchase agreements, securities lending, derivative contracts, minimum required deposits at central banks, and requirements associated with participation in clearing houses and payment systems. Other encumbered assets include assets that are restricted for legal or other reasons, such as restricted cash and short sales.
(3) Other unencumbered assets included select liquid asset holdings that management believes are not readily available to support BMO's liquidity requirements. These included securities of $12.6 billion as at October 31, 2022, which included securities held at BMO's insurance subsidiary, significant equity investments and certain investments held at BMO's merchant banking business. Other unencumbered assets included mortgages and loans that may be securitized to access secured funding.
(4) Loans included in available as collateral represented loans currently lodged at central banks that could potentially be used to access central bank funding. Loans available for pledging as collateral do not include other sources of additional liquidity that may be realized from BMO's loan portfolio, such as incremental securitization, covered bond issuances and U.S. Federal Home Loan Bank (FHLB) advances.
(5) Included securities, securities borrowed or purchased under resale agreements and NHA mortgage-backed securities (reported as loans at amortized cost).

Material presented in a blue-tinted font above is an integral part of Note 5 of the 2022 audited annual consolidated financial statements.

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## Funding Strategy

BMO's funding strategy requires that secured and unsecured wholesale funding used to support loans and less liquid assets must have a term (typically maturing in two to ten years) that will support the effective term to maturity of these assets. Secured and unsecured wholesale funding for liquid trading assets is largely shorter term (maturing in one year or less), is aligned with the liquidity of the assets being funded, and is subject to limits on aggregate maturities across different periods. Supplemental liquidity pools are funded largely with wholesale term funding.

We maintain a large and stable base of customer deposits that, in combination with our strong capital position, is a source of strength. This supports the maintenance of a sound liquidity position and reduces reliance on wholesale funding. Customer deposits totalled $544.4 billion as at October 31, 2022, increasing from $498.9 billion in 2021, primarily due to strong growth in both retail and commercial deposits and the impact of the stronger U.S. dollar.

Total secured and unsecured wholesale funding outstanding, which largely consists of negotiable marketable securities, was $236.8 billion as at October 31, 2022, with $63.6 billion sourced as secured funding and $173.2 billion sourced as unsecured funding. Total wholesale funding outstanding increased from $190.4 billion as at October 31, 2021, primarily due to the net issuance of wholesale funding during the year and the impact of the stronger U.S. dollar. The mix and maturities of BMO's wholesale term funding are outlined later in this section. Additional information on deposit maturities can also be found in the Contractual Maturities of Assets and Liabilities and Off-Balance Sheet Commitments section. We maintain a sizeable portfolio of unencumbered liquid assets, totalling $335.3 billion as at October 31, 2022 and $317.3 billion as at October 31, 2021, that can be monetized to meet potential funding requirements, as described in the Unencumbered Liquid Assets section above.

## Wholesale Funding Maturities (1)

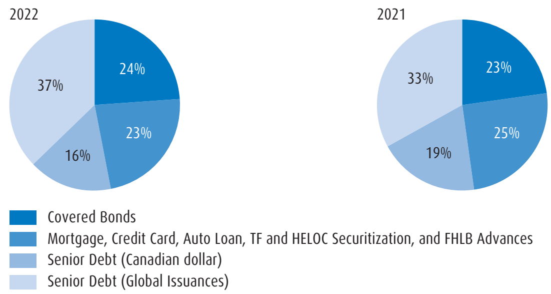
| | As at October 31, 2022 | | | | | | | | As at October 31, 2021 |
|---|---|---|---|---|---|---|---|---|---|
| (Canadian $ in millions) | Less than 1 month | 1 to 3 months | 3 to 6 months | 6 to 12 months | Subtotal less than 1 year | 1 to 2 years | Over 2 years | Total | Total |
| Deposits from banks | **5,127** | **541** | **1,002** | **2,880** | **9,550** | **–** | **–** | **9,550** | 3,421 |
| Certificates of deposit and commercial paper | **9,719** | **22,586** | **18,701** | **28,896** | **79,902** | **263** | **531** | **80,696** | 71,898 |
| Bearer deposit notes | **446** | **122** | **1,055** | **38** | **1,661** | **–** | **–** | **1,661** | 2,364 |
| Asset-backed commercial paper (ABCP) | **–** | **–** | **–** | **–** | **–** | **–** | **–** | **–** | – |
| Senior unsecured medium-term notes | **2,031** | **1,691** | **4,007** | **9,286** | **17,015** | **18,743** | **29,476** | **65,234** | 51,837 |
| Senior unsecured structured notes (2) | **116** | **40** | **–** | **71** | **227** | **34** | **7,689** | **7,950** | 5,182 |
| Secured funding | | | | | | | | | |
| Mortgage and HELOC securitizations | **–** | **1,749** | **409** | **2,231** | **4,389** | **3,456** | **12,540** | **20,385** | 20,128 |
| Covered bonds | **–** | **2,021** | **5,751** | **2,358** | **10,130** | **2,126** | **16,791** | **29,047** | 23,405 |
| Other asset-backed securitizations (3) | **–** | **865** | **721** | **59** | **1,645** | **249** | **4,737** | **6,631** | 5,316 |
| Federal Home Loan Bank advances | **–** | **–** | **–** | **–** | **–** | **3,406** | **4,088** | **7,494** | – |
| Subordinated debt | **–** | **–** | **–** | **–** | **–** | **–** | **8,150** | **8,150** | 6,892 |
| Total | **17,439** | **29,615** | **31,646** | **45,819** | **124,519** | **28,277** | **84,002** | **236,798** | 190,443 |
| Of which: | | | | | | | | | |
| Secured | **–** | **4,635** | **6,881** | **4,648** | **16,164** | **9,237** | **38,156** | **63,557** | 48,849 |
| Unsecured | **17,439** | **24,980** | **24,765** | **41,171** | **108,355** | **19,040** | **45,846** | **173,241** | 141,594 |
| Total (4) | **17,439** | **29,615** | **31,646** | **45,819** | **124,519** | **28,277** | **84,002** | **236,798** | 190,443 |

(1) Wholesale unsecured funding primarily included funding raised through the issuance of negotiable marketable securities. Wholesale funding excluded repo transactions and bankers' acceptances, which are disclosed in the Contractual Maturities of Assets and Liabilities and Off-Balance Sheet Commitments section, and also excluded ABCP issued by certain ABCP conduits that are not consolidated for financial reporting purposes.
(2) Primarily issued to institutional investors.
(3) Included credit card, auto and transportation finance loan securitizations.
(4) Total wholesale funding comprised Canadian-dollar-denominated funding totalling $50.0 billion and U.S.-dollar-denominated and other foreign-currency-denominated funding totalling $186.8 billion as at October 31, 2022.

Material presented in a blue-tinted font above is an integral part of Note 5 of the 2022 audited annual consolidated financial statements.

Diversification of our wholesale term funding sources is an important part of our overall liquidity management strategy. Our wholesale term funding activities are well-diversified by jurisdiction, currency, investor segment, instrument type and maturity profile. We maintain ready access to long-term wholesale funding through various borrowing programs, including a European Note Issuance Program, Canadian, Australian and U.S. Medium-Term Note programs, Canadian and U.S. mortgage securitizations, Canadian credit card loans, auto loans and home equity line of credit (HELOC) securitizations, U.S. transportation finance loans, covered bonds, and Canadian and U.S. senior unsecured deposits.

**Wholesale Capital Market Term Funding Composition** (%)




Our wholesale term funding plan seeks to ensure sufficient funding capacity is available to execute business strategies. The funding plan considers expected maturities, as well as asset and liability growth projected for businesses in our forecasting and planning processes, and assesses funding needs in relation to the sources available. The funding plan is reviewed annually by the senior management committees with specific related responsibilities and approved by the RRC, and is regularly updated to reflect actual results and incorporate updated forecast information.

## Regulatory Developments

During the year, OSFI announced changes to its Liquidity Adequacy Requirements Guideline that are effective April 1, 2023. The changes primarily relate to the calculation of the OSFI Net Cumulative Cash Flow supervisory tool. We do not anticipate a material impact on our liquidity and funding practices or requirements as a result of these changes.

## Credit Ratings

The credit ratings assigned to BMO's short-term and senior long-term debt securities by external rating agencies are important for the bank in raising both capital and funding to support its business operations. Maintaining strong credit ratings allows us to access the wholesale markets at competitive pricing levels. Should BMO's credit ratings experience a downgrade, our cost of funding would likely increase and our access to funding and capital through the wholesale markets could be reduced. A material downgrade of BMO's ratings could also have other consequences, including those set out in Note 8 of the consolidated financial statements.

The credit ratings assigned to BMO's senior debt by rating agencies are indicative of high-grade, high-quality issues. During the third quarter of fiscal 2022, Moody's, Standard & Poor's (S&P), DBRS and Fitch affirmed their ratings for BMO. Moody's, S&P and DBRS have a stable outlook on BMO and Fitch has a negative outlook.

As at October 31, 2022

| Rating agency | Short-term debt | Senior debt (1) | Long-term deposits / Legacy senior debt (2) | Subordinated debt (NVCC) | Outlook |
|---|---|---|---|---|---|
| Moody's | P-1 | A2 | Aa2 | Baa1(hyb) | Stable |
| S&P | A-1 | A- | A+ | BBB+ | Stable |
| Fitch | F1+ | AA- | AA | A | Negative |
| DBRS | R-1 (high) | AA (low) | AA | A (low) | Stable |

(1) Subject to conversion under the Bank Recapitalization (Bail-In) Regime.
(2) Long-term deposits / Legacy senior debt includes senior debt issued prior to September 23, 2018 and senior debt issued on or after September 23, 2018 that is excluded from the Bank Recapitalization (Bail-In) Regime.

We are required to deliver collateral to certain counterparties in the event of a downgrade of BMO's current credit rating. The incremental collateral required is based on mark-to-market exposure, collateral valuations and collateral threshold arrangements, as applicable. As at October 31, 2022, we would be required to deliver additional collateral to counterparties totalling $161 million, $429 million and $1,340 million as a result of a one-notch, two-notch and three-notch downgrade, respectively.

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## Liquidity Coverage Ratio

The Liquidity Coverage Ratio (LCR) is calculated in accordance with the Liquidity Adequacy Requirements (LAR) Guideline issued by the Office of the Superintendent of Financial Institutions (OSFI) and is summarized in the following table. The LCR is calculated on a daily basis as the ratio of High-Quality Liquid Assets (HQLA) held to total net stressed cash outflows over the next 30 calendar days. BMO's HQLA primarily comprises cash, highly-rated debt issued or backed by governments, highly-rated covered bonds and non-financial corporate debt, and non-financial equities that are part of a major stock index. Net cash flows include outflows from deposits, secured and unsecured wholesale funding, commitments and potential collateral requirements, offset by permitted inflows from loans, securities lending activities and other non-HQLA debt maturing over a 30-day horizon. Weightings prescribed by OSFI are applied to cash flows and HQLA to arrive at the weighted values and the LCR. The LCR does not reflect excess liquidity in BMO Financial Corp. (BFC) that is greater than 100%, because of limitations on the transfer of liquidity between BFC and the parent bank. Canadian domestic systemically important banks (D-SIBs), including BMO, are required to maintain a minimum LCR of 100%. The average daily LCR for the quarter ended October 31, 2022 was 135%, indicating a surplus of $53 billion above the regulatory minimum, and an increase of 10% from 125% in 2021 due to higher HQLA and lower net cash outflows. While banks are required to maintain an LCR of greater than 100% in normal conditions, they are also expected to be able to utilize HQLA during a period of stress, which may result in an LCR of less than 100% during such a period. The LCR is only one measure of a bank's liquidity position and does not fully capture all of its liquid assets or the funding alternatives that may be available during a period of stress. BMO's total liquid assets are shown in the Liquid Assets table.

| | For the quarter ended October 31, 2022 | |
|---|---|---|
| (Canadian $ in billions, except as noted) | **Total unweighted value (average)** (1) (2) | **Total weighted value (average)** (2) (3) |
| **High-Quality Liquid Assets** | | |
| Total high-quality liquid assets (HQLA) | * | **204.3** |
| **Cash Outflows** | | |
| Retail deposits and deposits from small business customers, of which: | **238.4** | **16.1** |
| Stable deposits | **116.1** | **3.5** |
| Less stable deposits | **122.3** | **12.6** |
| Unsecured wholesale funding, of which: | **252.9** | **114.3** |
| Operational deposits (all counterparties) and deposits in networks of cooperative banks | **140.6** | **35.0** |
| Non-operational deposits (all counterparties) | **89.1** | **56.1** |
| Unsecured debt | **23.2** | **23.2** |
| Secured wholesale funding | **–** | **22.9** |
| Additional requirements, of which: | **203.7** | **39.5** |
| Outflows related to derivatives exposures and other collateral requirements | **21.3** | **6.6** |
| Outflows related to loss of funding on debt products | **2.9** | **2.9** |
| Credit and liquidity facilities | **179.5** | **30.0** |
| Other contractual funding obligations | **1.3** | **–** |
| Other contingent funding obligations | **477.0** | **9.3** |
| Total cash outflows | * | **202.1** |
| **Cash Inflows** | | |
| Secured lending (e.g., reverse repos) | **147.3** | **34.3** |
| Inflows from fully performing exposures | **10.8** | **5.9** |
| Other cash inflows | **10.7** | **10.7** |
| Total cash inflows | **168.8** | **50.9** |
| | | **Total adjusted value** (4) |
| Total HQLA | | **204.3** |
| Total net cash outflows | | **151.2** |
| Liquidity Coverage Ratio (%) | | **135** |
| For the quarter ended October 31, 2021 | | Total adjusted value (4) |
| Total HQLA | | 194.4 |
| Total net cash outflows | | 156.0 |
| Liquidity Coverage Ratio (%) | | 125 |

* Disclosure is not required under the LCR disclosure standard.
(1) Unweighted values are calculated at market value (for HQLA) or as outstanding balances maturing or callable within 30 days (for inflows and outflows).
(2) Values are calculated based on the simple average of the daily LCR over 63 business days in the fourth quarter of 2022.
(3) Weighted values are calculated after the application of the weightings prescribed under the OSFI Liquidity Adequacy Requirements (LAR) Guideline for HQLA and cash inflows and outflows.
(4) Adjusted values are calculated based on total weighted values after applicable caps, as defined in the LAR Guideline.

## Net Stable Funding Ratio

The Net Stable Funding Ratio (NSFR) is a regulatory metric that assesses the stability of a bank's funding profile in relation to the liquidity value of its assets and is calculated in accordance with the OSFI Liquidity Adequacy Requirements (LAR) Guideline. Unlike the LCR, which is a short-term metric, the NSFR assesses a bank's medium-term and long-term resilience. The NSFR is defined as the ratio of the amount of available stable funding (ASF) to the amount of required stable funding (RSF). ASF represents the proportion of own and third-party resources that are expected to be reliably available to a bank over a one-year time horizon (including customer deposits, long-term wholesale funding and capital). The stable funding requirements for each institution are set by OSFI based on the liquidity and maturity characteristics of its balance sheet assets and off-balance sheet exposures. Weightings prescribed by OSFI are applied to notional asset and liability balances to determine ASF, RSF and the NSFR. Canadian domestic systemically important banks (D-SIBs), including BMO, are required to maintain a minimum NSFR of 100%. BMO's NSFR was 114% as at October 31, 2022, indicating a surplus of $81 billion above the regulatory minimum. The NSFR decreased from 118% as at October 31, 2021, as higher required stable funding was partially offset by higher available stable funding.

| | For the quarter ended October 31, 2022 | | | | |
|---|---|---|---|---|---|
| | Unweighted value by residual maturity | | | | |
| (Canadian $ in billions, except as noted) | No maturity (1) | Less than 6 months | 6 to 12 months | Over 1 year | Weighted value (2) |
| **Available Stable Funding (ASF) Item** | | | | | |
| Capital: | – | – | – | 83.4 | 83.4 |
| Regulatory capital | – | – | – | 83.4 | 83.4 |
| Other capital instruments | – | – | – | – | – |
| Retail deposits and deposits from small business customers: | 210.0 | 33.2 | 24.8 | 42.3 | 285.7 |
| Stable deposits | 105.5 | 14.9 | 9.0 | 7.8 | 130.8 |
| Less stable deposits | 104.5 | 18.3 | 15.8 | 34.5 | 154.9 |
| Wholesale funding: | 253.4 | 197.9 | 56.9 | 90.5 | 236.7 |
| Operational deposits | 144.0 | 0.2 | – | – | 72.1 |
| Other wholesale funding | 109.4 | 197.7 | 56.9 | 90.5 | 164.6 |
| Liabilities with matching interdependent assets | – | 1.6 | 2.1 | 11.8 | – |
| Other liabilities: | 5.3 | 67.7 | * | * | 4.4 |
| NSFR derivative liabilities | * | * | * | – | * |
| All other liabilities and equity not included in the above categories | 5.3 | 44.9 | 0.1 | 4.3 | 4.4 |
| Total ASF | * | * | * | * | 610.2 |
| **Required Stable Funding (RSF) Item** | | | | | |
| Total NSFR high-quality liquid assets (HQLA) | * | * | * | * | 12.6 |
| Deposits held at other financial institutions for operational purposes | – | – | – | – | – |
| Performing loans and securities: | 180.3 | 137.0 | 51.8 | 311.5 | 459.5 |
| Performing loans to financial institutions secured by Level 1 HQLA | – | 41.3 | 2.5 | – | 3.3 |
| Performing loans to financial institutions secured by non-Level 1 HQLA and unsecured performing loans to financial institutions | 37.8 | 57.3 | 4.7 | 15.7 | 62.6 |
| Performing loans to non-financial corporate clients, loans to retail and small business customers, and loans to sovereigns, central banks and public sector entities, of which: | 101.8 | 29.1 | 31.7 | 156.8 | 246.6 |
| With a risk weight of less than or equal to 35% under the Basel II standardized approach for credit risk | – | – | – | – | – |
| Performing residential mortgages, of which: | 13.3 | 6.9 | 12.6 | 125.2 | 110.6 |
| With a risk weight of less than or equal to 35% under the Basel II standardized approach for credit risk | 13.3 | 6.7 | 12.4 | 120.7 | 106.6 |
| Securities that are not in default and do not qualify as HQLA, including exchange-traded equities | 27.4 | 2.4 | 0.3 | 13.8 | 36.4 |
| Assets with matching interdependent liabilities | – | 1.6 | 2.1 | 11.8 | – |
| Other assets: | 11.0 | * | * | 44.2 | 43.2 |
| Physical traded commodities, including gold | 3.4 | * | * | * | 2.9 |
| Assets posted as initial margin for derivative contracts and contributions to default funds of CCPs | * | * | * | 11.4 | 9.7 |
| NSFR derivative assets | * | * | * | 9.8 | – |
| NSFR derivative liabilities before deduction of variation margin posted | * | * | * | 1.5 | 1.5 |
| All other assets not included in the above categories | 7.6 | 1.4 | 0.1 | 20.0 | 29.1 |
| Off-balance sheet items | – | – | – | 537.0 | 18.8 |
| Total RSF | * | * | * | * | 534.1 |
| Net Stable Funding Ratio (%) | * | * | * | * | 114 |

| For the quarter ended October 31, 2021 | Weighted value (2) |
|---|---|
| Total ASF | 535.2 |
| Total RSF | 453.4 |
| Net Stable Funding Ratio (%) | 118 |

* Disclosure is not required under the NSFR disclosure standard.

(1) Items reported in the "no maturity" column do not have a stated maturity. These may include, but are not limited to, items such as non-maturity deposits, short positions, open maturity positions, non-HQLA equities, physical traded commodities and demand loans.

(2) Weighted values are calculated after the application of the weights prescribed under the OSFI LAR Guideline for ASF and RSF.

## Contractual Maturities of Assets and Liabilities and Off-Balance Sheet Commitments

The tables below show the remaining contractual maturities of on-balance sheet assets and liabilities and off-balance sheet commitments. The contractual maturity of financial assets and liabilities is an input to, but is not necessarily consistent with, the expected maturity of assets and liabilities that is used in the management of liquidity and funding risk. We forecast asset and liability cash flows, under both normal market conditions and a number of stress scenarios, to manage liquidity and funding risk. Stress scenarios include assumptions for loan repayments, deposit withdrawals, and credit commitment and liquidity facility drawdowns by counterparty and product type. Stress scenarios also consider the time horizon over which liquid assets can be monetized and the related discounts ("haircuts") and potential collateral requirements that may result from both market volatility and credit rating downgrades, among other assumptions.

| | | | | | | | | | | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| (Canadian $ in millions) | 0 to 1 month | 1 to 3 months | 3 to 6 months | 6 to 9 months | 9 to 12 months | 1 to 2 years | 2 to 5 years | Over 5 years | No maturity | Total |
| **On-Balance Sheet Financial Instruments** | | | | | | | | | | |
| **Assets** | | | | | | | | | | |
| Cash and cash equivalents | 86,003 | – | – | – | – | – | – | – | 1,463 | 87,466 |
| Interest bearing deposits with banks | 3,844 | 1,662 | 86 | 44 | 98 | – | – | – | – | 5,734 |
| Securities | 4,189 | 4,284 | 5,480 | 5,375 | 6,060 | 18,272 | 68,521 | 108,072 | 53,009 | 273,262 |
| Securities borrowed or purchased under resale agreements | 83,861 | 21,736 | 5,101 | 2,448 | 48 | – | – | – | – | 113,194 |
| Loans (1) | | | | | | | | | | |
| Residential mortgages | 526 | 1,519 | 3,708 | 5,778 | 6,501 | 14,665 | 105,285 | 10,810 | 88 | 148,880 |
| Consumer instalment and other personal | 211 | 553 | 940 | 1,693 | 1,537 | 4,844 | 37,742 | 14,084 | 24,499 | 86,103 |
| Credit cards | – | – | – | – | – | – | – | – | 9,663 | 9,663 |
| Business and government | 13,003 | 9,595 | 11,724 | 9,300 | 11,394 | 37,250 | 105,009 | 17,776 | 94,259 | 309,310 |
| Allowance for credit losses | – | – | – | – | – | – | – | – | (2,617) | (2,617) |
| Total loans, net of allowance | 13,740 | 11,667 | 16,372 | 16,771 | 19,432 | 56,759 | 248,036 | 42,670 | 125,892 | 551,339 |
| Other Assets | | | | | | | | | | |
| Derivative instruments | 5,362 | 7,147 | 3,359 | 2,552 | 2,225 | 7,787 | 11,636 | 8,092 | – | 48,160 |
| Customers' liabilities under acceptances | 9,752 | 3,461 | 19 | 3 | – | – | – | – | – | 13,235 |
| Other | 2,735 | 625 | 225 | 21 | 2 | 10 | 19 | 5,817 | 37,355 | 46,809 |
| Total other assets | 17,849 | 11,233 | 3,603 | 2,576 | 2,227 | 7,797 | 11,655 | 13,909 | 37,355 | 108,204 |
| Total Assets | 209,486 | 50,582 | 30,642 | 27,214 | 27,865 | 82,828 | 328,212 | 164,651 | 217,719 | 1,139,199 |

| | | | | | | | | | | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| (Canadian $ in millions) | 0 to 1 month | 1 to 3 months | 3 to 6 months | 6 to 9 months | 9 to 12 months | 1 to 2 years | 2 to 5 years | Over 5 years | No maturity | Total |
| **Liabilities and Equity** | | | | | | | | | | |
| Deposits (2) (3) | 38,064 | 44,637 | 49,626 | 47,908 | 48,444 | 39,992 | 62,978 | 16,265 | 421,564 | 769,478 |
| Other liabilities | | | | | | | | | | |
| Derivative instruments | 3,370 | 11,764 | 4,399 | 3,814 | 2,895 | 7,619 | 14,092 | 12,003 | – | 59,956 |
| Acceptances | 9,752 | 3,461 | 19 | 3 | – | – | – | – | – | 13,235 |
| Securities sold but not yet purchased (4) | 40,979 | – | – | – | – | – | – | – | – | 40,979 |
| Securities lent or sold under repurchase agreements (4) | 94,215 | 6,476 | 1,046 | 2,226 | – | – | – | – | – | 103,963 |
| Securitization and liabilities related to structured entities | 14 | 2,803 | 1,300 | 794 | 1,673 | 5,136 | 9,342 | 6,006 | – | 27,068 |
| Other | 12,143 | 4,980 | 101 | 97 | 146 | 872 | 2,558 | 5,722 | 18,713 | 45,332 |
| Total other liabilities | 160,473 | 29,484 | 6,865 | 6,934 | 4,714 | 13,627 | 25,992 | 23,731 | 18,713 | 290,533 |
| Subordinated debt | – | – | – | – | – | – | 25 | 8,125 | – | 8,150 |
| Total Equity | – | – | – | – | – | – | – | – | 71,038 | 71,038 |
| Total Liabilities and Equity | 198,537 | 74,121 | 56,491 | 54,842 | 53,158 | 53,619 | 88,995 | 48,121 | 511,315 | 1,139,199 |

(1) Loans receivable on demand have been included under no maturity.
(2) Deposits payable on demand and payable after notice have been included under no maturity.
(3) Deposits totalling $29,966 million as at October 31, 2022 have a fixed maturity date; however, they can be redeemed early (either fully or partially) by customers without penalty. These are classified as payable on a fixed date due to their stated contractual maturity date.
(4) Presented based on their earliest maturity date.

| | | | | | | | | | | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| (Canadian $ in millions) | 0 to 1 month | 1 to 3 months | 3 to 6 months | 6 to 9 months | 9 to 12 months | 1 to 2 years | 2 to 5 years | Over 5 years | No maturity | Total |
| **Off-Balance Sheet Commitments** | | | | | | | | | | |
| Commitments to extend credit (1) | 1,932 | 3,610 | 10,461 | 13,373 | 14,753 | 38,057 | 119,430 | 5,490 | – | 207,106 |
| Letters of credit (2) | 1,680 | 4,601 | 4,936 | 4,662 | 4,922 | 2,832 | 3,680 | 57 | – | 27,370 |
| Backstop liquidity facilities | – | 585 | 393 | 1,438 | 1,275 | 3,465 | 9,189 | 985 | – | 17,330 |
| Leases | – | – | – | – | – | 3 | 44 | 256 | – | 303 |
| Securities lending | – | – | – | – | – | – | – | – | – | – |
| Purchase obligations | 27 | 98 | 55 | 55 | 58 | 217 | 309 | 22 | – | 841 |

(1) Commitments to extend credit exclude personal lines of credit and credit cards that are unconditionally cancellable at BMO's discretion. A large majority of these commitments expire without being drawn upon. As a result, the total contractual amounts may not be representative of the funding likely to be required for these commitments.
(2) Letters of credit can be drawn down at any time. These are classified based on their stated contractual maturity date.

Material presented in a blue-tinted font above is an integral part of Note 5 of the 2022 audited annual consolidated financial statements.

| (Canadian $ in millions) | 0 to 1 month | 1 to 3 months | 3 to 6 months | 6 to 9 months | 9 to 12 months | 1 to 2 years | 2 to 5 years | Over 5 years | No maturity | Total 2021 |
|---|---|---|---|---|---|---|---|---|---|---|
| **On-Balance Sheet Financial Instruments** | | | | | | | | | | |
| **Assets** | | | | | | | | | | |
| Cash and cash equivalents | 91,736 | – | – | – | – | – | – | – | 1,525 | 93,261 |
| Interest bearing deposits with banks | 3,529 | 1,440 | 1,172 | 1,753 | 409 | – | – | – | – | 8,303 |
| Securities | 5,286 | 4,742 | 5,116 | 3,383 | 2,692 | 17,512 | 43,571 | 90,225 | 60,322 | 232,849 |
| Securities borrowed or purchased under resale agreements | 70,080 | 22,873 | 11,362 | 1,602 | 766 | 699 | – | – | – | 107,382 |
| Loans (1) | | | | | | | | | | |
| Residential mortgages | 458 | 1,081 | 2,109 | 4,373 | 4,879 | 22,170 | 91,146 | 9,396 | 138 | 135,750 |
| Consumer instalment and other personal | 215 | 419 | 639 | 1,166 | 1,110 | 5,732 | 31,613 | 13,518 | 22,752 | 77,164 |
| Credit cards | – | – | – | – | – | – | – | – | 8,103 | 8,103 |
| Business and government | 12,082 | 7,667 | 7,697 | 10,496 | 10,213 | 29,303 | 81,377 | 14,413 | 66,561 | 239,809 |
| Allowance for credit losses | – | – | – | – | – | – | – | – | (2,564) | (2,564) |
| Total loans, net of allowance | 12,755 | 9,167 | 10,445 | 16,035 | 16,202 | 57,205 | 204,136 | 37,327 | 94,990 | 458,262 |
| Other Assets | | | | | | | | | | |
| Derivative instruments | 2,752 | 4,924 | 2,187 | 1,809 | 1,634 | 7,525 | 8,787 | 7,095 | – | 36,713 |
| Customers' liabilities under acceptances | 11,574 | 2,428 | 19 | – | – | – | – | – | – | 14,021 |
| Other | 2,002 | 461 | 140 | 4 | 3 | 5 | 1 | 5,097 | 29,671 | 37,384 |
| Total other assets | 16,328 | 7,813 | 2,346 | 1,813 | 1,637 | 7,530 | 8,788 | 12,192 | 29,671 | 88,118 |
| Total Assets | 199,714 | 46,035 | 30,441 | 24,586 | 21,706 | 82,946 | 256,495 | 139,744 | 186,508 | 988,175 |

| (Canadian $ in millions) | 0 to 1 month | 1 to 3 months | 3 to 6 months | 6 to 9 months | 9 to 12 months | 1 to 2 years | 2 to 5 years | Over 5 years | No maturity | Total 2021 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Liabilities and Equity** | | | | | | | | | | |
| Deposits (2) (3) | 29,885 | 37,841 | 42,488 | 28,857 | 24,299 | 33,778 | 45,729 | 19,925 | 422,829 | 685,631 |
| Other liabilities | | | | | | | | | | |
| Derivative instruments | 2,771 | 3,651 | 2,379 | 1,508 | 1,444 | 5,723 | 7,140 | 6,199 | – | 30,815 |
| Acceptances | 11,574 | 2,428 | 19 | – | – | – | – | – | – | 14,021 |
| Securities sold but not yet purchased (4) | 32,073 | – | – | – | – | – | – | – | – | 32,073 |
| Securities lent or sold under repurchase agreements (4) | 73,190 | 17,199 | 3,994 | 3,103 | 70 | – | – | – | – | 97,556 |
| Securitization and liabilities related to structured entities | 21 | 1,737 | 1,527 | 648 | 486 | 7,240 | 9,791 | 4,036 | – | 25,486 |
| Other | 10,121 | 1,632 | 116 | 109 | 162 | 944 | 1,277 | 3,509 | 20,307 | 38,177 |
| Total other liabilities | 129,750 | 26,647 | 8,035 | 5,368 | 2,162 | 13,907 | 18,208 | 13,744 | 20,307 | 238,128 |
| Subordinated debt | – | – | – | – | – | – | 25 | 6,868 | – | 6,893 |
| Total Equity | – | – | – | – | – | – | – | – | 57,523 | 57,523 |
| Total Liabilities and Equity | 159,635 | 64,488 | 50,523 | 34,225 | 26,461 | 47,685 | 63,962 | 40,537 | 500,659 | 988,175 |

(1) Loans receivable on demand have been included under no maturity.
(2) Deposits payable on demand and payable after notice have been included under no maturity.
(3) Deposits totalling $20,991 million as at October 31, 2021 have a fixed maturity date; however, they can be redeemed early (either fully or partially) by customers without penalty. These are classified as payable on a fixed date due to their stated contractual maturity date.
(4) Presented based on their earliest maturity date.

| (Canadian $ in millions) | 0 to 1 month | 1 to 3 months | 3 to 6 months | 6 to 9 months | 9 to 12 months | 1 to 2 years | 2 to 5 years | Over 5 years | No maturity | Total 2021 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Off-Balance Sheet Commitments** | | | | | | | | | | |
| Commitments to extend credit (1) | 1,674 | 4,935 | 8,374 | 13,308 | 14,498 | 33,749 | 99,639 | 4,571 | – | 180,748 |
| Letters of credit (2) | 1,196 | 4,083 | 4,358 | 3,815 | 4,806 | 1,980 | 3,304 | 104 | – | 23,646 |
| Backstop liquidity facilities | 189 | 137 | 293 | 1,073 | 1,578 | 2,709 | 6,088 | 828 | – | 12,895 |
| Leases | – | – | – | – | 1 | 3 | 22 | 222 | – | 248 |
| Securities lending | 3,909 | – | – | – | – | – | – | – | – | 3,909 |
| Purchase obligations | 16 | 38 | 47 | 44 | 60 | 139 | 217 | 41 | – | 602 |

(1) Commitments to extend credit exclude personal lines of credit and credit cards that are unconditionally cancellable at BMO's discretion. A large majority of these commitments expire without being drawn upon. As a result, the total contractual amounts may not be representative of the funding likely to be required for these commitments.
(2) Letters of credit can be drawn down at any time. These are classified based on their stated contractual maturity date.

**Caution**

This Liquidity and Funding Risk section contains forward-looking statements. Please refer to the Caution Regarding Forward-Looking Statements.

Material presented in a blue-tinted font above is an integral part of Note 5 of the 2022 audited annual consolidated financial statements.

# Operational Non-Financial Risk

**Operational non-financial risk** encompasses a wide range of non-financial risks, including those related to business change, customer trust, reputation and data, all of which can result in financial loss. These losses can stem from inadequate or failed internal processes or systems, human error or misconduct, and external events that may directly or indirectly impact the fair value of assets we hold in our credit or investment portfolios. Examples of these risks include cyber and cloud security risk, technology risk, fraud risk, business continuity risk and human resources risk, but exclude legal and regulatory risk, credit risk, market risk, liquidity risk and other types of financial risk.



Operational non-financial risk (ONFR) is inherent in all of our business and banking activities and can lead to significant impacts on our operating and financial results, including financial loss, restatements of financial results and damage to BMO's reputation. Like other financial services organizations that operate in multiple jurisdictions, we are exposed to a variety of operational risks arising from the potential for failures of our internal processes, technology systems and employees, as well as from external threats. Potential losses may be the result of process and control failures, theft and fraud, unauthorized transactions by employees, business disruption, information security breaches, cybersecurity threats, exposure to risks related to third-party relationships, and damage to physical assets. Given the large volume of transactions that we process on a daily basis, and the complexity and speed of our business operations, there is a possibility that certain operational or human errors may be repeated or compounded before they are discovered and rectified.

Operational non-financial risk is not only inherent in our business and banking activities, it is also inherent in the processes and controls we use to manage risks. There is the possibility that errors could occur, as well as the possibility that a failure in our internal processes or systems could lead to financial loss and reputational harm. Shortcomings or failures of internal processes, systems or employees, or of services and products provided by third parties, including any of our financial, accounting or other data processing systems, could lead to financial loss, restatements of financial results and damage to BMO's reputation.

The nature of our business activities also exposes us to the risk of theft and fraud when we enter into credit transactions with customers or counterparties. In extending credit, BMO relies on the accuracy and completeness of any information provided by, and any other representations made by, customers and counterparties. While we conduct due diligence in relation to such customer information and, where practicable and economically feasible, engage valuation experts and other experts or sources of information to assist in assessing the value of collateral and other customer risks, our financial results may be adversely impacted if the information provided by customers or counterparties is materially misleading and this is not discovered during the due diligence process.

We have established various risk management frameworks to manage and mitigate these risks, including internal controls, limits and governance processes. However, despite the contingency plans we have in place to maintain our ability to serve our clients and minimize disruptions and adverse impacts, and the contingency plans of our third-party service providers, our ability to conduct business may be adversely affected by a disruption to the infrastructure that supports our operations and the communities in which we do business, including, but not limited to, disruption caused by public health emergencies or terrorist acts.

We regularly review top and emerging risk exposures that could impact BMO's business and operations, and we assess our preparedness to proactively manage the risks we face or could face in the future. Consistent with the management of risk across the enterprise, we employ a three-lines-of-defence approach in managing our exposures to non-financial risk.

Refer to the Top and Emerging Risks That May Affect Future Results section for further discussion of these and other risks.

## Operational Non-Financial Risk Governance

The Enterprise Operational Risk Committee (EORC), a sub-committee of the Risk Management Committee (RMC), is the primary governance committee exercising oversight of all operational non-financial risk management matters, including: providing direction on, and monitoring against, strategic objectives and deliverables; improving operational resilience; and helping ensure that BMO maintains its reputation for preventing avoidable operating failures and mistakes. As part of its governance responsibilities, the EORC reviews and recommends corporate policies and standards to the Board and senior executives for review and approval as required, as well as the methodologies and tools that comprise the governing principles of the Operational Non-Financial Risk Management Framework (ONFRMF). The documentation that gives effect to these governing principles is reviewed on a regular basis in order to confirm that it incorporates sound governance practices and is consistent with BMO's risk appetite. Regular analysis and reporting of our enterprise operational risk profile to the various committees (EORC, RMC and Risk Review Committee (RRC)) are important elements of our risk governance framework. Enterprise operational risk reporting provides an integrated view of top and emerging risks, trends in loss data, capital consumption, key risk indicators and operating group profiles. We continue to invest in our reporting platforms to support timely and comprehensive reporting capabilities in order to enhance risk transparency and facilitate the proactive management of operational risk exposures.

## Operational Non-Financial Risk Management

As the first line of defence, the operating groups and Corporate Services, including Technology and Operations, are accountable for the day-to-day management of non-financial risk, including the Chief Risk Officers of our businesses, who provide governance and oversight for their respective business units, along with Corporate Services, which provides additional governance and oversight in certain targeted areas. Independent risk management oversight is provided by the Operational Non-Financial Risk Management (ONFRM) team, which is responsible for ONFR strategy, tools and policies, and for exercising second-line oversight, effective challenge and governance. ONFRM establishes and maintains the ONFRMF, which defines the processes to be used by the first line of defence to identify, assess, manage, mitigate, monitor and report on key operational risk exposures, losses and near-miss operational risk events with significant potential impact. In addition, the ONFRMF defines the processes by which ONFRM, as the second line of defence, guides, supports, monitors, assesses and communicates with the first line in its management of operational non-financial risks. Operational Risk Officers within ONFRM independently assess group operational risk profiles, identify material exposures and potential weaknesses in processes and controls, and recommend appropriate mitigation strategies and actions. Implementing the governing principles of the ONFRMF also involves continuing to strengthen our risk culture by promoting greater awareness and understanding of non-financial risk across all three lines of defence, learning from loss events and near-misses, and providing related training and communication, as well as day-to-day execution and oversight of the ONFRMF. We also continue to strengthen our second-line-of-defence support and oversight capabilities with an enhanced Operational Non-Financial Risk Operating Model, which takes a differentiated approach based on the nature of the underlying risk and existing organizational structures.

Through the implementation and oversight of the ONFRMF, we seek to maintain an operational risk profile that is not only consistent with our risk appetite and supported by adequate capital, but is also reinforced by enhanced operational resilience. Operational resilience is an organization's ability to protect and sustain core business services that are key for its clients, both during the normal course of business and when experiencing operational stress or disruption. It involves our ability to deal with unpredictable events and adapt to changes in external circumstances. Operational resilience is not a defensive strategy, it is a positive, forward-looking strategic posture that allows us to take measured risks with confidence and prepare BMO to withstand challenges in the market arising from both expected and unexpected events.

The following are the key programs, methodologies and processes set out in the ONFRMF that assist us in the ongoing review of our operational risk profile:

- **Risk Control Self-Assessment** is an established process which is evolving into the Product/Service and Process Risk Assessment program in 2023-2024. This new Product/Service and Process Risk Assessment program will be used by our operating groups and Corporate Service areas to assess the controls and residual exposures to risk in their business operations by focusing on the key controls they have in place to address specific material risks associated with their products, services, internal activities and processes. It provides a forward-looking view of the impact of the business environment and internal controls on the risk profiles of our operating groups and Corporate Service areas, supporting the proactive prevention, mitigation and management of risk.
- BMO's **Initiative Assessment and Approval Process (IAAP)** is used to assess, document and approve qualifying initiatives when a new business, service or product is developed, or existing services and products are enhanced. This process supports continuous oversight of changes in risk by setting out specific requirements for due diligence, approval, monitoring and reporting that apply at all levels of the organization.
- Material trends, metrics and risk assessments comprising **Key Risk Indicators, Issues Management** and **Internal Loss Data Events** are integral components of the operational risk profile and are utilized to assess specific risk exposures in relation to BMO's overall risk appetite.
- **Stress testing** assesses the potential impact of severe negative events on key risks and critical business processes in order to inform risk management. Stress testing helps management identify and understand the impact of large-scale events, including events that have a low frequency of occurrence but a high severity of impact, as well as environmental stresses, and develop mitigation measures or controls that aim to help manage tail risk.
- Effective **business continuity management** prepares us to recover, maintain and manage critical operations and processes, as well as safeguard the interests and well-being of our customers, shareholders and employees, in the event of a business disruption, thereby minimizing any adverse effects on our customers and other stakeholders. We have established a framework that facilitates the rapid recovery and timely resumption of critical operations. Our comprehensive business continuity management strategy involves developing, testing and maintaining effective recovery strategies and plans so that critical processes and third-party arrangements remain viable.
- BMO's **Corporate Risk & Insurance team** provides a second layer of mitigation for certain operational risk exposures. We purchase insurance when required by law, regulation or contractual agreement, and when it is economically attractive and practicable to mitigate our risks, in order to provide adequate protection against unexpected material loss.

The following are examples of ONFR that may adversely affect BMO's business and financial results. For more information, refer to the Top and Emerging Risks That May Affect Future Results section.

**Cyber and Cloud Security Risk**

Cyber and cloud security is integral to BMO's business activities, brand and reputation. As technology evolves rapidly and the connective capabilities of digital devices grow, cyber threats and risks also evolve. These threats and risks include: breaches of, or disruptions to, our systems or operations, as well as unauthorized access, use or dissemination of information pertaining to BMO, our customers or employees. Refer to the Risks That May Affect Future Results section for further information.

**Technology Risk**

Technology is a key enabler of BMO's critical business products and services delivery. Thus, failure to maintain and invest in technology can lead to operational disruption (e.g., prolonged slowdown or outage of critical systems or business services) and impede the achievement of strategic organizational goals, at significant financial cost. Technology risk management activities are intended to protect BMO's systems, data and assets, and aim to ensure their confidentiality, integrity and availability. As the adoption of digital banking continues to grow, we continue to invest in innovative new enhancements of our technological capabilities in order to meet our customers' expectations and keep their data secure.

**Data and Analytics Risks**

BMO continues to invest in new digital and analytics capabilities in support of the enterprise Digital First goals. Our ability to effectively manage and safeguard our data assets has a direct impact on our digital processes and our ability to develop and introduce innovative new analytics capabilities with tools and systems driven by artificial intelligence (AI). Our management of data risks is focused on the quality, resilience, retention and governance of BMO's data assets, which are foundational to our business operations. Our management of analytics risks focuses on BMO's commitment to fair and ethical use of AI tools and systems, in compliance with all regulatory expectations.

**Third-Party Risk**

We continue to use third parties to gain rapid access to new technologies, increase efficiencies, and improve competitiveness and performance. This increases our reliance on third parties and sub-contractors to effectively deliver products and services to our customers, and exposes us to the risk of business disruption and financial loss arising from the breakdown of processes and controls at third parties and their sub-contractors. To manage this risk, we have in place a robust third-party risk management framework designed to identify, assess, manage, monitor, mitigate and report on risks arising from the use of third parties through all stages of the third-party life cycle, in line with our organizational strategy and risk appetite. We continue to enhance our third-party risk management capabilities in order to help maintain robust risk management, operational resilience and compliance with relevant regulatory requirements. This includes monitoring and assessing the anticipated impact of pending regulatory changes to B-10 – *Third-Party Risk Management*, to be announced by the Office of the Superintendent of Financial Institutions (OSFI).

**Anti-Money Laundering**

Compliance with all Anti-Money Laundering, Anti-Terrorist Financing (AML/ATF) and sanctions measures is an integral part of safeguarding BMO, our customers and the communities in which we operate. We are committed to managing AML/ATF and sanctions risks effectively, and complying with all relevant laws and regulations. Risks related to non-compliance with these requirements can include enforcement action, criminal prosecution, legal action and damage to our reputation. Under the direction of the Chief Anti-Money Laundering Officer (CAMLO), BMO's AML/ATF and sanctions compliance program promotes effective governance and oversight across all of our businesses, and establishes policies, risk assessments and training, including mandatory annual training for all employees. BMO's AML/ATF and sanctions compliance program applies analytics, technology and professional expertise in order to deter, detect and report suspicious activity. The CAMLO regularly reports to the Audit and Conduct Review Committee (ACRC) of the Board of Directors and to senior management on the effectiveness of the AML compliance program. Continuing amendments to Canada's AML/ATF regulations, including the amended regulations that came into effect in June 2021, are intended to improve the effectiveness of Canada's AML/ATF regime and further align it with international standards. In addition, we continue to comply with the ongoing sanctions arising from Russia's invasion of Ukraine in February 2022. We remain committed to effective compliance and the ongoing effort to protect the financial system and the communities in which we operate.

## Non-Financial Risk Measurement

Effective November 1, 2019, OSFI permitted BMO, along with other AMA-approved banks, to use the Basel II Standardized Approach for determining regulatory capital requirements for enterprise operational risk prior to implementation of the new Standardized Measurement Approach, as part of the final Basel III reforms. We expect to transition to the new Basel III Standardized Measurement Approach for regulatory capital reporting effective February 2023.

## Model Risk

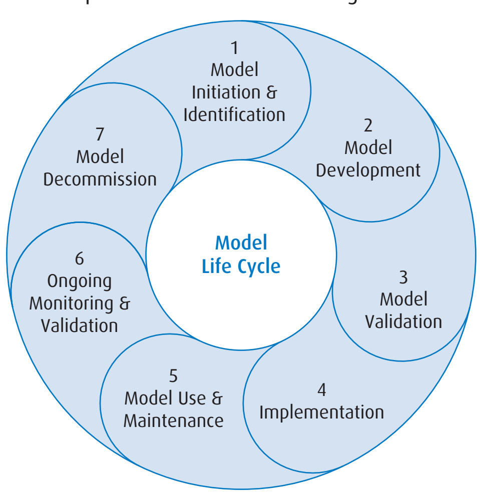
**Model risk** is the potential for adverse consequences resulting from decisions that are based on incorrect or misused model results. These adverse consequences can include financial loss, poor business decision-making and damage to reputation.

Model risk arises from the use of quantitative analytical tools that apply statistical, mathematical, economic, algorithmic or other advanced techniques, such as artificial intelligence (AI) and machine learning (ML), to process input data and generate quantitative estimates. These analytical tools range from very simple models that produce straightforward estimates to highly sophisticated models that value complex transactions or generate a broad range of forward-looking estimates. These models generate results that are used to inform business, risk and capital management decision-making, and to assist in making daily lending, trading, underwriting, funding, investment and operational decisions.

These quantitative analytical tools provide important insights and are effective when used within a framework that identifies key assumptions and limitations, while controlling and mitigating model risk. In addition to applying judgment to evaluate the reliability of model results, we mitigate model risk by maintaining strong controls over the development, validation, implementation and use of all models across the enterprise. We also seek to ensure that qualitative model overlays and non-statistical approaches to evaluating risks are intuitive, experience-based, well-documented and subject to effective challenge by those with sufficient expertise and knowledge, in order to deliver reasonable results.

**Model Risk Management Framework**

Risk is inherent in models because model results are estimates which rely on statistical, mathematical or other quantitative techniques that approximate reality to transform data into estimates or forecasts of future outcomes. Model risk also arises from the potential for misuse of models or model results. Model risk is governed at BMO by the enterprise-wide Model Risk Management Framework.



The Model Risk Management Framework sets out an end-to-end approach for model risk governance across the model life cycle and for managing model risk within the limits of our risk appetite. The framework includes BMO's Model Risk Corporate Policy, Model Risk Guidelines and supporting operating procedures, which outline explicit principles for managing model risk, detail model risk management processes, and define the roles and responsibilities of all stakeholders across the model life cycle. Model owners, developers and users serve as the first line of defence, while the Model Risk group is the second line of defence, and the Corporate Audit Division is the third line of defence.

Our Model Risk group is responsible for developing and maintaining a risk-based Model Risk Management Framework that aligns with regulatory expectations, as well as for exercising oversight of the effectiveness of model processes, model inventory and the overall aggregation, assessment and reporting of model risk. This framework incorporates guidance on the management of risks arising from advances in automated decision-making, such as algorithmic trading, as well as AI and ML. Our Model Risk Management Committee (MRMC), a sub-committee of the RMC, is a cross-functional group representing all key stakeholders across the enterprise. The MRMC meets regularly to help direct BMO's use of models, to oversee the development, implementation and maintenance of the Model Risk Management Framework, to provide effective challenge and to discuss governance of the enterprise's models.



**Outcomes Analysis and Back-Testing**

Once models are validated, approved and in use, they are subject to ongoing monitoring, including outcomes analysis, at varying frequencies. As a key component of outcomes analysis, back-testing compares model results against actual observed outcomes. Variances between model forecasts and actual observed outcomes are measured against defined risk materiality thresholds and tolerance ranges, which may result in actions such as model review and parameter recalibration, as appropriate. This analysis serves to confirm the validity of a model's performance over time. Controls are in place to address identified issues and enhance our models' overall performance.

All models used within BMO, including models that incorporate AI and ML techniques, are subject to validation and ongoing monitoring to confirm that they are being used in accordance with our framework and in alignment with regulatory expectations, such as those related to ethics, privacy, fairness and explainability. This framework applies to a wide variety of models, ranging from market, credit and non-financial risk models to stress testing, pricing and valuation, and anti-money laundering models.

**Caution**

This Operational Non-Financial Risk section contains forward-looking statements. Please refer to the Caution Regarding Forward-Looking Statements.

## Legal and Regulatory Risk

**Legal and regulatory risk** is the potential for loss or harm resulting from failure to comply with laws or satisfy contractual obligations or regulatory requirements. This includes the risk arising from any failure to: comply with the law (in letter or in spirit) or maintain standards of care; implement legal or regulatory requirements; enforce or comply with contractual terms; assert non-contractual rights; effectively manage disputes; or act in a manner so as to maintain our reputation.

The success of BMO's business relies in part on our ability to manage our exposure to legal and regulatory risk. The financial services industry is highly regulated and subject to strict enforcement of legal and regulatory requirements. Banks globally continue to be subject to fines and other penalties for a number of regulatory and conduct issues, and we are exposed to risks in connection with regulatory and governmental inquiries, investigations and enforcement actions, and criminal prosecutions. As rulemaking and supervisory expectations continue to evolve, we monitor developments to enable BMO to respond by implementing changes as required.

Under the direction of BMO's General Counsel, our Legal & Regulatory Compliance group maintains enterprise-wide frameworks that set out the steps to be taken to identify, assess, manage, monitor and report on legal and regulatory issues. We identify applicable laws and regulations and potential risks, recommend mitigation measures and strategies, conduct internal investigations, and oversee legal proceedings and enforcement actions, including civil claims and litigation, criminal charges, and regulatory examinations and audits.

Heightened regulatory and supervisory scrutiny has a significant impact on the way we conduct business. Working with the operating groups and Corporate Services, including Technology and Operations, Legal & Regulatory Compliance assesses and analyzes the implications of regulatory and supervisory changes. We devote substantial resources to the implementation of systems and processes required to comply with new regulations, which may also help us meet the needs and demands of our customers. Failure to comply with applicable legal and regulatory requirements may result in legal proceedings, financial losses, regulatory sanctions, enforcement actions, criminal convictions and penalties, an inability to execute our business strategies, a decline in investor and customer confidence, and damage to our reputation. Certain businesses are also subject to fiduciary requirements, including policies and practices that address the responsibilities of a business to a customer, such as service requirements and expectations, customer suitability determinations, disclosure obligations and communications.

BMO is subject to legal proceedings, including investigations by regulators, arising in the ordinary course of business, and the unfavourable resolution of any such legal proceedings could have a material adverse effect on our business, financial condition, results of operations, cash flows, capital position or credit ratings; require material changes in our operations; result in loss of customers; and damage our reputation. The volume of legal proceedings and the amount of damages and penalties assessed in such legal proceedings could grow in the future. Information regarding material legal proceedings to which we are a party is included in the Legal Proceedings section in Note 24 of the consolidated financial statements. Our disclosure controls and procedures are designed to provide reasonable assurance that all relevant information is gathered and reported to senior management on a timely basis, so that appropriate decisions can be made regarding public disclosure. In assessing the materiality of legal proceedings, factors considered include a case-by-case assessment of specific facts and circumstances, our past experience and the opinions of legal experts. However, some legal proceedings may be highly complex, and may include novel or untested legal claims or theories. The outcome of such proceedings may be difficult to anticipate until late in the proceedings, which may last several years.

Safeguarding our customers, employees, information and assets from exposure to criminal risk is an important priority. Criminal risk is the potential for loss or harm resulting from failure to comply with criminal laws, which could include acts by employees against BMO, acts by external parties against BMO and acts by external parties using BMO to engage in unlawful conduct, such as fraud, theft, money laundering, violence, cyber-crime, bribery and corruption.

BMO's Anti-Corruption Office, through its global program, has articulated key principles and procedures necessary for the effective oversight of compliance with anti-corruption legislation in the jurisdictions in which we operate. These include guidance on both identifying and avoiding corrupt practices and rigorously investigating allegations of corrupt activity.

Governments and regulators around the world continue to focus on anti-money laundering and related concerns, raising their expectations concerning the quality and efficacy of anti-money laundering programs and penalizing institutions that fail to meet these expectations. Under the direction of the Chief Anti-Money Laundering Officer (CAMLO), BMO's Anti-Money Laundering Office is responsible for the governance, oversight and assessment of the principles and procedures designed to help ensure compliance with laws and regulations and internal risk parameters related to anti-money laundering, anti-terrorist financing and sanctions measures. For additional discussion regarding BMO's risk management practices with respect to anti-money laundering measures, refer to the Anti-Money Laundering section.

We recognize that our business is built on BMO's reputation for good conduct. In recognition of this, we have adopted a wide range of practices in addition to BMO's Code of Conduct to support the ethical conduct of our employees. BMO's Ethical Culture and Conduct Framework sets out our approach to managing and mitigating potential misconduct. Misconduct is behaviour that falls short of legal, professional, internal conduct and ethical standards. Similar to our approach to other non-financial risks, this framework is supported by our Enterprise-Wide Risk Management Framework and our focus on maintaining a strong risk culture. For further discussion, refer to the Risk Culture section.

All of these frameworks reflect the three-lines-of-defence operating model described previously. The operating groups and Corporate Services, including Technology and Operations, manage day-to-day risks by complying with corporate policies and standards, while Legal & Regulatory Compliance units specifically aligned with each of the operating groups provide advice and independent legal and regulatory risk management oversight.

We continue to respond to other global regulatory developments, including capital and liquidity requirements. These developments include consumer protection measures and specific financial reforms, including proposed reforms in respect of the assessment, management and disclosure of climate-related financial risk, which are discussed in further detail below. For additional discussion of regulatory developments relating to capital management and liquidity and funding risk, refer to the Enterprise-Wide Capital Management section and the Liquidity and Funding Risk section. For a discussion of the impact of certain other regulatory developments, refer to: Critical Accounting Estimates and Judgments – Income Taxes and Deferred Tax Assets; Tax Legislation and Interpretations; Fiscal and Monetary Policies and Other Economic Conditions in the Countries in which BMO Conducts Business; and Benchmark Interest Rate Reform.

**Consumer and Investor Protection** – Regulators around the world continue to focus on consumer protection measures, including with respect to seniors and other vulnerable customers, interactions with consumers, and standards of conduct for individuals in the financial services industry. In Canada, these measures have included amending the *Bank Act* to implement the Financial Consumer Protection Framework (FCPF) and amending the *Financial Consumer Agency of Canada Act* to strengthen the mandate and powers of the Financial Consumer Agency of Canada. Key features of the FCPF include the introduction of responsible business conduct obligations, such as prohibited conduct and obtaining express consent, cooling-off periods for certain consumer agreements, stricter complaint management and whistleblowing requirements, implementation of an appropriateness requirement for the sale of banking products to retail customers, and enhanced disclosure requirements. BMO implemented the FCPF on June 30, 2022. In addition, reforms to the Canadian securities regulatory regime related to the protection of investors are also proceeding. Canadian securities regulatory reforms include plans to: consolidate the Mutual Fund Dealers Association of Canada (MFDA) and the Investment Industry Regulatory Organization of Canada (IIROC) into a single self-regulatory organization and combine the two investor protection funds, and harmonize and enhance the reporting of ongoing costs, including embedded fees, of owning investment funds and segregated funds under joint proposals by the Canadian Securities Administrators (CSA) and Canadian Council of Insurance Regulators. Regulators also plan to monitor and assess the impacts of the client-focused reforms, the final stage of which came into effect on December 31, 2021. In the United States, banking regulators have a heightened focus, with respect to all consumer products, on matters pertaining to racial equity and consumer protection. Key consumer concerns, including fair lending, and unfair, deceptive or abusive acts or practices, are the subject of heightened regulatory scrutiny in bank examination programs.

**French Language Requirements in Quebec** – On May 24, 2022, the Quebec government adopted Bill 96, which provides for material amendments to the Charter of the French Language and other legislation. Bill 96 received royal assent on June 1, 2022. Some changes were effective immediately, while others will be effective at a later date (three months, one year or three years). The purpose of Bill 96 is to affirm that the official language of Quebec is French. The Bill sets out new obligations intended to ensure that employees' right to carry on their activities in French is respected and that French is the language of business and service in Quebec. It also strengthens the forms of recourse available to employees and customers. The Office québécois de la langue française has enhanced enforcement powers and can impose stricter penalties. The main areas impacted by this legislation are labour and employment matters, the language of proceedings filed with the court, the registration of security interests and other related documents, the language of standard-form and consumer contracts, communications and contracts with the Quebec government and its agencies (subject to certain exceptions), trademarks, remedies and penalties. We are implementing the new requirements, in accordance with the required timelines.

**U.S. Regulatory Reform** – In 2022, leadership at the U.S. federal banking agencies continued to evolve, including key appointees who may initiate regulatory reforms, impact areas of supervisory focus or facilitate new rulemaking. It is expected that the agencies will issue new rules related to data collection for small business lending and reforms to the rules implementing the *Community Reinvestment Act*. In addition, agencies and U.S. lawmakers continue to focus on consumer protection, as well as potential reforms to bank merger standards. We continue to monitor the rulemaking activities at all relevant agencies.

**Other Regulatory Initiatives Impacting Financial Services in Canada** – The Department of Finance Canada has appointed an open banking lead to develop a Canadian open banking system, which would allow Canadian consumers and small businesses to direct federally regulated financial institutions to share their banking information through a secure mechanism with entities that meet information security and other requirements. Implementing regulations are required for other earlier amendments to the *Bank Act* that will allow banks to undertake broader financial technology activities. As part of the 2021 federal budget process, the Department of Finance Canada launched consultations regarding the reduction of interchange fees that would benefit small businesses. These consultations precede legislative modification to interchange fees, which had previously been lowered by legislation in 2018. At this time, we are not anticipating changes from the current voluntary commitment of the payment networks. In addition, the federal government has tabled Bill C-13, which is intended to promote substantive equality between the French and English languages in federally regulated businesses, including banks. The Bill is currently being considered by the Standing Committee on Official Languages.

**Climate Change and Environmental, Social and Governance Matters** – We continue to monitor the rulemaking activities of securities regulatory authorities, and we are participating in programs and consultations that focus on risk management and disclosures related to environmental, social and governance (ESG) matters, as well as trends in climate-related litigation. Globally, we are also tracking the emergence of formal supervisory regulatory frameworks governing climate change risk analysis and reporting, including in Canada, the United States, the United Kingdom and the European Union. In addition, emerging regulatory requirements in certain U.S. jurisdictions may prohibit or penalize financial institutions that engage in “boycotting” due to environmental concerns or require clients to meet environmental standards that exceed the legal or regulatory requirements in the jurisdictions in which they operate. ESG and climate-related litigation trends and regulatory investigations involving disclosure practices or financing activities, as well as allegations of “greenwashing”, also continue to evolve. We are monitoring these trends and assessing their potential impact in the context of BMO’s climate-related sustainable finance and responsible investment activities, environmental and social risk management, and ESG and climate-related disclosure practices. For further discussion, refer to the Environmental and Social Risk section.

**Privacy** – There is an increasing focus on privacy regulation related to the use and safeguarding of personal information, and we continue to advance our privacy program to comply with these evolving regulatory requirements. In Canada, significant reform to federal privacy laws is expected under Bill C-27, including new regulatory powers and penalties. In Quebec, Bill 64 has been adopted, which will modernize the province’s private-sector privacy regime and give new powers to regulators to impose monetary administrative penalties. Ontario is also considering implementing private-sector privacy legislation. Outside of Canada, large fines and settlements have been imposed for breaches of privacy rights and failure to comply with regulatory privacy requirements, evidence of heightened regulatory vigilance and enforcement. The *California Consumer Privacy Act,* which is currently the most comprehensive privacy law at the state level in the United States, will be enhanced and amended in 2023 by the *California Privacy Rights Act*, which includes new and expanded privacy rights for California residents. Other states have introduced privacy legislation, and this is leading to a growing patchwork of privacy laws in the United States. In the European Union and the United Kingdom, new standard contractual clauses have been introduced to address concerns regarding the transfer of personal data to countries lacking adequate privacy protection. For additional discussion regarding privacy, refer to the Cyber and Cloud Security Risk section and the Operational Non-Financial Risk – Cyber and Cloud Security Risk section.

The General Counsel and the Chief Compliance Officer regularly report to the Audit and Conduct Review Committee (ACRC) of the Board of Directors and senior management on the effectiveness of our Enterprise Compliance Program. The program uses a risk-based approach to identify, assess and manage compliance with applicable laws and regulations, and directs operating groups and Corporate Services to maintain policies, procedures and controls that address these laws and regulations. Under the direction of the Chief Compliance Officer, we identify and report on gaps and deficiencies, and we track remedial action plans. The CAMLO also regularly reports to the ACRC.

All BMO employees must regularly complete legal and regulatory training on topics such as anti-corruption, anti-money laundering and privacy policies, standards and procedures. This is done in conjunction with our Code of Conduct training, which tests employees’ knowledge and understanding of the behaviour required of employees of BMO.

**Caution**

This Legal and Regulatory Risk section contains forward-looking statements. Please refer to the Caution Regarding Forward-Looking Statements.

## Strategic Risk

**Strategic risk** arises from the possibility that BMO could experience financial loss or other types of harm due to changes in the external business environment and failure to respond effectively to these changes as a result of inaction, inappropriate strategies or poor implementation of strategies. Strategic risk also includes business risk, which arises from the specific business activities of the enterprise, and the effects these could have on its earnings.

Strategic risk arises from external risks inherent in the business environment within which BMO operates, as well as from the potential financial loss or other negative impact that BMO could experience if we are unable to address those external risks effectively. While external strategic risks – including economic, geopolitical, regulatory, technological, social and competitive risks – cannot be controlled, the likelihood and magnitude of their impact can be limited through an effective strategic risk management framework, and certain of these risks, including economic, geopolitical and regulatory risks, can be assessed through stress testing.

BMO’s Corporate Strategy team oversees the strategic planning process and works with the lines of business, along with ERPM, Finance and Corporate Services, to identify, monitor and mitigate strategic risk across the enterprise. Our rigorous strategic risk management framework encourages a consistent approach to developing strategies, delivered through an integrated, multi-year strategic and financial planning process that directs funding to support specific strategic choices across each line of business.

The Corporate Strategy team works with the lines of business and key corporate stakeholders during the strategy development process to promote consistency and adherence to strategic management standards, including a consideration of the results of stress testing as an input into strategic decision-making. The potential impacts of changes in the business environment, including macroeconomic developments, broad industry trends, the actions of existing and new competitors and regulatory developments, are considered in this process and inform strategic decision-making within each line of business. Enterprise and group strategies are reviewed with the Executive Committee and the Board of Directors annually in interactive sessions that challenge assumptions and strategies in the context of both the current and potential future business environment. Where required, these strategies are revised to address new or unexpected developments, such as rising interest rates, inflation and changes to regulatory policy.

Business risk, as a component of strategic risk, encompasses the potential causes of earnings volatility that are distinct from credit, market or non-financial risk factors. BMO's profitability, and hence value, may be eroded by changes in the business environment or by failures of strategy or execution due to changing client expectations, the inability to correctly identify client expectations, or relatively ineffective strategic responses to industry changes. Within BMO, each operating group is responsible for controlling its respective business risk by assessing, managing and mitigating any risks arising from changes in its business volumes or cost structures, as well as actions that could be taken by competitors in future, among other factors. To manage the impacts of transverse business risks (i.e., those spanning multiple lines of business, such as climate change), the Corporate Strategy team works in tandem with the relevant lines of business to shape effective mitigation approaches.

The ability to implement the strategic plans developed by management influences our financial performance. Performance objectives established through the strategic planning process are monitored regularly and reported on quarterly, using both leading and lagging indicators of absolute and relative performance, so that strategies can be reviewed and adjusted where necessary. Regular strategic and financial updates are also reviewed closely in order to identify any significant emerging risk issues.

## Environmental and Social Risk

**Environmental and social risk** is the potential for loss or harm directly or indirectly resulting from environmental and social factors that impact BMO or its customers, and BMO's impact on the environment and society.

In recognition of its unique characteristics, Environmental and Social (E&S) risk is classified in BMO's Risk Taxonomy as a transverse risk that may arise over a range of time frames, from short-term to long-term. Factors that may give rise to E&S risk include, but are not limited to: climate change; pollution and waste; energy, water and other resource usage; biodiversity and land use; human rights; diversity, equity and inclusion; labour standards; community health, safety and security; land acquisition and involuntary resettlement; Indigenous peoples' rights; and cultural heritage.

We may be directly exposed to E&S risk associated with the ownership and operation of BMO's businesses, which involve the management and operation of real estate owned or leased by BMO. We may be indirectly exposed to the risk of financial loss or reputational harm if our customers, suppliers or clients are affected by E&S factors, such that they are unable to meet their financial or other obligations to us. E&S factors may also give rise to the risk of reputational harm, for instance if we are perceived to not respond effectively to those factors, or to cause, contribute or be linked to adverse impacts on the environment or society.

### Governance

The Board of Directors, through the Risk Review Committee (RRC), approves the Enterprise Risk Appetite Statement, including the E&S Risk Appetite Statement and the E&S Risk Corporate Policy. The Audit and Conduct Review Committee (ACRC) assesses the effectiveness of BMO's governance of sustainability matters and approves BMO's sustainability reporting and disclosures, including our Sustainability Report and Public Accountability Statement, and our Climate Report. The RRC assists the Board of Directors in executing its oversight responsibilities for the identification, assessment and management of our exposure to E&S risk, including risks arising from climate change, for overall adherence to risk management corporate policies, and for complying with risk-related regulatory requirements. The Human Resources Committee has responsibility for the alignment of executive compensation with performance, including performance in relation to BMO's environmental and social objectives. The Governance and Nominating Committee reviews the Board and committee charters regularly to assess coverage and the alignment of ESG-related oversight responsibilities to their respective mandates.

BMO's General Counsel is the bank's Executive Committee Sponsor for Sustainability and has accountability for areas such as legal and regulatory risk, reputation risk, business conduct, ethics and sustainability, including climate change. Our ESG Executive Committee comprises senior leaders from the lines of business and Corporate Services across the enterprise, and provides oversight and leadership for our sustainability strategy, including our Climate Ambition, as described in the Climate Change section. In addition to the ESG Executive Committee, the bank has a Sustainability Council, which is a leadership forum to advance sustainability initiatives. The Sustainability team is responsible for coordinating the development and maintenance of an enterprise-wide strategy that meets our overarching E&S responsibilities.

The Chief Risk Officer (CRO) provides independent review and oversight of enterprise-wide risks and leadership on risk issues, developing and maintaining a risk management framework and fostering a strong risk culture across the organization. Enterprise Risk and Portfolio Management (ERPM) provides risk management oversight, supporting a disciplined approach to risk-taking in independent transaction approval and portfolio management, policy formulation, risk reporting, climate scenario analysis, modelling and risk education. The CRO and the ERPM team periodically report to the RRC on E&S risk matters, including climate change.

As set out in our E&S Risk Corporate Policy, the Head of Risk Frameworks and Regulatory Capital Oversight leads the E&S team and is responsible for developing and overseeing the implementation of the E&S risk management framework, consistent with regulatory expectations and considering leading industry practices. These include: integrating the management of E&S risk across the ERMF; providing subject-matter expertise, input and approval, if needed, for data sources, advisors and other information necessary to support the identification, management, assessment, monitoring and reporting of E&S risk, developing the enterprise risk appetite statement for E&S risk with corresponding key risk metrics; reporting on E&S risk exposures to senior management, the Board of Directors and its committees, and our regulators; supporting the drafting of disclosures on E&S risk; supporting ERPM leadership in carrying out their accountabilities; and assessing new E&S risk exposures and recommending escalation to the CRO or General Counsel, and/or relevant management committees, if necessary.

The Chief Sustainability Officer works in partnership with ERPM and is responsible for providing strategic direction and advisory support on sustainability matters, including sustainability governance and E&S risk management, across BMO. These include: providing subject-matter expertise and input for the development of the E&S risk management framework outlined in the E&S Risk Corporate Policy, to drive alignment with regulatory expectations and considering leading industry practices; and providing guidance and subject-matter expertise to the operating groups and Corporate Services (including Finance, People & Culture, Strategy, Corporate Real Estate, and Procurement), Legal & Regulatory Compliance and ERPM regarding the identification, management, assessment, monitoring and reporting of E&S risk, in alignment with the Reputation Risk Management Framework set out in the Reputation Risk Corporate Standard. The Chief Sustainability Officer reports quarterly to the Sustainability Council and reports regularly to the ESG Executive Committee, as well as to other relevant Board and management committees, on key sustainability developments and climate change, and engages with external stakeholders to better understand the social consequences and environmental effects of our operations and financing decisions.

Senior management oversees E&S risk through management committees and forums that provide oversight and receive updates on sustainability matters and E&S risk. These include, but are not limited to: Sustainability Council, Disclosure Committee, Risk Management Committee (RMC), Reputation Risk Management Committee (RRMC), Enterprise Regulatory Developments Committee, Sustainable Finance Steering Committee, Impact Investment Fund Committee and BMO GAM Investment Committee. The ESG Executive Committee, chaired by BMO's General Counsel with representation from the Executive Committee, examines topics related to sustainability and E&S risk, including climate strategy. Additional committees, forums and working groups will be established as needed. In addition, the Board and management committees operating in other jurisdictions receive updates and oversee E&S risk for the relevant jurisdiction. They may also receive updates on sustainability matters and E&S risk across the enterprise.



## Environmental and Social Risk Management Approach

A successful future for BMO and our customers depends on the sustainability of the environment, communities and economies in which BMO and our customers operate. At BMO, we seek to understand the impact that environmental and social factors have on our business environment, clients, portfolios and operations. With this understanding, we are better positioned to make informed strategic decisions.

E&S risk is a transverse risk that impacts our other material risks: credit and counterparty risk, market risk, insurance risk, liquidity and funding risk, operational non-financial risk, legal and regulatory risk, strategic risk and reputation risk. We have developed a qualitative risk appetite statement on E&S risks, including risks related to climate change. In addition, we have established a key risk metric with risk tolerance thresholds, which measures our lending to carbon-related assets as a percentage of our total net loans and acceptances, net of the allowance for credit losses on impaired loans.

We have established an E&S Risk Corporate Policy that is part of our ERMF and applies to all employees of BMO and its subsidiaries. The policy outlines the expectation of our Board of Directors that BMO will integrate E&S risk considerations across the ERMF, and sets out a foundation for risk governance in all stages of the risk management life cycle (identification, assessment, management, monitoring and reporting). It is supported by BMO's three-lines-of-defence operating model, as underpinned by our risk culture. The approach to implementation involves building new capabilities while also leveraging our existing risk governance mechanisms and tools, to identify, assess, manage, monitor and report on potential impacts to clients, portfolios and operations. We recognize that E&S risk management is a new risk discipline and that, along with our peers, we are on a longer journey to fully understand and manage these risks. We will need to adapt and refine our approach, tools and methodologies in order to we address the changing expectations and requirements of our regulators, clients, communities and shareholders.

E&S risk is addressed in our Credit Risk Management Framework, including provisions for governance and accountabilities, enhanced due diligence and requirements for escalations or exceptions. We have sector-specific financing guidelines to help us identify and manage E&S risks in higher-risk sectors and to integrate a consideration of these risks into our decision-making, including topics such as climate change and Indigenous consultation. Social and environmental requirements in financing arrangements and transactions are monitored by the lines of business as part of our overall monitoring process. Updates to our policies are distributed to all affected employees, and we inform key decision-makers on a case-by-case or issue-by-issue basis, as necessary. Our internal audit function periodically conducts audits on all operating units, which include assessing compliance with applicable policies and procedures, including those related to E&S risk management. We evaluate the E&S risks associated with credit and counterparty transactions and exposures, and we apply enhanced due diligence processes to transactions with clients operating in certain higher-risk sectors and geographies. Transactions involving significant environmental or social concerns may be escalated to BMO's Reputation Risk Management Committee for consideration. We have restrictions in place for lending to companies involved in certain higher-risk activities, as described in the Environmental and Social Risk Management section of BMO's Sustainability Report.

Our Sustainability team partners with the Procurement and Corporate Real Estate groups on operational sustainability. Together, these groups are responsible for establishing and maintaining an operational environmental management approach, including the application of the framework set out in ISO 14001, and for setting objectives and targets that are intended to align our operations with our sustainability performance goals.

## Frameworks and Commitments

In order to better understand and address the issues that affect our business and our approach to E&S risk management, we are signatories to, and participate in, many market-leading initiatives, including the Equator Principles, the United Nations (UN) Principles for Responsible Banking (UNPRB) and the UN Principles for Responsible Investment (UNPRI), and we are a member of the Partnership for Carbon Accounting Financials (PCAF), the Net-Zero Banking Alliance (NZBA) and Net-Zero Asset Managers initiative (NZAM). These frameworks may include process and reporting requirements that are intended to be voluntary, or they may adopt a "comply-or-explain" approach. As signatories, we may be exposed to legal, regulatory or reputation risk in the event that we do not fully implement these frameworks, either as a result of our own actions or due to external factors.

- The Equator Principles serve as a common baseline and framework for financial institutions to identify, assess and manage E&S risks that may arise in project financing. We apply this credit risk management framework to identify, assess and manage any exposures to E&S risks in these transactions. As a signatory to the Equator Principles, we have implemented the EP4 framework, the most recent iteration of the Equator Principles, which includes requirements related to climate change and free, prior and informed consent of affected Indigenous peoples, for transactions within its scope.

- UNPRB provides a framework for a sustainable banking system and is the only sustainability framework for banks that is applicable across the enterprise, providing guidance at the strategic, portfolio and transaction levels across all lines of business. UNPRB enables any financial institution genuinely committed to sustainable and responsible banking to set targets that are within the scope of its capabilities and current financial and operational position.
- UNPRI is a framework that encourages sustainable investing through the integration of ESG considerations into investment decision-making and ownership practices.
- PCAF is a global partnership of financial institutions working together to develop and implement a harmonized approach to assessing and disclosing the greenhouse gas (GHG) emissions associated with loans and investments.
- NZBA and NZAM are industry-led, UN-convened organizations of banks and asset managers supporting the implementation of decarbonization strategies and the development of an internationally coherent framework and guidelines for banks and asset managers committed to aligning their lending and investment portfolios with net-zero emissions by 2050.

In order to be better informed about emerging environmental and social risks, we participate in global forums with our peers and maintain an open dialogue with our external stakeholders. BMO is a member of, and actively engaged in, sustainability-focused working groups of the United Nations Environment Programme – Finance Initiative (UNEP-FI). BMO is also a member of the U.S. Risk Management Association Climate Risk Consortium.

## Climate Change

BMO's Climate Ambition is to be our clients' lead partner in the transition to a net-zero world. We strive to achieve this ambition through a four-pillar climate strategy: Commitment; Capabilities; Client partnership and commercialization; and Convening for climate action. As a global bank, we aim to help drive the transformation to a net-zero carbon economy by partnering with our clients to accelerate the low-carbon transition. As part of the development of our climate-related capabilities, in March 2021, we announced the establishment of the BMO Climate Institute – a centre of excellence that bridges climate-related policy and science with business strategy and finance to unlock solutions for BMO and our clients.

In line with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), we recognize that climate change involves exposure to physical risks and transition risks. Physical risks are risks associated with a changing climate, which can have both acute and chronic physical effects. These risks may include an increase in the frequency and intensity of weather-related events, such as storms, floods, wildfires and heatwaves, or longer-term changes, such as temperature changes, rising sea levels and changes in soil productivity. To date, key climate change indicators, weather-related events and associated scientific research indicate that global exposure to climate change risks may be accelerating. Transition risks are associated with the shift to a net-zero carbon economy. These risks may arise from climate-related policy changes, technological changes and behavioural changes involving carbon-pricing mechanisms or a shift in consumer preferences toward lower-carbon products and services. We continue to closely monitor these changes, some of which may unfold more rapidly than others as consumers, clients, investors, governments and communities act to enhance their resilience to climate-related risks.

We consider the physical and transaction risks arising from climate change to be transverse risks, as discussed in the Environmental and Social Risk Management Approach section. Our Environmental and Social Risk Financing Guideline includes direction on developing an understanding of specific climate change impacts on borrowers and their operations, including regulatory and/or legislative changes. To avoid over-exposure to any one sector or geographic region that might be exposed to climate-related risks, we maintain a diversified lending portfolio. We continue to conduct sector-specific reviews across our lending portfolio to assess exposure to climate-sensitive industries.

We are developing a climate scenario analysis program to explore climate-specific vulnerabilities in order to enhance our resilience to climate-related risks, in line with the TCFD recommendations. The climate scenario analysis program leverages existing risk capabilities in combination with climate-specific expertise. This program includes the evaluation of transition risks and/or physical risks, where relevant and potentially significant, across a selection of climate-sensitive portfolios, and we will continue expanding analyses across sectors and risk types in line with internal policies and any applicable regulatory requirements. Utilizing scenario analysis to gain a deeper understanding of climate-related risks is relatively new and evolving rapidly. As we enhance our knowledge of climate-related impacts and consider comprehensive climate-based scenarios, and as data modelling techniques and data availability improve, we expect our approach to analyzing these scenarios will evolve. These analyses will help identify potential exposures to material financial risks and may inform our business strategy in relation to climate change, going forward.

We continue to assess the credibility, reliability, comparability and decision-making usefulness of various measurement, assessment and reporting approaches, as well as how they could be incorporated into our climate risk management program and associated disclosures.

## Codes of Conduct and Statement on Human Rights

BMO's Board-approved Code of Conduct reflects our commitment to manage our business responsibly. Our Statement on Human Rights describes our approach to human rights in the context of the UN Guiding Principles on Business and Human Rights. We report publicly under the United Kingdom *Modern Slavery Act 2015* and the Australian *Modern Slavery Act 2018*, and we have in place a Supplier Code of Conduct, which outlines our standards for integrity, fair dealing and sustainability. We are also monitoring Bill S-211, *An Act to enact the Fighting Against Forced Labour and Child Labour in Supply Chains Act and to amend the Customs Tariff* (Bill S-211), and will develop a plan for alignment, if and when Bill S-211 is enacted. We expect our suppliers to be aware of, understand and comply with the principles of our Supplier Code of Conduct.

## Legal and Regulatory Developments

We continue to monitor the rulemaking activities of securities regulatory authorities and standard-setters. In October 2021, the Canadian Securities Administrators proposed National Instrument 51-107, *Disclosure of Climate-related Matters* (NI 51-107) and related policies. NI 51-107 would involve compliance by reporting issuers with disclosure requirements related to climate-related governance, strategy, risk management, metrics and targets, which would be finalized in 2023. In January 2022, Canadian securities regulators published guidance on ESG disclosure practices for investment funds. In March 2022, the International Sustainability Standards Board (ISSB) published two exposure drafts setting out proposed new IFRS general requirements, one involving disclosure of sustainability-related financial information and the other involving climate-related disclosures. The ISSB standards are expected to be released in 2023. We have established internal working groups to assess the impact of these new rules and standards on our disclosure practices, identify any potential gaps in our reporting and develop a plan to implement new disclosure practices, if and when such rules and standards are announced.

In May 2022, the Office of the Superintendent of Financial Institutions (OSFI) launched a public consultation process for its draft Guideline B-15, *Climate Risk Management* (Guideline B-15). Guideline B-15 consists of two chapters, the first outlining OSFI's expectations for governance and management of climate-related risks, and the second outlining OSFI's expectations for the disclosure of climate-related risks. The final Guideline B-15 is expected to be released in early fiscal 2023, with federally regulated financial institutions expected to report Guideline B-15 disclosures for fiscal years ending on or after October 1, 2023. We are currently developing programs through Enterprise-Wide Risk and Portfolio Management, including a climate scenario analysis program, that address these developments, and we plan to integrate these emerging expectations into our ERMF.

We are also monitoring trends in climate-related litigation, including cases involving allegations of "greenwashing", where claims of environmental and social benefits are made in relation to products or services or corporate performance that are not capable of substantiation, or which give a misleading impression. Prosecution of greenwashing claims has occurred in jurisdictions in Canada, the United States and Europe, and the Securities Exchange Commission (SEC) is seeking comment on two proposed rules expanding the regulation of ESG-related funds. We continue to evaluate our ESG-related disclosures for consistency and accuracy in relation to our practices and approach, and we are assessing our exposure to risks that may arise in relation to allegations of greenwashing.

## Reporting

We have supported the TCFD since 2018, and we have adopted the TCFD framework to guide climate-related financial disclosures, as set out in our Climate Report. Our Sustainability Report is prepared in accordance with the Global Reporting Initiative (GRI) Standards (core option) and the GRI Financial Services Sector Disclosure, and integrates the disclosure frameworks of the TCFD and the Sustainability Accounting Standards Board. This report includes the Public Accountability Statements for Bank of Montreal, Bank of Montreal Mortgage Corporation, BMO Life Assurance Company and BMO Life Insurance Company, outlining certain aspects of Bank of Montreal's contributions, and the contributions of its affiliates with operations in Canada, to the Canadian economy and society. These statements meet the requirements of the Canadian federal government's Public Accountability Statement regulations. The shareholders' auditors provide a limited assurance report on selected environmental and social indicators in the Sustainability Report and the Climate Report.

**Caution**

This Environmental and Social Risk section contains forward-looking statements. Please refer to the Caution Regarding Forward-Looking Statements.

# Reputation Risk

**Reputation risk** is the potential for loss or harm to the BMO brand. It can arise even if other risks are managed effectively.

Our reputation is built on our commitment to high standards of business conduct, and is one of our most valuable assets. By protecting and maintaining our reputation, we safeguard our brand, increase shareholder value, reduce our cost of capital, improve employee engagement, and preserve our customers' loyalty and trust.

We manage risks to our reputation by considering the potential reputational impact of all business activities, including strategy development and implementation, transactions and initiatives, product and service offerings, and events or incidents impacting BMO, as well as day-to-day decision-making and conduct. We consider our reputation in everything that we do.

BMO's Code of Conduct is the foundation of our ethical culture, and it provides employees with guidance on the behaviour that is expected of them, so that they can make the right choice in decisions that affect our customers and stakeholders. Ongoing reinforcement of the principles set out in the Code of Conduct minimizes risks to our reputation that may result from poor decisions or behaviour. Recognizing that non-financial risks can have a negative effect as significant as the effect of financial risks, we actively promote a culture which encourages employees to raise concerns and supports them in doing so, with zero tolerance for retaliation.

In our corporate governance practices and Enterprise-Wide Risk Management Framework, we have put in place specific controls to manage risks to our reputation. We seek to identify activities or events that could impact our reputation with customers, regulators or other stakeholders. Where we identify a potential risk to our reputation, we take steps to assess and manage that risk. Instances of significant or heightened exposure to reputation risk are escalated to BMO's Reputation Risk Management Committee for review. As misconduct can impact our reputation, the Chief Ethics Officer, who is responsible for enterprise-wide reporting on employee conduct, escalates instances of misconduct involving significant reputation risk to BMO's Reputation Risk Management Committee, as appropriate.

# Accounting Matters and Disclosure and Internal Control

## Critical Accounting Estimates and Judgments

The most significant assets and liabilities for which we must make estimates and judgments include: allowance for credit losses; financial instruments measured at fair value; pension and other employee future benefits; impairment of securities; income taxes and deferred tax assets; goodwill and intangible assets; insurance-related liabilities; provisions, including legal proceedings and restructuring charges; transfers of financial assets; and consolidation of structured entities. We make judgments in assessing the business model for financial assets, as well as whether substantially all risks and rewards have been transferred in respect of transfers of financial assets and whether we control structured entities (SEs). These judgments are discussed in Notes 6 and 7 of the financial statements. Note 17 of the consolidated financial statements provides further details on the estimates and judgments made in determining the fair value of financial instruments. If actual results were to differ from these estimates, the impact would be recorded in future periods.

By their very nature, the judgments and estimates that we make for the purposes of preparing financial statements relate to matters that are inherently uncertain. However, we have detailed policies and control procedures that are intended to ensure the judgments made in estimating these amounts are well controlled, independently reviewed and consistently applied from period to period. We believe that the estimates of the value of our assets and liabilities are appropriate.

For a more detailed discussion of the use of estimates, refer to Note 1 of the consolidated financial statements.

### Allowance for Credit Losses

The allowance for credit losses consists of allowances for estimated losses related to impaired loans in the portfolio provided for but not yet written off, and allowances for performing loans, which represent our best estimate of impairment in the existing portfolio for loans that have not yet been individually identified as impaired. Our approach to establishing and maintaining the allowance on performing loans is based on the requirements of IFRS 9 *Financial Instruments* and considering the guideline issued by the Office of the Superintendent of Financial Institutions (OSFI). Under the IFRS 9 expected credit loss (ECL) methodology, an allowance is recorded for expected credit losses on financial assets regardless of whether there has been actual impairment. ECL is calculated on a probability-weighted basis, based on three economic scenarios, and is calculated for each exposure in the portfolio as a function of the probability of default (PD), exposure at default (EAD) and loss given default (LGD), with the timing of the loss also considered. Where there has been a significant increase in credit risk, lifetime ECL is recorded; otherwise, 12 months of ECL is generally recorded. The determination of a significant increase in credit risk requires a consideration of many different factors that will vary by product and risk segment. The main factors considered in making this determination are the change in PD since origination and certain other criteria, such as 30-day past due and watchlist status. We may apply experienced credit judgment to reflect factors not captured in the results produced by the ECL models, as we deem necessary. We applied experienced credit judgment to reflect the impact of the uncertain environment on credit conditions and the economy. We have controls and processes in place to govern the ECL process, including judgments and assumptions used in determining the allowance on performing loans. These judgments and assumptions will change over time, and the impact of any such change will be recorded in future periods.

In establishing our allowance on performing loans, we attach probability weightings to three economic scenarios, which are representative of our view of economic and market conditions – a base scenario, which in our view represents the most probable outcome, as well as benign and adverse scenarios, all developed by our Economics group. The allowance on performing loans is sensitive to changes in economic forecasts and the probability weight assigned to each forecast scenario. When changes in economic performance in the forecasts are measured, we use real GDP as the basis, which acts as the key driver for movements in many of the other economic and market variables used, including the equity volatility index (VIX), corporate BBB credit spreads, unemployment rates, housing price indices and consumer credit. In addition, we also consider industry-specific variables, where applicable. Many of the variables have a high degree of interdependency, and as such, there is no single factor to which the allowances as a whole are sensitive. Holding all else equal, as economic variables worsen, the allowance on performing loans would increase and conversely, as they improve, the allowance would decrease. In addition, assuming all variables are held constant, an increase in loan balances or a deterioration in the credit quality of the loan portfolio would both drive an increase in the allowance on performing loans.

Information on the provision for credit losses for the years ended October 31, 2022 and 2021 can be found in the Total Provision for Credit Losses section. Additional information on the process and methodology for determining the allowance for credit losses can be found in the discussion of Credit and Counterparty Risk, as well as in Note 4 of the consolidated financial statements.

### Financial Instruments Measured at Fair Value

We record assets and liabilities classified as held for trading, assets and liabilities designated at fair value, derivatives, certain equity and debt securities and securities sold but not yet purchased at fair value. Fair value represents the amount that would be received on the sale of an asset or paid on the transfer of a liability in an orderly transaction between willing parties at the measurement date. We employ the fair value hierarchy based on inputs we use in valuation techniques to measure fair value of our financial instruments. The extent of our use of quoted market prices (Level 1), internal models with observable market information (Level 2) and internal models without observable market information (Level 3) in the valuation of loans, securities, derivatives, certain other assets, and liabilities recorded at fair value as at October 31, 2022 and October 31, 2021, as well as a sensitivity analysis of our Level 3 financial instruments, is disclosed in Note 17 of the consolidated financial statements. For instruments that are valued using models, we consider all reasonable available information and maximize the use of observable market data.

Valuation Product Control (VPC), a group independent of the trading lines of business, seeks to ensure that the recorded fair values of financial instruments are materially accurate by:

- Developing and maintaining valuation policies, procedures and methodologies in accordance with IFRS and regulatory requirements
- Establishing official rate sources for valuation data inputs, and
- Providing independent review of portfolios for which prices supplied by traders are used for valuation.

When VPC determines that adjustments to valuations are needed to better reflect fair value estimates based on data inputs from official rate sources, the adjustments are subject to review and approval by the Valuation Steering Committee (VSC).

The VSC is our senior management valuation committee. It meets at least monthly to address the more challenging valuation issues related to our portfolios, approves valuation methodology changes as needed to enhance the reliability of our fair value estimates, and acts as a key forum for the discussion of sources of valuation uncertainty and how these have been addressed by management.

As at October 31, 2022, total valuation adjustments were a net decrease in value of $197 million for financial instruments carried at fair value on the Consolidated Balance Sheet (a net decrease of $124 million as at October 31, 2021).

## Pension and Other Employee Future Benefits

Our pension and other employee future benefits expense is calculated by independent actuaries using assumptions determined by management. Differences between actual experience and the assumptions used are recognized in other comprehensive income.

Pension and other employee future benefits expense, plan assets and defined benefit obligations are sensitive to changes in discount rates. We determine discount rates at each year end for all plans, using high-quality corporate bonds with terms matching the plans' specific cash flows.

Additional information regarding accounting for pension and other employee future benefits, including a sensitivity analysis for key assumptions, is included in Note 21 of the consolidated financial statements.

## Impairment of Securities

We have investments in associates and joint ventures, which we review at each quarter-end reporting period to identify and evaluate those that show indications of possible impairment. For these investments, a significant or prolonged decline in the fair value of a security to an amount below its cost is objective evidence of impairment.

Debt securities measured at amortized cost or fair value through other comprehensive income (FVOCI) are assessed for impairment using the expected credit loss model. For securities determined to have low credit risk, the allowance for credit losses is measured at a 12-month expected credit loss.

Additional information regarding accounting for debt securities measured at amortized cost or FVOCI, other securities, the related allowance for credit losses and the determination of fair value is included in Notes 3 and 17 of the consolidated financial statements.

## Income Taxes and Deferred Tax Assets

Our approach to tax is guided by our Statement on Tax Principles, elements of which are described below, and governed by our tax risk management framework, which is implemented through internal controls and processes. We operate with due regard to risks, including tax and reputation risks. We actively seek to identify, assess, manage, monitor and report any tax risks that may arise in order to understand our financial exposure. Our intention is to comply fully with tax laws. We consider all applicable laws in connection with commercial activities, and where tax laws change in our business or for our customers, we adapt and make changes accordingly. We monitor applicable tax-related developments, including legislative proposals, case law and guidance from tax authorities. When an interpretation or application of tax laws is not clear, we take well-reasoned positions based on available case law and administrative positions of tax authorities, and we engage external advisors when necessary. We do not engage in tax planning that does not have commercial substance. We do not knowingly work with customers we believe use tax strategies to evade taxes. We are committed to maintaining productive relationships and cooperating with tax authorities on all tax matters. We seek to resolve disputes in a collaborative manner; however, when our interpretation of tax law differs from that of tax authorities, we are prepared to defend our position.

The provision for income taxes is calculated based on the expected tax treatment of transactions recorded in either the Consolidated Statement of Income or the Consolidated Statement of Changes in Equity. In determining the provision for income taxes, we interpret tax legislation, case law and administrative positions in numerous jurisdictions and, based on our judgment, we record the estimate of the amount required to settle tax obligations. We also make assumptions about the expected timing of the reversal of deferred tax assets and liabilities. If the interpretations and assumptions differ from those of tax authorities or if the timing of reversals is not as expected, the provision for income taxes could increase or decrease in future periods. The amount of any such increase or decrease cannot be reasonably estimated.

Deferred tax assets are recognized only when it is probable that sufficient taxable profit will be available in future periods against which deductible temporary differences or unused tax losses and tax credits may be utilized. We are required to assess whether it is probable that deferred income tax assets will be realized. Factors used to assess the probability of realization are past experience of income and capital gains, forecasts of future net income before taxes, and the remaining expiration period of tax loss carry forwards and tax credits. Changes in assessment of these factors could increase or decrease the provision for income taxes in future periods.

On November 4, 2022, the Canadian government introduced legislation related to certain tax measures that would be applicable to certain Canadian companies in a bank or life insurer group, including a one-time 15% tax (referred to as the Canada Recovery Dividend, or CRD), based on the average taxable income for fiscal 2020 and fiscal 2021, less a $1 billion exemption, payable in equal instalments over five years. Once the legislation is substantively enacted, which would occur after the third legislative reading, we expect to record a one-time tax expense relating to the CRD of approximately $325 million. The legislation also included a permanent 1.5% increase in the tax rate, based on taxable income above $100 million (effective for taxation years that end after April 7, 2022 and pro-rated for the first year). The permanent 1.5% increase in tax rate will also be reflected in higher deferred tax assets and liabilities. The fiscal 2022 impact of this increase is not expected to be material to the bank.

Canadian tax authorities have reassessed us for additional income tax and interest in an amount of approximately $1,425 million to date, in respect of certain 2011-2017 Canadian corporate dividends. Those reassessments denied certain dividend deductions on the basis that the dividends were received as part of a "dividend rental arrangement". In general, the tax rules raised by the Canadian tax authorities were prospectively addressed in the 2015 and 2018 Canadian Federal Budgets.

We filed Notices of Appeal with the Tax Court of Canada and the matter is in litigation. We expect to be reassessed for income tax in respect of similar activities undertaken in 2018. We remain of the view that our tax filing positions were appropriate and intend to challenge all reassessments. However, if such challenges are unsuccessful, the additional expense would negatively impact net income.

Additional information regarding accounting for income taxes is included in Note 22 of the consolidated financial statements.

## Goodwill and Intangible Assets

Goodwill is assessed for impairment at least annually. This assessment includes a comparison of the carrying value and the recoverable amount of each of our cash-generating units (CGUs) in order to verify that the recoverable amount of each CGU is greater than its carrying value. If the carrying value were to exceed the recoverable amount of the CGU, an impairment calculation would be performed. The recoverable amount of a CGU is the higher of its fair value less costs to sell and its value in use.

Fair value less costs to sell was used to perform the impairment test in all periods. In determining fair value less costs to sell, we employ the discounted cash flow model, consistent with that used when a business is acquired. This model is dependent on assumptions related to revenue growth, discount rates, synergies achieved on acquisition and the availability of comparable acquisition data. Changes in any of these assumptions would affect the determination of fair value for each of our CGUs in a different manner. Management must exercise judgment and make assumptions in determining fair value. Differences in judgments and assumptions could affect the determination of fair value and any resulting impairment write-down.

As at October 31, 2022, no goodwill impairment was recorded as the estimated fair value of the CGUs was greater than their carrying value. In 2021, we recorded a goodwill write-down of $779 million, due to the implied valuation from the definitive agreement to sell our EMEA Asset Management business (part of our Wealth Management CGU) to Ameriprise and our allocation of goodwill to the business being sold.

Intangible assets with definite lives are amortized to income on either a straight-line or an accelerated basis over a period not exceeding 15 years, depending on the nature of the asset. We test intangible assets with definite lives for impairment when circumstances indicate that the carrying value may not be recoverable.

Intangible assets with indefinite lives are tested annually for impairment. If an intangible asset is determined to be impaired, it will be written down to its recoverable amount, the higher of value in use and fair value less costs to sell, when this is less than the carrying value.

Additional information regarding the composition of goodwill and intangible assets is included in Note 11 of the consolidated financial statements.

## Insurance-Related Liabilities

Insurance claims and policy benefit liabilities represent current claims and estimates of future insurance policy benefit liabilities. Liabilities for life insurance contracts are determined using the Canadian Asset Liability Method, which incorporates best-estimate assumptions for mortality, morbidity, policy lapses, surrenders, future investment yields, policy dividends, administration costs and margins for adverse deviation. These assumptions are reviewed at least annually and updated to reflect actual experience and market conditions. The most significant potential impact on the valuation of these liabilities would result from a change in the assumptions for interest rates and equity market values. If the assumed future interest rates were to increase by one percentage point, earnings before tax would increase by approximately $35 million. A reduction of one percentage point would lower earnings before tax by approximately $34 million. If the assumed equity market value increased by 10%, earnings before tax would increase by approximately $13 million. A reduction of 10% would lower earnings before tax by approximately $13 million.

Additional information on insurance-related liabilities is provided in Note 14 of the consolidated financial statements, and information on insurance risk is provided in the Insurance Risk section.

## Provisions

A provision is recognized if, as a result of a past event, we have a present legal or constructive obligation that can be estimated reliably, and it is probable that an outflow of economic benefits will be required to settle the obligation. Provisions are recorded at the best estimate of the amount required to settle any obligation as at the balance sheet date, considering the risks and uncertainties surrounding the obligation. For example, BMO and its subsidiaries are involved in various legal actions in the ordinary course of business. Factors considered in estimating any obligation related to these legal actions include a case-by-case assessment of specific facts and circumstances, past experience and the opinions of legal experts. Management and internal and external experts are involved in estimating any amounts that may be required. Certain provisions also relate to restructuring initiatives that we have undertaken. These provisions are recorded at management's best estimate of the amounts that will ultimately be paid out.

The actual costs of settling some obligations may be substantially higher or lower than the amount of the provisions.

Additional information regarding provisions is included in the Legal and Regulatory Risk section and in Note 24 of the consolidated financial statements.

## Transfer of Financial Assets

We sell Canadian residential mortgages to third-party Canadian securitization programs, including the Canada Mortgage Bond Program, directly to third-party investors under the National Housing Act Mortgage-Backed Securities program. In 2020, we participated in programs offered by the Canadian and U.S. governments in response to the COVID-19 pandemic to support businesses facing economic hardship, including the Canada Emergency Business Account (CEBA) program and the Business Development Bank of Canada (BDC) Co-Lending program.

We also purchase or originate certain commercial mortgage loans which are subsequently sold and derecognized, and we purchase U.S. government agency collateralized mortgage obligations (CMOs) issued by third-party sponsored vehicles, which we may further securitize by repackaging them into new CMOs prior to selling to third-party investors.

We assess whether substantially all of the risks and rewards of these financial instruments have been transferred in order to determine if they qualify for derecognition. Where we continue to be substantially exposed to prepayment, interest rate and/or credit risk of these financial instruments, they do not qualify for derecognition. We continue to recognize these financial instruments, and recognize the related cash proceeds as a secured financing on our Consolidated Balance Sheet.

## Consolidation of Structured Entities

In the normal course of business, we enter into arrangements with SEs, using them to secure customer transactions, to securitize financial assets to obtain liquidity, or to pass our credit risk exposure to holders of the vehicles' securities. For example, we enter into transactions with SEs where we transfer assets, including mortgage loans, mortgage-backed securities, credit card loans, real estate lines of credit, auto loans and equipment loans, in order to obtain alternate sources of funding, or as part of our trading activities. We are required to consolidate a SE if we control the SE. We control a SE when we have power over the SE, exposure or rights to variable returns as a result of our involvement, and the ability to exercise power to affect the amount of those returns.

Additional information concerning our interests in SEs is included in the Off-Balance Sheet Arrangements section, as well as in Note 7 of the consolidated financial statements.

**Caution**

This Critical Accounting Estimates and Judgments section contains forward-looking statements. Please refer to the Caution Regarding Forward-Looking Statements.

# Changes in Accounting Policies in 2022

## IBOR Reform – Phase 2 amendments

Effective November 1, 2020, we early adopted Phase 2 amendments to IFRS 9, *Financial Instruments*, IAS 39, *Financial Instruments: Recognition and Measurement* (IAS 39), IFRS 7, *Financial Instruments: Disclosures*, and IFRS 4, *Insurance Contracts*, as well as IFRS 16, *Leases*. These amendments address issues that arise from the implementation of IBOR reform, where IBORs are replaced with alternative benchmark rates.

For financial instruments at amortized cost, the amendments introduce a practical expedient such that if a change in the contractual cash flows is as a result of IBOR reform and occurs on an economically equivalent basis, the change will be accounted for by updating the effective interest rate with no immediate gain or loss recognized. The amendments also provide additional temporary relief from the application of specific IAS 39 hedge accounting requirements to hedging relationships affected by IBOR reform. For example, there is an exception from the requirement to discontinue hedge accounting as a result of changes to hedge documentation required solely by IBOR reform. The amendments also require additional disclosure that allows users to understand the impact of IBOR reform on our financial instruments and risk management strategy.

Further details are provided in Note 1 of the consolidated financial statements.

## Conceptual Framework

Effective November 1, 2020, we adopted the revised Conceptual Framework (Framework), which sets out the fundamental concepts for financial reporting to drive consistency in standard-setting decisions and that similar transactions are treated in a similar way, so as to provide useful information to users of financial statements. The revised Framework had no impact on our accounting policies.

# Future Changes in Accounting Policies

## IFRS 17, *Insurance Contracts* (IFRS 17)

In May 2017, the IASB issued IFRS 17*, Insurance Contracts* (IFRS 17), which provides a comprehensive approach to accounting for all types of insurance contracts and will replace the existing IFRS 4, *Insurance Contracts* (IFRS 4). The standard was subsequently amended in June 2020, with additional narrow-scope amendments in December 2021. IFRS 17 will be effective for our fiscal year beginning November 1, 2023. We established an enterprise-wide project in order to meet the requirements of IFRS 17, and continue to evaluate the potential impacts of adoption, including available accounting policy and transition choices.

IFRS 17 will change the fundamental principles used to recognize and measure insurance contracts, including life insurance contracts reinsurance contracts and investment contracts with discretionary participation features. Key differences from IFRS 4 are as follows:

IFRS 17 requires us to measure groups of contracts based on our estimates of the present value of future cash flows that are expected to arise as we fulfil the contracts, an explicit risk adjustment for non-financial risk and a contractual service margin (CSM), which represents unearned profits. The CSM component of the insurance contract liability will be amortized into income as services/insurance coverage is provided, and groups of contracts that result in losses are recorded in income immediately. Under IFRS 4, there is no similar grouping requirement and gains/losses on new business are recognized in income immediately. When we adopt IFRS 17, we will establish the CSM for insurance contracts in effect, which will increase liabilities and decrease equity.

The discount rate we use under IFRS 4 is connected to the assets held to support insurance contract liabilities. Under IFRS 17, the discount rate will reflect the characteristics of insurance contract liabilities. We have an accounting policy choice under IFRS 17 to recognize changes in the discount rate on insurance contract liabilities, either through other comprehensive income or in our statement of income.

On transition, we will apply either a full retrospective approach, where we restate prior periods as if we had always applied IFRS 17, a modified retrospective approach where we apply specific modifications to the full retrospective application, or a full fair value method where we measure the contracts at fair value to determine a value for the CSM.

Further information on these amendments can be found in Note 1 of the consolidated financial statements.

**Caution**
This Future Changes in Accounting Policies section contains forward-looking statements. Please refer to the Caution Regarding Forward-Looking Statements.

# Other Regulatory Developments

We continue to monitor and prepare for other regulatory developments, including those referenced elsewhere in this document.

For a comprehensive discussion of other regulatory developments, refer to the Enterprise-Wide Capital Management section, the Risks That May Affect Future Results section, the Liquidity and Funding Risk section, and the Legal and Regulatory Risk section.

## Treatment of Innovative Real Estate Secured Lending Products

On June 28, 2022, the Office of the Superintendent of Financial Institutions (OSFI) published an Advisory, Clarification on the Treatment of Innovative Real Estate Secured Lending Products, under Guideline B-20 (the Advisory), with clarifications on residential reverse mortgages, residential mortgages with shared equity features and combined loan plans (CLPs). For CLPs, the Advisory outlines OSFI's expectations on the re-advanceability feature above the 65% loan-to-value (LTV) limit.

BMO originates CLPs through its BMO Homeowner ReadiLine® product. The Advisory is not expected to impact the way CLPs are used by borrowers.

The Advisory will come into effect on October 31, 2023 in respect of CLPs originated, renewed or refinanced after this date.

**Caution**
This Other Regulatory Developments section contains forward-looking statements. Please refer to the Caution Regarding Forward-Looking Statements.

# Transactions with Related Parties

In the ordinary course of business, we provide banking services to key management personnel on the same terms that we offer these services to preferred customers. Key management personnel are those persons having authority and responsibility for planning, directing and/or controlling the activities of an entity, being the directors and the most senior executives of the bank. Banking services are provided to joint ventures and equity-accounted investees on the same terms offered to customers for these services. We also offer employees a subsidy on annual credit card fees.

Details of our investments in joint ventures and associates and the compensation of key management personnel are disclosed in Note 27 of the consolidated financial statements.

# Shareholders' Auditors' Services and Fees

## Review of Shareholders' Auditors

The Audit and Conduct Review Committee (ACRC) is responsible for the appointment, compensation and oversight of the shareholders' auditors and conducts an annual assessment of the performance and effectiveness of the shareholders' auditors, considering factors such as: the quality of the services provided by the engagement team of the shareholders' auditors during the audit period; the qualifications, experience and geographical reach relevant to serving BMO Financial Group; the quality of communications received from the shareholders' auditors; and the independence, objectivity and professional skepticism of the shareholders' auditors.

The ACRC believes that it has a robust review process in place to monitor audit quality and oversee the work of the shareholders' auditors, including the lead audit partner, which includes:

- Annually reviewing the audit plan in two separate meetings, including a consideration of the impact of business risks on the audit plan and an assessment of the reasonableness of the audit fee
- Reviewing the qualifications of the senior engagement team members
- Monitoring the execution of the audit plan of the shareholders' auditors, with emphasis on the more complex and challenging areas of the audit
- Reviewing and evaluating the audit findings, including in camera sessions
- Evaluating audit quality and performance, including recent Canadian Public Accountability Board (CPAB) and Public Company Accounting Oversight Board (PCAOB) inspection reports on the shareholders' auditors and their peer firms
- At a minimum, holding quarterly meetings with the chair of the ACRC and the lead audit partner to discuss audit-related issues independently of management
- Performing a comprehensive review of the shareholders' auditors every five years, and performing an annual review between these comprehensive reviews, following the guidelines set out by the Chartered Professional Accountants of Canada (CPA Canada) and the CPAB.

In 2022, an annual review of the shareholders' auditors was completed. Input was sought from ACRC members and management on areas such as communication effectiveness, industry insights, audit performance, independence and professional skepticism. In addition, the most recent comprehensive review was completed in 2020, based on the latest recommendations of CPA Canada and CPAB. These reviews focused on: (i) the independence, objectivity and professional skepticism of the shareholders' auditors; (ii) the quality of the engagement team; and (iii) the quality of communications and interactions with the shareholders' auditors. As a result of the reviews, the ACRC was satisfied with the performance of the shareholders' auditors.

Independence of the shareholders' auditors is overseen by the ACRC in accordance with BMO's Auditor Independence Standard. The ACRC also confirms that the lead audit partner rotates out of that role after five consecutive years and does not return to that role for a further five years.

## Pre-Approval Policies and Procedures

As part of BMO Financial Group's corporate governance practices, the ACRC oversees the application of its policy limiting the services provided by the shareholders' auditors that are not related to their role as auditors. All services must comply with our Auditor Independence Standard, as well as professional standards and securities regulations governing auditor independence. The ACRC pre-approves the types of services (permitted services) that can be provided by the shareholders' auditors, as well as the annual audit plan, which includes fees for specific types of services. For permitted services that are not included in the pre-approved annual audit plan, approval to proceed with the engagement is provided in accordance with our Auditor Independence Standard.

## Shareholders' Auditors' Fees

| (Canadian $ in millions)<br>Fees (1) | **2022** | 2021 |
|---|---|---|
| Audit fees | **23.5** | 25.2 |
| Audit-related fees (2) | **4.8** | 3.4 |
| Tax services fees (3) | **0.3** | 0.1 |
| All other fees (4) | **0.7** | 1.3 |
| Total | **29.3** | 30.0 |

(1) The classification of fees is based on applicable Canadian securities laws and U.S. Securities and Exchange Commission definitions.

(2) Includes fees paid for specified procedures on BMO's Proxy Circular and other services, and French translation of financial statements, related continuous disclosures and other public documents containing financial information.

(3) Includes fees paid for tax compliance services provided to various BMO-managed investment company complexes.

(4) Includes other fees paid by BMO-managed investment company complexes.

# Management's Annual Report on Disclosure Controls and Procedures and Internal Control over Financial Reporting

## Disclosure Controls and Procedures

Disclosure controls and procedures are designed to provide reasonable assurance that all relevant information is gathered and reported to senior management, including the Chief Executive Officer (CEO) and the Chief Financial Officer (CFO), on a timely basis, so that appropriate decisions can be made regarding public disclosure.

As at October 31, 2022, under the supervision of the CEO and the CFO, BMO Financial Group's (BMO) management evaluated the effectiveness of the design and operation of its disclosure controls and procedures, as defined in Canada by National Instrument 52-109, *Certification of Disclosure in Issuers' Annual and Interim Filings*, and in the United States by Rule 13a-15(e) under the *Securities Exchange Act of 1934* (the Exchange Act). Based on this evaluation, the CEO and the CFO have concluded that BMO's disclosure controls and procedures were effective as at October 31, 2022.

## Internal Control over Financial Reporting

Internal control over financial reporting is a process designed under the supervision of the CEO and the CFO to provide reasonable assurance regarding the reliability of financial reporting and the preparation of consolidated financial statements in accordance with IFRS and the requirements of the Securities and Exchange Commission (SEC) in the United States, as applicable. Management is responsible for establishing and maintaining adequate internal control over financial reporting for BMO.

Internal control over financial reporting at BMO includes policies and procedures that:

- Pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of BMO
- Are designed to provide reasonable assurance that transactions are recorded as necessary to permit preparation of the consolidated financial statements in accordance with IFRS and the requirements of the SEC in the United States, as applicable, and that receipts and expenditures of BMO are being made only in accordance with authorizations by management and directors of BMO, and
- Are designed to provide reasonable assurance that any unauthorized acquisition, use or disposition of BMO's assets that could have a material effect on the consolidated financial statements is prevented or detected in a timely manner

Because of its inherent limitations, internal control over financial reporting can provide only reasonable assurance and may not prevent or detect misstatements. Furthermore, 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 related policies and procedures may deteriorate.

BMO's management, under the supervision of the CEO and the CFO, has evaluated the effectiveness of internal control over financial reporting using the framework and criteria established in *Internal Control – Integrated Framework*, issued by the Committee of Sponsoring Organizations of the Treadway Commission in May 2013 (2013 COSO Framework). Based on this evaluation, management has concluded that internal control over financial reporting was effective as at October 31, 2022.

At the request of BMO's Audit and Conduct Review Committee, KPMG LLP (the shareholders' auditors), an independent registered public accounting firm, has conducted an audit of the effectiveness of our internal control over financial reporting. The audit report states in its conclusion that, in KPMG's opinion, BMO maintained, in all material respects, effective internal control over financial reporting as at October 31, 2022, in accordance with the criteria established in the 2013 COSO Framework.

## Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting during the year ended October 31, 2022 that have materially affected, or are reasonably likely to materially affect, the adequacy and effectiveness of our internal control over financial reporting.

# Supplemental Information

## Table 1: Ten-Year Statistical Review

| ($ millions)<br>As at or for the year ended October 31 | **2022** | 2021 | 2020 | 2019 | 2018 | 2017 | 2016 | 2015 | 2014 | 2013 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Condensed Consolidated Balance Sheet** | | | | | | | | | | |
| **Assets** | | | | | | | | | | |
| Cash and cash equivalents | **87,466** | 93,261 | 57,408 | 48,803 | 42,142 | 32,599 | 31,653 | 40,295 | 28,386 | 26,348 |
| Interest bearing deposits with banks | **5,734** | 8,303 | 9,035 | 7,987 | 8,305 | 6,490 | 4,449 | 7,382 | 6,110 | 6,259 |
| Securities | **273,262** | 232,849 | 234,260 | 189,438 | 180,935 | 163,198 | 149,985 | 130,918 | 143,319 | 135,800 |
| Securities borrowed or purchased under resale agreements | **113,194** | 107,382 | 111,878 | 104,004 | 85,051 | 75,047 | 66,646 | 68,066 | 53,555 | 39,799 |
| Loans, net of allowances | **551,339** | 458,262 | 447,420 | 426,984 | 384,172 | 358,507 | 357,518 | 321,531 | 291,400 | 269,059 |
| Other | **108,204** | 88,118 | 89,260 | 74,979 | 72,688 | 73,763 | 77,709 | 73,689 | 65,889 | 59,779 |
| Total assets | **1,139,199** | 988,175 | 949,261 | 852,195 | 773,293 | 709,604 | 687,960 | 641,881 | 588,659 | 537,044 |
| **Liabilities** | | | | | | | | | | |
| Deposits | **769,478** | 685,631 | 659,034 | 568,143 | 520,928 | 479,792 | 470,281 | 438,169 | 393,088 | 368,369 |
| Other | **290,533** | 238,128 | 225,218 | 225,981 | 199,862 | 180,438 | 170,910 | 159,383 | 155,254 | 133,500 |
| Subordinated debt | **8,150** | 6,893 | 8,416 | 6,995 | 6,782 | 5,029 | 4,439 | 4,416 | 4,913 | 3,996 |
| Total liabilities | **1,068,161** | 930,652 | 892,668 | 801,119 | 727,572 | 665,259 | 645,630 | 601,968 | 553,255 | 505,865 |
| Total equity | **71,038** | 57,523 | 56,593 | 51,076 | 45,721 | 44,345 | 42,306 | 39,422 | 34,313 | 30,107 |
| Total liabilities and equity | **1,139,199** | 988,175 | 949,261 | 852,195 | 773,293 | 709,604 | 687,960 | 641,881 | 588,659 | 537,044 |
| **Condensed Consolidated Statement of Income** | | | | | | | | | | |
| Net interest income | **15,885** | 14,310 | 13,971 | 12,888 | 11,438 | 11,275 | 10,945 | 9,796 | 8,292 | 8,487 |
| Non-interest revenue | **17,825** | 12,876 | 11,215 | 12,595 | 11,467 | 10,832 | 10,015 | 9,593 | 9,931 | 8,343 |
| Total revenue | **33,710** | 27,186 | 25,186 | 25,483 | 22,905 | 22,107 | 20,960 | 19,389 | 18,223 | 16,830 |
| Insurance claims, commissions and changes in policy benefit liabilities (CCPB) | **683** | (1,399) | (1,708) | (2,709) | (1,352) | (1,538) | (1,543) | (1,254) | (1,505) | (767) |
| Provision for credit losses (PCL) | **(313)** | (20) | (2,953) | (872) | (662) | (746) | (771) | (544) | (527) | (553) |
| Non-interest expense | **(16,194)** | (15,509) | (14,177) | (14,630) | (13,477) | (13,192) | (12,916) | (12,250) | (10,955) | (10,260) |
| Income before income taxes | **17,886** | 10,258 | 6,348 | 7,272 | 7,414 | 6,631 | 5,730 | 5,341 | 5,236 | 5,250 |
| Provision for income taxes | **(4,349)** | (2,504) | (1,251) | (1,514) | (1,961) | (1,292) | (1,100) | (936) | (903) | (1,055) |
| Net income | **13,537** | 7,754 | 5,097 | 5,758 | 5,453 | 5,339 | 4,630 | 4,405 | 4,333 | 4,195 |
| Attributable to equity holders of the bank | **13,537** | 7,754 | 5,097 | 5,758 | 5,453 | 5,337 | 4,621 | 4,370 | 4,277 | 4,130 |
| Attributable to non-controlling interest in subsidiaries | **–** | – | – | – | – | 2 | 9 | 35 | 56 | 65 |
| Net income | **13,537** | 7,754 | 5,097 | 5,758 | 5,453 | 5,339 | 4,630 | 4,405 | 4,333 | 4,195 |
| **Condensed Consolidated Statement of Changes in Equity** | | | | | | | | | | |
| Preferred shares and other equity instruments | **6,308** | 5,558 | 6,598 | 5,348 | 4,340 | 4,240 | 3,840 | 3,240 | 3,040 | 2,265 |
| Common shares | **17,744** | 13,599 | 13,430 | 12,971 | 12,929 | 13,032 | 12,539 | 12,313 | 12,357 | 12,003 |
| Contributed surplus | **317** | 313 | 302 | 303 | 300 | 307 | 294 | 299 | 304 | 315 |
| Retained earnings | **45,117** | 35,497 | 30,745 | 28,725 | 25,850 | 23,700 | 21,207 | 18,930 | 17,237 | 15,087 |
| Accumulated other comprehensive income | **1,552** | 2,556 | 5,518 | 3,729 | 2,302 | 3,066 | 4,426 | 4,640 | 1,375 | 437 |
| Total equity | **71,038** | 57,523 | 56,593 | 51,076 | 45,721 | 44,345 | 42,306 | 39,422 | 34,313 | 30,107 |

Certain comparative figures have been reclassified to conform with the current year's presentation to reflect changes in accounting policies. Refer to Note 1 of the consolidated financial statements.

BMO adopted various new and amended IFRS standards in 2015, IFRS 9 *Financial Instruments* in 2018 and IFRS 16 *Leases* in 2020 prospectively, with no changes to prior periods. In 2014, BMO adopted several new and amended accounting pronouncements issued by the International Accounting Standards Board and elected to reclassify 2012 and 2013 amounts. In 2019, BMO adopted IFRS 15 *Revenue from Contract with Customers* and elected to reclassify 2017 and 2018 amounts.

| ($ millions, except as noted)<br>As at or for the year ended October 31 | **2022** | 2021 | 2020 | 2019 | 2018 | 2017 | 2016 | 2015 | 2014 | 2013 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Other Financial Measures** | | | | | | | | | | |
| **Common Share Data** ($) | | | | | | | | | | |
| Basic earnings per share | **20.04** | 11.60 | 7.56 | 8.68 | 8.19 | 7.93 | 6.94 | 6.59 | 6.44 | 6.19 |
| Diluted earnings per share | **19.99** | 11.58 | 7.55 | 8.66 | 8.17 | 7.90 | 6.92 | 6.57 | 6.41 | 6.17 |
| Dividends declared per share | **5.44** | 4.24 | 4.24 | 4.06 | 3.78 | 3.56 | 3.40 | 3.24 | 3.08 | 2.94 |
| Book value per share | **95.60** | 80.18 | 77.40 | 71.54 | 64.73 | 61.91 | 59.57 | 56.31 | 48.18 | 43.22 |
| Closing share price | **125.49** | 134.37 | 79.33 | 97.50 | 98.43 | 98.83 | 85.36 | 76.04 | 81.73 | 72.62 |
| One-year return (%) | **(3.1)** | 75.9 | (14.6) | 3.2 | 3.3 | 20.2 | 17.0 | (3.0) | 17.1 | 28.8 |
| Number outstanding (in thousands) | | | | | | | | | | |
| End of year | **677,107** | 648,136 | 645,889 | 639,232 | 639,330 | 647,816 | 645,761 | 642,583 | 649,050 | 644,130 |
| Average basic | **663,990** | 647,163 | 641,424 | 638,881 | 642,930 | 649,650 | 644,049 | 644,916 | 645,860 | 648,476 |
| Average diluted | **665,707** | 648,676 | 642,128 | 640,360 | 644,913 | 651,961 | 646,126 | 647,141 | 648,475 | 649,806 |
| Market capitalization ($ billions) | **85.0** | 87.1 | 51.2 | 62.3 | 62.9 | 64.0 | 55.1 | 48.9 | 53.0 | 46.8 |
| Price-to-earnings multiple | **6.3** | 11.6 | 10.5 | 11.3 | 12.0 | 12.5 | 12.3 | 11.6 | 12.8 | 11.8 |
| Market-to-book value multiple | **1.31** | 1.68 | 1.02 | 1.36 | 1.52 | 1.60 | 1.43 | 1.35 | 1.70 | 1.66 |
| Dividend yield (%) | **4.3** | 3.2 | 5.3 | 4.2 | 3.8 | 3.6 | 4.0 | 4.3 | 3.8 | 4.0 |
| Dividend payout ratio (%) | **27.1** | 36.5 | 56.1 | 46.8 | 46.1 | 44.9 | 49.0 | 49.2 | 47.8 | 47.5 |
| **Financial Measures and Ratios** (%) | | | | | | | | | | |
| Return on equity | **22.9** | 14.9 | 10.1 | 12.6 | 13.3 | 13.2 | 12.1 | 12.5 | 14.0 | 14.9 |
| Efficiency ratio | **48.0** | 57.0 | 56.3 | 57.4 | 58.8 | 59.7 | 61.6 | 63.2 | 60.1 | 61.0 |
| Net interest margin on average earning assets | **1.62** | 1.59 | 1.64 | 1.70 | 1.67 | 1.74 | 1.76 | 1.69 | 1.57 | 1.75 |
| Total PCL-to-average net loans and acceptances | **0.06** | – | 0.63 | 0.20 | 0.17 | 0.20 | 0.22 | 0.17 | 0.18 | 0.21 |
| PCL on impaired loans-to-average net loans and acceptances | **0.10** | 0.11 | 0.33 | 0.17 | 0.18 | 0.22 | 0.22 | – | – | – |
| Return on average assets (%) | **1.26** | 0.79 | 0.54 | 0.69 | 0.72 | 0.74 | 0.65 | 0.66 | 0.72 | 0.74 |
| Return on average risk-weighted assets (%) (1) | **3.89** | 2.38 | 1.51 | 1.86 | 1.97 | 1.98 | 1.71 | 1.84 | 1.85 | 1.93 |
| Average assets ($ millions) | **1,072,497** | 981,140 | 942,450 | 833,252 | 754,295 | 722,626 | 707,122 | 664,391 | 593,928 | 555,431 |
| Net income growth | **74.6** | 52.1 | (11.5) | 5.6 | 2.1 | 15.3 | 5.1 | 1.7 | 3.3 | 0.9 |
| Diluted EPS growth | **72.7** | 53.3 | (12.8) | 6.0 | 3.3 | 14.3 | 5.3 | 2.5 | 3.9 | 1.1 |
| **Capital Measures** (%) (1) | | | | | | | | | | |
| Common Equity Tier 1 Ratio | **16.7** | 13.7 | 11.9 | 11.4 | 11.3 | 11.4 | 10.1 | 10.7 | 10.1 | 9.9 |
| Tier 1 Capital Ratio | **18.4** | 15.4 | 13.6 | 13.0 | 12.9 | 13.0 | 11.6 | 12.3 | 12.0 | 11.4 |
| Total Capital Ratio | **20.7** | 17.6 | 16.2 | 15.2 | 15.2 | 15.1 | 13.6 | 14.4 | 14.3 | 13.7 |
| Leverage Ratio | **5.6** | 5.1 | 4.8 | 4.3 | 4.2 | 4.4 | 4.2 | 4.2 | na | na |
| **Other Statistical Information** | | | | | | | | | | |
| Number of employees | **46,722** | 43,863 | 43,360 | 45,513 | 45,454 | 45,200 | 45,234 | 46,353 | 46,778 | 45,631 |
| Number of bank branches | **1,383** | 1,405 | 1,409 | 1,456 | 1,483 | 1,503 | 1,522 | 1,535 | 1,553 | 1,563 |
| Number of automated teller machines | **4,717** | 4,851 | 4,820 | 4,967 | 4,828 | 4,731 | 4,599 | 4,761 | 4,338 | 4,225 |

BMO adopted various new and amended IFRS standards in 2015, IFRS 9 *Financial Instruments* in 2018 and IFRS 16 *Leases* in 2020 prospectively, with no changes to prior periods. In 2014, BMO adopted several new and amended accounting pronouncements issued by the International Accounting Standards Board and elected to reclassify 2012 and 2013 amounts. In 2019, BMO adopted IFRS 15 *Revenue from Contract with Customers* and elected to reclassify 2017 and 2018 amounts.

(1) Capital ratios and risk-weighted assets are disclosed in accordance with the Capital Adequacy Requirements (CAR) Guideline, as set out by OSFI, as applicable.

na – not applicable

# Table 2: Average Assets, Liabilities and Interest Rates

| ($ millions, except as noted) For the year ended October 31 | **2022** Average balances | **2022** Average interest rate (%) | **2022** Interest income/ expense | 2021 Average balances | 2021 Average interest rate (%) | 2021 Interest income/ expense |
|---|---|---|---|---|---|---|
| **Assets** | | | | | | |
| **Canadian Dollar** | | | | | | |
| Deposits with other banks and other interest bearing assets | **33,950** | **1.23** | **416** | 34,255 | 0.23 | 79 |
| Securities | **80,971** | **2.52** | **2,043** | 90,140 | 1.79 | 1,618 |
| Securities borrowed or purchased under resale agreements | **50,090** | **1.39** | **695** | 43,375 | 0.44 | 190 |
| Loans | | | | | | |
| Residential mortgages | **132,118** | **2.63** | **3,476** | 122,661 | 2.58 | 3,168 |
| Non-residential mortgages | **4,954** | **3.09** | **153** | 5,368 | 3.19 | 171 |
| Personal and credit cards | **74,832** | **4.68** | **3,503** | 66,247 | 4.26 | 2,823 |
| Business and government | **96,057** | **3.81** | **3,656** | 82,858 | 3.37 | 2,796 |
| Total loans | **307,961** | **3.50** | **10,788** | 277,134 | 3.23 | 8,958 |
| Total Canadian dollar | **472,972** | **2.95** | **13,942** | 444,904 | 2.44 | 10,845 |
| **U.S. Dollar and Other Currencies** | | | | | | |
| Deposits with other banks and other interest bearing assets | **60,463** | **0.83** | **504** | 68,612 | 0.18 | 124 |
| Securities | **185,099** | **1.92** | **3,548** | 145,504 | 1.61 | 2,345 |
| Securities borrowed or purchased under resale agreements | **62,416** | **1.02** | **640** | 62,250 | 0.39 | 245 |
| Loans | | | | | | |
| Residential mortgages | **8,312** | **2.97** | **247** | 8,055 | 3.02 | 243 |
| Non-residential mortgages | **12,426** | **3.86** | **479** | 10,684 | 3.18 | 339 |
| Personal and credit cards | **15,060** | **3.89** | **586** | 13,344 | 3.86 | 516 |
| Business and government | **160,157** | **4.34** | **6,951** | 141,003 | 3.71 | 5,230 |
| Total loans | **195,955** | **4.22** | **8,263** | 173,086 | 3.66 | 6,328 |
| Total U.S. dollar and other currencies | **503,933** | **2.57** | **12,955** | 449,452 | 2.01 | 9,042 |
| Other non-interest bearing assets | **95,592** | | | 86,784 | | |
| **Total All Currencies** | | | | | | |
| Total assets and interest income | **1,072,497** | **2.51** | **26,897** | 981,140 | 2.03 | 19,887 |
| **Liabilities** | | | | | | |
| **Canadian Dollar** | | | | | | |
| Deposits | | | | | | |
| Banks | **4,983** | **0.37** | **19** | 9,616 | 0.35 | 33 |
| Business and government | **169,063** | **1.31** | **2,221** | 157,226 | 0.69 | 1,091 |
| Individuals | **149,329** | **0.58** | **866** | 142,833 | 0.44 | 622 |
| Total deposits | **323,375** | **0.96** | **3,106** | 309,675 | 0.56 | 1,746 |
| Securities sold but not yet purchased and securities lent or sold under repurchase agreements (1) | **60,163** | **1.62** | **974** | 55,415 | 0.91 | 506 |
| Subordinated debt and other interest bearing liabilities | **25,788** | **2.39** | **616** | 28,416 | 2.10 | 597 |
| Total Canadian dollar | **409,326** | **1.15** | **4,696** | 393,506 | 0.72 | 2,849 |
| **U.S. Dollar and Other Currencies** | | | | | | |
| Deposits | | | | | | |
| Banks | **23,583** | **1.21** | **285** | 24,200 | 0.33 | 80 |
| Business and government | **305,576** | **1.02** | **3,104** | 272,380 | 0.45 | 1,234 |
| Individuals | **75,160** | **0.29** | **216** | 71,795 | 0.22 | 160 |
| Total deposits | **404,319** | **0.89** | **3,605** | 368,375 | 0.40 | 1,474 |
| Securities sold but not yet purchased and securities lent or sold under repurchase agreements (1) | **90,324** | **1.85** | **1,671** | 74,376 | 1.35 | 1,005 |
| Subordinated debt and other interest bearing liabilities | **20,600** | **5.05** | **1,040** | 14,118 | 1.76 | 249 |
| Total U.S. dollar and other currencies | **515,243** | **1.23** | **6,316** | 456,869 | 0.60 | 2,728 |
| Other non-interest bearing liabilities | **84,253** | | | 74,471 | | |
| **Total All Currencies** | | | | | | |
| Total liabilities and interest expense | **1,008,822** | **1.09** | **11,012** | 924,846 | 0.60 | 5,577 |
| Shareholders' equity | **63,675** | | | 56,294 | | |
| **Total Liabilities, Interest Expense and Shareholders' Equity** | **1,072,497** | **1.03** | **11,012** | 981,140 | 0.57 | 5,577 |
| **Net interest margin** | | | | | | |
| – based on earning assets | | **1.62** | | | 1.59 | |
| – based on total assets | | **1.48** | | | 1.46 | |
| **Net interest income** | | | **15,885** | | | 14,310 |

(1) For the years ended October 31, 2022 and 2021, the maximum amount of securities lent or sold under repurchase agreements at any month end was $129,549 million and $102,567 million, respectively.

Supplemental Information

# Table 3: Volume/Rate Analysis of Changes in Net Interest Income

| | | | 2022/2021 |
|---|---|---|---|
| | Increase (decrease) due to change in | | |
| ($ millions)<br>For the year ended October 31 | Average balance | Average rate | Total |
| **Assets** | | | |
| **Canadian Dollar** | | | |
| Deposits with other banks and other interest bearing assets | (1) | 338 | 337 |
| Securities | (165) | 590 | 425 |
| Securities borrowed or purchased under resale agreements | 30 | 475 | 505 |
| Loans | | | |
| Residential mortgages | 243 | 65 | 308 |
| Non-residential mortgages | (13) | (5) | (18) |
| Personal and credit cards | 366 | 314 | 680 |
| Business and government | 446 | 414 | 860 |
| Total loans | 1,042 | 788 | 1,830 |
| Change in Canadian dollar interest income | 906 | 2,191 | 3,097 |
| **U.S. Dollar and Other Currencies** | | | |
| Deposits with other banks and other interest bearing assets | (15) | 395 | 380 |
| Securities | 639 | 564 | 1,203 |
| Securities borrowed or purchased under resale agreements | 1 | 394 | 395 |
| Loans | | | |
| Residential mortgages | 8 | (4) | 4 |
| Non-residential mortgages | 55 | 85 | 140 |
| Personal and credit cards | 65 | 5 | 70 |
| Business and government | 711 | 1,010 | 1,721 |
| Total loans | 839 | 1,096 | 1,935 |
| Change in U.S. dollar and other currencies interest income | 1,464 | 2,449 | 3,913 |
| **Total All Currencies** | | | |
| Change in total interest income (a) | 2,370 | 4,640 | 7,010 |
| **Liabilities** | | | |
| **Canadian Dollar** | | | |
| Deposits | | | |
| Banks | (16) | 2 | (14) |
| Business and government | 83 | 1,047 | 1,130 |
| Individuals | 28 | 216 | 244 |
| Total deposits | 95 | 1,265 | 1,360 |
| Securities sold but not yet purchased and securities lent or sold under repurchase agreements | 43 | 425 | 468 |
| Subordinated debt and other interest bearing liabilities | (55) | 74 | 19 |
| Change in Canadian dollar interest expense | 83 | 1,764 | 1,847 |
| **U.S. Dollar and Other Currencies** | | | |
| Deposits | | | |
| Banks | (2) | 207 | 205 |
| Business and government | 150 | 1,720 | 1,870 |
| Individuals | 7 | 49 | 56 |
| Total deposits | 155 | 1,976 | 2,131 |
| Securities sold but not yet purchased and securities lent or sold under repurchase agreements | 216 | 450 | 666 |
| Subordinated debt and other interest bearing liabilities | 114 | 677 | 791 |
| Change in U.S. dollar and other currencies interest expense | 485 | 3,103 | 3,588 |
| **Total All Currencies** | | | |
| Change in total interest expense (b) | 568 | 4,867 | 5,435 |
| Change in total net interest income (a – b) | 1,802 | (227) | 1,575 |

## Table 4: Net Loans and Acceptances – Segmented Information (1) (2)

| ($ millions) | Canada | | United States | | Other countries | | Total | |
|---|---|---|---|---|---|---|---|---|
| As at October 31 | **2022** | 2021 | **2022** | 2021 | **2022** | 2021 | **2022** | 2021 |
| Consumer | | | | | | | | |
| Residential mortgages | **139,387** | 128,020 | **9,483** | 7,718 | **–** | – | **148,870** | 135,738 |
| Credit cards | **9,069** | 7,642 | **594** | 461 | **–** | – | **9,663** | 8,103 |
| Consumer instalment and other personal loans | **71,070** | 63,841 | **14,931** | 13,232 | **–** | – | **86,001** | 77,073 |
| Total consumer | **219,526** | 199,503 | **25,008** | 21,411 | **–** | – | **244,534** | 220,914 |
| Total business and government | **135,317** | 113,895 | **175,571** | 132,087 | **11,225** | 7,453 | **322,113** | 253,435 |
| Total loans and acceptances, net of allowance for credit losses on impaired loans | **354,843** | 313,398 | **200,579** | 153,498 | **11,225** | 7,453 | **566,647** | 474,349 |
| Allowance for credit losses on performing loans | **(1,102)** | (1,143) | **(959)** | (910) | **(12)** | (13) | **(2,073)** | (2,066) |
| Total net loans and acceptances | **353,741** | 312,255 | **199,620** | 152,588 | **11,213** | 7,440 | **564,574** | 472,283 |

## Table 5: Net Impaired Loans and Acceptances (NIL) – Segmented Information (2) (3) (4)

| ($ millions, except as noted) | Canada | | United States | | Other countries | | Total | |
|---|---|---|---|---|---|---|---|---|
| As at October 31 | **2022** | 2021 | **2022** | 2021 | **2022** | 2021 | **2022** | 2021 |
| Consumer | | | | | | | | |
| Residential mortgages | **187** | 216 | **98** | 123 | **–** | – | **285** | 339 |
| Consumer instalment and other personal loans | **109** | 83 | **101** | 113 | **–** | – | **210** | 196 |
| Total consumer | **296** | 299 | **199** | 236 | **–** | – | **495** | 535 |
| Business and government | **499** | 551 | **445** | 585 | **8** | – | **952** | 1,136 |
| Total impaired loans and acceptances, net of allowance for credit losses on impaired loans | **795** | 850 | **644** | 821 | **8** | – | **1,447** | 1,671 |
| **Condition Ratios** (1) | | | | | | | | |
| NIL as a % of net loans and acceptances | **0.22** | 0.27 | **0.32** | 0.54 | **0.07** | – | **0.26** | 0.35 |
| NIL as a % of net loans and acceptances | | | | | | | | |
| Consumer | **0.13** | 0.15 | **0.80** | 1.10 | **–** | – | **0.20** | 0.24 |
| Business and government | **0.37** | 0.48 | **0.25** | 0.44 | **0.07** | – | **0.30** | 0.45 |

(1) Aggregate Net Loans and Acceptances balances are net of allowance for credit losses on performing loans and impaired loans. The Consumer and Business and government Net Loans and Acceptances balances are net of allowance for credit losses on impaired loans only.
(2) Segmented credit information by geographic area is based upon the country of ultimate risk.
(3) Net Impaired Loans and Acceptances balances are net of allowance for credit losses on impaired loans.
(4) Net Impaired Loans exclude purchased credit impaired loans.

# Table 6: Net Loans and Acceptances – Segmented Information (1) (2)

| ($ millions)<br>As at October 31 | 2022 | 2021 |
|---|---|---|
| **Net Loans and Acceptances by Province** | | |
| Atlantic provinces | **17,617** | 15,996 |
| Quebec | **53,975** | 48,090 |
| Ontario | **159,862** | 136,638 |
| Prairie provinces | **54,607** | 51,460 |
| British Columbia and territories | **67,680** | 60,071 |
| Total net loans and acceptances in Canada | **353,741** | 312,255 |
| **Net Business and Government Loans by Industry** | | |
| Commercial real estate | **54,478** | 43,259 |
| Construction (non-real estate) | **5,761** | 4,367 |
| Retail trade | **23,716** | 16,924 |
| Wholesale trade | **20,693** | 14,727 |
| Agriculture | **14,181** | 13,739 |
| Communications | **876** | 787 |
| Financing products | **1,588** | 1,084 |
| Manufacturing | **36,607** | 28,034 |
| Mining | **3,503** | 1,832 |
| Oil and gas | **3,780** | 5,905 |
| Transportation | **14,691** | 12,952 |
| Utilities | **9,754** | 7,263 |
| Forest products | **1,113** | 780 |
| Service industries | **55,658** | 45,019 |
| Financial | **70,438** | 52,531 |
| Government | **1,859** | 1,720 |
| Other | **3,417** | 2,512 |
| Total business and government | **322,113** | 253,435 |

# Table 7: Net Impaired Loans and Acceptances – Segmented Information (3)

| ($ millions)<br>As at October 31 | 2022 | 2021 |
|---|---|---|
| **Net Impaired Business and Government Loans** | | |
| Commercial real estate | **61** | 56 |
| Construction (non-real estate) | **34** | 58 |
| Retail trade | **92** | 143 |
| Wholesale trade | **47** | 38 |
| Agriculture | **189** | 190 |
| Communications | **1** | 1 |
| Financing products | **–** | – |
| Manufacturing | **143** | 130 |
| Mining | **14** | 2 |
| Oil and gas | **–** | 63 |
| Transportation | **63** | 73 |
| Utilities | **3** | 2 |
| Forest products | **2** | 2 |
| Service industries | **266** | 344 |
| Financial | **25** | 12 |
| Government | **3** | 2 |
| Other | **9** | 20 |
| Total business and government | **952** | 1,136 |

(1) Aggregate Net Loans and Acceptances balances are net of allowance for credit losses on performing loans and impaired loans. The net Business and government loans by industry balances are net of allowance for credit losses on impaired loans only.
(2) Segmented credit information by geographic area is based upon the country of ultimate risk.
(3) Balances are presented net of allowances on impaired loans.

# Table 8: Changes in Gross Impaired Loans – Segmented Information (1)(2)

| ($ millions, except as noted) | Canada | | United States | | Other countries | | Total | |
|---|---|---|---|---|---|---|---|---|
| As at October 31 | **2022** | 2021 | **2022** | 2021 | **2022** | 2021 | **2022** | 2021 |
| Gross impaired loans and acceptances (GIL), beginning of year | | | | | | | | |
| Consumer | **382** | 414 | **256** | 335 | **–** | – | **638** | 749 |
| Business and government | **813** | 929 | **718** | 1,876 | **–** | 84 | **1,531** | 2,889 |
| Total GIL, beginning of year | **1,195** | 1,343 | **974** | 2,211 | **–** | 84 | **2,169** | 3,638 |
| Additions to impaired loans and acceptances | | | | | | | | |
| Consumer | **630** | 712 | **77** | 134 | **–** | – | **707** | 846 |
| Business and government | **538** | 616 | **377** | 313 | **13** | – | **928** | 929 |
| Total additions | **1,168** | 1,328 | **454** | 447 | **13** | – | **1,635** | 1,775 |
| Reductions to impaired loans and acceptances (3) | | | | | | | | |
| Consumer | **(462)** | (547) | **(66)** | (162) | **–** | – | **(528)** | (709) |
| Business and government | **(533)** | (636) | **(389)** | (1,231) | **–** | (84) | **(922)** | (1,951) |
| Total reductions due to net repayments and other | **(995)** | (1,183) | **(455)** | (1,393) | **–** | (84) | **(1,450)** | (2,660) |
| Write-offs (4) | | | | | | | | |
| Consumer | **(159)** | (197) | **(51)** | (51) | **–** | – | **(210)** | (248) |
| Business and government | **(51)** | (96) | **(102)** | (240) | **–** | – | **(153)** | (336) |
| Total write-offs | **(210)** | (293) | **(153)** | (291) | **–** | – | **(363)** | (584) |
| Gross impaired loans and acceptances, end of year | | | | | | | | |
| Consumer | **391** | 382 | **216** | 256 | **–** | – | **607** | 638 |
| Business and government | **767** | 813 | **604** | 718 | **13** | – | **1,384** | 1,531 |
| Total GIL, end of year | **1,158** | 1,195 | **820** | 974 | **13** | – | **1,991** | 2,169 |
| **Condition Ratios** | | | | | | | | |
| GIL as a % of Gross Loans | | | | | | | | |
| Consumer | **0.18** | 0.19 | **0.86** | 1.19 | **–** | – | **0.25** | 0.29 |
| Business and government | **0.57** | 0.71 | **0.34** | 0.54 | **0.12** | – | **0.43** | 0.60 |
| GIL as a % of gross loans and acceptances | **0.33** | 0.38 | **0.41** | 0.63 | **0.12** | – | **0.35** | 0.46 |

(1) Gross Impaired Loans excludes Purchased Credit Impaired Loans.
(2) Segmented credit information by geographic area is based upon the country of ultimate risk.
(3) Includes impaired amounts returned to performing status, sales, repayments, the impact of foreign exchange fluctuations and offsets for consumer write-offs which have not been recognized in formations.
(4) Excludes certain loans that are written off directly and not classified as new formations.

Supplemental Information

# Table 9: Changes in Allowance for Credit Losses – Segmented Information (1)

| ($ millions, except as noted) | Canada | | United States | | Other countries | | Total | |
|---|---|---|---|---|---|---|---|---|
| As at October 31 | **2022** | 2021 | **2022** | 2021 | **2022** | 2021 | **2022** | 2021 |
| **Allowance for credit losses (ACL), beginning of year** | | | | | | | | |
| Consumer | **907** | 1,073 | **133** | 217 | **–** | – | **1,040** | 1,290 |
| Business and government | **792** | 782 | **1,111** | 1,696 | **15** | 46 | **1,918** | 2,524 |
| Total ACL, beginning of year | **1,699** | 1,855 | **1,244** | 1,913 | **15** | 46 | **2,958** | 3,814 |
| Provision for credit losses (2) | | | | | | | | |
| Consumer | **268** | 201 | **45** | (48) | **–** | – | **313** | 153 |
| Business and government | **48** | 117 | **(43)** | (211) | **(7)** | (32) | **(2)** | (126) |
| Total provision for credit losses | **316** | 318 | **2** | (259) | **(7)** | (32) | **311** | 27 |
| Recoveries | | | | | | | | |
| Consumer | **105** | 127 | **60** | 64 | **–** | – | **165** | 191 |
| Business and government | **–** | 23 | **50** | 19 | **–** | – | **50** | 42 |
| Total recoveries | **105** | 150 | **110** | 83 | **–** | – | **215** | 233 |
| Write-offs | | | | | | | | |
| Consumer | **(390)** | (442) | **(69)** | (72) | **–** | – | **(459)** | (514) |
| Business and government | **(51)** | (96) | **(102)** | (240) | **–** | – | **(153)** | (336) |
| Total write-offs | **(441)** | (538) | **(171)** | (312) | **–** | – | **(612)** | (850) |
| Other, including foreign exchange rate changes | | | | | | | | |
| Consumer | **(39)** | (52) | **4** | (28) | **–** | – | **(35)** | (80) |
| Business and government | **8** | (34) | **146** | (153) | **7** | 1 | **161** | (186) |
| Total other, including foreign exchange rate changes | **(31)** | (86) | **150** | (181) | **7** | 1 | **126** | (266) |
| **ACL, end of year** | | | | | | | | |
| Consumer | **851** | 907 | **173** | 133 | **–** | – | **1,024** | 1,040 |
| Business and government | **797** | 792 | **1,162** | 1,111 | **15** | 15 | **1,974** | 1,918 |
| Total ACL, end of year | **1,648** | 1,699 | **1,335** | 1,244 | **15** | 15 | **2,998** | 2,958 |
| Net write-offs as a % of average loans and acceptances (3) | **un** | un | **un** | un | **un** | un | **0.08** | 0.13 |

# Table 10: Allocation of Allowance for Credit Losses – Segmented Information (1)(4)

| ($ millions, except as noted) | Canada | | United States | | Other countries | | Total | |
|---|---|---|---|---|---|---|---|---|
| As at October 31 | **2022** | 2021 | **2022** | 2021 | **2022** | 2021 | **2022** | 2021 |
| Consumer | | | | | | | | |
| Residential mortgages | **7** | 7 | **3** | 5 | **–** | – | **10** | 12 |
| Consumer instalment and other personal loans | **88** | 76 | **14** | 15 | **–** | – | **102** | 91 |
| Total consumer | **95** | 83 | **17** | 20 | **–** | – | **112** | 103 |
| Business and government | **268** | 262 | **159** | 133 | **5** | – | **432** | 395 |
| Total allowance for credit losses on impaired loans | **363** | 345 | **176** | 153 | **5** | – | **544** | 498 |
| Allowance for credit losses on performing loans | **1,102** | 1,143 | **959** | 910 | **12** | 13 | **2,073** | 2,066 |
| Allowance for credit losses | **1,465** | 1,488 | **1,135** | 1,063 | **17** | 13 | **2,617** | 2,564 |
| **Coverage Ratios** | | | | | | | | |
| Allowance for credit losses on impaired loans as a % of gross impaired loans and acceptances | | | | | | | | |
| Total | **31.3** | 28.9 | **21.5** | 15.7 | **38.5** | – | **27.3** | 23.0 |
| Consumer | **24.3** | 21.7 | **7.9** | 7.8 | **–** | – | **18.5** | 16.1 |
| Business and government | **34.9** | 32.2 | **26.3** | 18.5 | **38.5** | – | **31.2** | 25.8 |

(1) Segmented credit information by geographic area is based upon country of ultimate risk.
(2) Excludes provision for credit losses on other assets.
(3) Aggregate Net Loans and Acceptances balances are net of allowance for credit losses on performing loans and impaired loans (excluding those related to off-balance sheet instruments).
(4) Amounts exclude Allowance for Credit Losses related to off-balance sheet instruments, which are reported in Other Liabilities.

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# Table 11: Allowance for Credit Losses on Impaired Loans – Segmented Information

| ($ millions)<br>As at October 31 | 2022 | 2021 |
|---|---|---|
| **Business and Government** | | |
| **Allowance for Credit Losses on Impaired Loans by Industry** | | |
| Commercial real estate | **11** | 11 |
| Construction (non-real estate) | **25** | 9 |
| Retail trade | **81** | 90 |
| Wholesale trade | **31** | 36 |
| Agriculture | **13** | 23 |
| Communications | **–** | 5 |
| Financing products | **–** | – |
| Manufacturing | **41** | 47 |
| Mining | **5** | – |
| Oil and gas | **39** | 77 |
| Transportation | **10** | 17 |
| Utilities | **1** | 1 |
| Forest products | **1** | 2 |
| Service industries | **144** | 73 |
| Financial | **29** | 3 |
| Government | **–** | – |
| Other | **1** | 1 |
| Total business and government (1) | **432** | 395 |

# Table 12: Provision for Credit Losses – Segmented Information

| ($ millions)<br>For the year ended October 31 | 2022 | 2021 |
|---|---|---|
| **Consumer** | | |
| Residential mortgages | **7** | 16 |
| Cards | **190** | 194 |
| Consumer instalment and other personal loans | **151** | 158 |
| Total consumer | **348** | 368 |
| **Business and Government** | | |
| Commercial real estate | **2** | 7 |
| Construction (non-real estate) | **20** | 3 |
| Retail trade | **4** | 38 |
| Wholesale trade | **7** | 18 |
| Agriculture | **(2)** | 2 |
| Communications | **(5)** | (2) |
| Financing products | **–** | – |
| Manufacturing | **10** | 41 |
| Mining | **5** | (9) |
| Oil and gas | **(32)** | 18 |
| Transportation | **(7)** | 11 |
| Utilities | **1** | 1 |
| Forest products | **–** | 2 |
| Service industries | **133** | 30 |
| Financial | **16** | (4) |
| Government | **–** | – |
| Other | **2** | 1 |
| Total business and government | **154** | 157 |
| Total provision for credit losses on impaired loans | **502** | 525 |
| Provision for credit losses on performing loans | **(189)** | (505) |
| | **313** | 20 |
| **Performance Ratios** (%) | | |
| PCL-to-average net loans and acceptances | **0.06** | – |
| PCL on impaired loans-to-segmented average net loans and acceptances | | |
| Consumer | **0.15** | 0.17 |
| Business and government | **0.05** | 0.06 |
| PCL on impaired loans-to-average net loans and acceptances | **0.10** | 0.11 |

(1) Amounts exclude Allowance for Credit Losses related to off-balance sheet instruments, which are reported in Other Liabilities.

# Table 13: Average Deposits

| | 2022 | | 2021 | |
|---|---|---|---|---|
| ($ millions, except as noted) | **Average balance** | **Average rate paid (%)** | Average balance | Average rate paid (%) |
| **Deposits Booked in Canada** | | | | |
| Demand deposits – interest bearing | **51,184** | **1.84** | 48,372 | 0.58 |
| Demand deposits – non-interest bearing | **84,280** | **–** | 74,505 | – |
| Payable after notice | **130,812** | **0.61** | 122,916 | 0.20 |
| Payable on a fixed date | **205,284** | **1.74** | 173,030 | 1.31 |
| Total deposits booked in Canada | **471,560** | **1.13** | 418,823 | 0.67 |
| **Deposits Booked in the United States and Other Countries** | | | | |
| Banks located in the United States and other countries (1) | **19,303** | **1.29** | 21,237 | 0.36 |
| Governments and institutions in the United States and other countries | **8,404** | **0.44** | 8,705 | 0.16 |
| Other demand deposits | **18,816** | **0.52** | 17,778 | 0.08 |
| Other deposits payable after notice or on a fixed date | **209,611** | **0.48** | 211,507 | 0.15 |
| Total deposits booked in the United States and other countries | **256,134** | **0.55** | 259,227 | 0.16 |
| **Total average deposits** (2) | **727,694** | **0.92** | 678,050 | 0.47 |

As at October 31, 2022 and 2021: deposits by foreign depositors in our Canadian bank offices amounted to $95,292 million and $58,396 million, respectively.

(1) Includes regulated and central banks.

(2) Average deposits payable on a fixed date included $101 million, $27,287 million and $17,394 million of federal funds purchased, commercial paper issued and other deposit liabilities, respectively, as at October 31, 2022 ($101 million, $14,740 million and $18,893 million, respectively, as at October 31, 2021).

# Glossary of Financial Terms

**Adjusted Earnings and Measures**

- *Adjusted Revenue* – calculated as revenue excluding the impact of certain non-recurring items, and adjusted net revenue is adjusted revenue, net of CCPB, as set out in the Non-GAAP and Other Financial Measures section.
- *Adjusted Non-Interest Expense* – calculated as non-interest expense excluding the impact of certain non-recurring items, as set out in the Non-GAAP and Other Financial Measures section.
- *Adjusted Net Income* – calculated as net income excluding the impact of certain non-recurring items, as set out in the Non-GAAP and Other Financial Measures section.

Management considers both reported and adjusted results to be useful in assessing underlying ongoing business performance.

**Adjusted Effective Tax Rate** is calculated as adjusted provision for income taxes divided by adjusted income before provision for income taxes.

**Allowance for Credit Losses** represents an amount deemed appropriate by management to absorb credit-related losses on loans and acceptances and other credit instruments, in accordance with applicable accounting standards. *Allowance on Performing Loans* is maintained to cover impairment in the existing portfolio for loans that have not yet been individually identified as impaired. *Allowance on Impaired Loans* is maintained to reduce the carrying value of individually identified impaired loans to the expected recoverable amount.

**Assets under Administration and Assets under Management** refers to assets administered or managed by a financial institution that are beneficially owned by clients and therefore not reported on the balance sheet of the administering or managing financial institution.

**Asset-Backed Commercial Paper (ABCP)** is a short-term investment. The commercial paper is backed by assets such as trade receivables, and is generally used for short-term financing needs.

**Average annual total shareholder return (TSR)** represents the average annual total return earned on an investment in BMO common shares made at the beginning of a fixed period. The return includes the change in share price and assumes dividends received were reinvested in additional common shares.

**Average Earning Assets** represents the daily average balance of deposits at central banks, deposits with other banks, securities borrowed or purchased under resale agreements, securities, and loans over a one-year period.

**Average Net Loans and Acceptances** is the daily or monthly average balance of loans and customers' liability under acceptances, net of the allowance for credit losses, over a one-year period.

**Bail-In Debt** is senior unsecured debt subject to the Canadian Bail-In Regime. Bail-in debt includes senior unsecured debt issued directly by the bank on or after September 23, 2018, which has an original term greater than 400 days and is marketable, subject to certain exceptions. Some or all of this debt may be statutorily converted into common shares of the bank under the Bail-In Regime if the bank enters resolution.

**Bankers' Acceptances (BAs)** are bills of exchange or negotiable instruments drawn by a borrower for payment at maturity and accepted by a bank. BAs constitute a guarantee of payment by the bank and can be traded in the money market. The bank earns a "stamping fee" for providing this guarantee.

**Basis Point** is one one-hundredth of a percentage point.

**Common Equity Tier 1 (CET1) Capital** comprises common shareholders' equity net of deductions for goodwill, intangible assets, pension assets, certain deferred tax assets and other items, which may include a portion of expected credit loss provisions.

**Common Equity Tier 1 (CET1) Ratio** is calculated as CET1 Capital, which comprises common shareholders' equity, net of deductions for goodwill, intangible assets, pension assets, certain deferred tax assets and other items, which may include a portion of expected credit loss provisions, divided by risk-weighted assets. The CET1 Ratio is calculated in accordance with OSFI's Capital Adequacy Requirements (CAR) Guideline.

**Common Shareholders' Equity** is the most permanent form of capital. For regulatory capital purposes, common shareholders' equity comprises common shareholders' equity, net of capital deductions.

**Credit and Counterparty Risk** is the potential for credit loss due to the failure of an obligor (i.e., a borrower, endorser, guarantor or counterparty) to repay a loan or honour another predetermined financial obligation.

**Derivatives** are contracts, requiring no initial or little investment, with a value that is derived from movements in underlying interest or foreign exchange rates, equity or commodity prices or other indices. Derivatives are used to transfer, modify or reduce current or expected risks from changes in rates and prices.

**Dividend Payout Ratio** represents common share dividends as a percentage of net income available to common shareholders. It is computed by dividing dividends per share by basic earnings per share. Adjusted dividend payout ratio is calculated in the same manner, using adjusted net income.

**Earnings per Share (EPS)** is calculated by dividing net income, after deducting preferred share dividends and distributions on other equity instruments, by the average number of common shares outstanding. Adjusted EPS is calculated in the same manner, using adjusted net income. Diluted EPS, which is BMO's basis for measuring performance, adjusts for possible conversions of financial instruments into common shares if those conversions would reduce EPS, and is more fully explained in Note 23 of the consolidated financial statements.

**Earnings Sensitivity** is a measure of the impact of potential changes in interest rates on the projected 12-month pre-tax net income of a portfolio of assets, liabilities and off-balance sheet positions in response to prescribed parallel interest rate movements, with interest rates floored at zero.

**Economic Capital** is an expression of the enterprise's capital demand requirement relative to its view of the economic risks in its underlying business activities. It represents management's estimation of the likely magnitude of economic losses that could occur should severely adverse situations arise. Economic capital is calculated for various types of risk, including credit, market (trading and non-trading), operational non-financial, business and insurance, based on a one-year time horizon using a defined confidence level.

**Economic Value Sensitivity** is a measure of the impact of potential changes in interest rates on the market value of a portfolio of assets, liabilities and off-balance sheet positions in response to prescribed parallel interest rate movements, with interest rates floored at zero.

**Efficiency Ratio (or Expense-to-Revenue Ratio)** is a measure of productivity. It is calculated as non-interest expense divided by total revenue on a taxable equivalent basis in the operating groups), expressed as a percentage.

**Efficiency Ratio, net of CCPB**, is calculated as non-interest expense divided by total revenue, net of insurance claims, commissions and changes in policy benefit liabilities (CCPB). The adjusted efficiency ratio, net of CCPB, is calculated in the same manner, utilizing adjusted revenue, net of CCPB, and adjusted non-interest expense.

**Environmental and Social Risk** is the potential for loss or harm, directly or indirectly, resulting from environmental or social factors that impact BMO or its customers, and BMO's impact on the environment.

**Fair Value** is the amount of consideration that would be agreed upon in an arm's-length transaction between knowledgeable, willing parties who are under no compulsion to act in an orderly market transaction.

**Forwards and Futures** are contractual agreements to either buy or sell a specified amount of a currency, commodity, interest-rate-sensitive financial instrument or security at a specified price and date in the future. Forwards are customized contracts transacted in the over-the-counter market. Futures are transacted in standardized amounts on regulated exchanges and are subject to daily cash margin requirements.

**Gross impaired loans and acceptances (GIL)** are calculated as the credit impaired balance of loans and customers' liability under acceptances, excluding purchased credit impaired loans.

**Hedging** is a risk management technique used to neutralize, manage or offset interest rate, foreign currency, equity, commodity or credit risk exposures arising from normal banking activities.

**Impaired Loans** are loans for which there is no longer reasonable assurance of the timely collection of principal or interest.

**Incremental Risk Charge (IRC)** complements the VaR and SVaR metrics and represents an estimate of the default and migration risks of non-securitization products held in the trading book with exposure to interest rate risk, measured over a one-year horizon at a 99.9% confidence level.

**Insurance Risk** is the potential for loss as a result of actual experience differing from that assumed when an insurance product was designed and priced, and comprises claims risk, policyholder behaviour risk and expense risk.

**Insurance Revenue, net of CCPB,** is insurance revenue, net of insurance claims, commissions and changes in policy benefit liabilities (CCPB).

**Legal and Regulatory Risk** is the potential for loss or harm resulting from a failure to comply with laws or satisfy contractual obligations or regulatory requirements. This includes the risk of failure to: comply with the law (in letter or in spirit) or maintain standards of care; implement legal or regulatory requirements; enforce or comply with contractual terms; assert non-contractual rights; effectively manage disputes; or act in a manner so as to maintain our reputation.

**Leverage Exposures (LE)** consist of on-balance sheet items and specified off-balance sheet items, net of specified adjustments.

**Leverage Ratio** reflects Tier 1 Capital divided by LE.

**Liquidity and Funding Risk** is the potential for loss if we are unable to meet our financial commitments in a timely manner at reasonable prices as they become due. Financial commitments include liabilities to depositors and suppliers, as well as lending, investment and pledging commitments.

**Liquidity Coverage Ratio (LCR)** is a Basel III regulatory metric calculated as the ratio of high-quality liquid assets to total net stressed cash outflows over a thirty-day period under a stress scenario prescribed by OSFI.

**Market Risk** is the potential for adverse changes in the value of our assets and liabilities resulting from changes in market variables such as interest rates, foreign exchange rates, equity and commodity prices and their implied volatilities, and credit spreads, and includes the risk of credit migration and default in our trading book.

**Mark-to-Market** represents the valuation of financial instruments at fair value (as defined above) as of the balance sheet date.

**Model Risk** is the potential for adverse consequences resulting from decisions that are based on incorrect or misused model results. These adverse consequences can include financial loss, poor business decision-making and damage to reputation.

**Net Interest Income** comprises earnings on assets, such as loans and securities, including interest and certain dividend income, less interest expense paid on liabilities, such as deposits. Net interest income, excluding trading, is presented on a basis that excludes trading-related interest income.

**Net Interest Margin** is the ratio of net interest income to average earning assets, expressed as a percentage or in basis points. Net interest margin, excluding trading, is computed in the same manner, excluding trading-related interest income and earning assets.

**Net Non-Interest Revenue** is non-interest revenue, net of insurance claims, commissions and changes in policy benefit liabilities (CCPB).

**Net Promoter Score (NPS)** is the percentage of surveyed customers who would recommend BMO to a friend or colleague. Data is gathered in a survey that uses a 0–10 point scale. "Detractors" are defined as those who provide a rating of 0–6, "Passives" are defined as those who provide a rating of 7 or 8, and "Promoters" are defined as those who provide a rating of 9 or 10. The NPS score is calculated by subtracting the percentage of "Detractors" from the percentage of "Promoters".

**Notional Amount** refers to the principal amount used to calculate interest and other payments under derivative contracts. The principal amount does not change hands under the terms of a derivative contract, except in the case of cross-currency swaps.

**Off-Balance Sheet Financial Instruments** consist of a variety of financial arrangements offered to clients, which include credit derivatives, written put options, backstop liquidity facilities, standby letters of credit, performance guarantees, credit enhancements, commitments to extend credit, securities lending, documentary and commercial letters of credit, and other indemnifications.

**Office of the Superintendent of Financial Institutions (OSFI) Canada** is the government agency responsible for regulating banks, insurance companies, trust companies, loan companies and pension plans in Canada.

**Operating Leverage** is the difference between revenue and non-interest expense growth rates. Adjusted operating leverage is the difference between adjusted revenue and adjusted non-interest expense growth rates.

**Operating Leverage, net of CCPB,** is the difference between revenue, net of CCPB (net revenue) and non-interest expense growth rates. Adjusted net operating leverage, is the difference between adjusted revenue, net of CCPB, and adjusted non-interest expense growth rates. The bank evaluates performance using adjusted revenue, net of CCPB.

**Operational Non-Financial Risk (ONFR)** encompasses a wide range of non-financial risks, including those related to business change, customer trust, reputation and data that can result in financial loss. These losses can stem from inadequate or failed internal processes or systems, human error or misconduct, and external events that may directly or indirectly impact the fair value of assets we fold in our credit or investment portfolios. Examples of these risks include cyber and cloud security risk, technology risk, fraud risk, business continuity risk and human resources risk, but exclude legal and regulatory risk, credit risk, market risk, liquidity risk and other types of financial risk.

**Options** are contractual agreements that convey to the purchaser the right but not the obligation to either buy or sell a specified amount of a currency, commodity, interest-rate-sensitive financial instrument or security at a fixed future date or at any time within a fixed future period.

**Pre-Provision, Pre-Tax Earnings (PPPT)** is calculated as income before the provision for income taxes and provision for/(recovery of) credit losses. We use PPPT on both a reported and adjusted basis to assess our ability to generate sustained earnings growth excluding credit losses, which are impacted by the cyclical nature of a credit cycle.

**Provision for Credit Losses (PCL)** is a charge to income that represents an amount deemed adequate by management to fully provide for impairment in a portfolio of loans and acceptances and other credit instruments, given the composition of the portfolio, the probability of default, the economic environment and the allowance for credit losses already established. PCL can comprise both a provision for credit losses on impaired loans and a provision for credit losses on performing loans. For more information, refer to the Credit and Counterparty Risk – Provision for Credit Losses and Critical Accounting Estimates and Judgments – Allowance for Credit Losses sections and Note 4 of the consolidated financial statements.

**Reputation Risk** is the potential for loss or harm to the BMO brand. It can arise even if other risks are managed effectively.

**Return on Equity or Return on Common Shareholders' Equity (ROE)** is calculated as net income, less preferred dividends and distributions on other equity instruments, as a percentage of average common shareholders' equity. Common shareholders' equity comprises common share capital, contributed surplus, accumulated other comprehensive income (loss) and retained earnings. Adjusted ROE is calculated using adjusted net income rather than net income.

**Return on Tangible Common Equity (ROTCE)** is calculated as net income available to common shareholders, adjusted for the amortization of acquisition-related intangible assets, as a percentage of average tangible common equity. Adjusted ROTCE is calculated using adjusted net income rather than net income.

**Risk-Weighted Assets (RWA)** are defined as on-balance sheet and off-balance sheet exposures that are risk-weighted based on guidelines established by OSFI. The measure is used for capital management and regulatory reporting purposes.

**Securities Borrowed or Purchased under Resale Agreements** are low-cost, low-risk instruments, often supported by the pledge of cash collateral, which arise from transactions that involve the borrowing or purchasing of securities.

**Securities Lent or Sold under Repurchase Agreements** are low-cost, low-risk liabilities, often supported by cash collateral, which arise from transactions that involve the lending or selling of securities.

**Securitization** is the practice of selling pools of contractual debts, such as residential mortgages, auto loans and credit card debt obligations, to third parties or trusts, which then typically issue a series of asset-backed securities to investors to fund the purchase of the contractual debts.

**Strategic Risk** arises from the possibility that the bank could experience financial loss or other types of harm due to changes in the external business environment and failure to respond effectively to these changes as a result of inaction, inappropriate strategies or poor implementation of strategies. Strategic risk also includes business risk, which arises from the specific business activities of the enterprise, and the effects these could have on its earnings.

**Stressed Value at Risk (SVaR)** measures the maximum loss likely to be experienced in the trading and underwriting portfolios, measured at a 99% confidence level over a one-day holding period, with model inputs calibrated to historical data from a period of significant financial stress. SVaR is calculated for specific classes of risk in BMO's trading and underwriting activities related to interest rates, foreign exchange rates, credit spreads, equity and commodity prices and their implied volatilities.

**Structured Entities (SEs)** include entities for which voting or similar rights are not the dominant factor in determining control of the entity. BMO is required to consolidate a SE if it controls the entity by having power over the entity, exposure to variable returns as a result of its involvement and the ability to exercise power to affect the amount of those returns.

**Structural (Non-Trading) Market Risk** comprises interest rate risk arising from banking activities (loans and deposits) and foreign exchange risk arising from foreign currency operations and exposures.

**Swaps** are contractual agreements between two parties to exchange a series of cash flows. The various swap agreements that BMO enters into are as follows:

- *Commodity swaps* – counterparties generally exchange fixed-rate and floating rate payments based on a notional value of a single commodity.
- *Credit default swaps* – one counter party pays the other a fee in exchange for an agreement by the other counterparty to make a payment if a credit event occurs, such as bankruptcy or failure to pay.
- *Cross-currency interest rate swaps* – fixed rate and floating-rate interest payments and principal amounts are exchanged in different currencies. Cross-currency swaps – fixed-rate interest payments and principal amounts are exchanged in different currencies.
- *Equity swaps* – counterparties exchange the return on an equity security or a group of equity securities for a return based on a fixed or floating interest rate or the return on another equity security or group of equity securities.
- *Interest rate swaps* – counterparties generally exchange fixed-rate and floating rate interest payments based on a notional value in a single currency.
- *Total return swaps* – one counterparty agrees to pay or receive from the other cash amounts based on changes in the value of a reference asset or group of assets, including any returns such as interest earned on these assets, in exchange for amounts that are based on prevailing market funding rates.

**Tangible Common Equity** is calculated as common shareholders' equity, less goodwill and acquisition-related intangible assets, net of related deferred tax liabilities.

**Taxable Equivalent Basis (teb):** Operating group revenue is presented on a taxable equivalent basis (teb). Revenue and the provision for income taxes are increased on tax-exempt securities to an equivalent pre-tax basis to facilitate comparisons of income between taxable and tax-exempt sources. The effective tax rate is also analyzed on a teb basis for consistency of approach, with the offset to operating segment adjustments recorded in Corporate Services.

**Tier 1 Capital** comprises CET1 Capital and **Additional Tier 1 (AT1) Capital**. AT1 Capital consists of preferred shares and other AT1 Capital instruments, less regulatory deductions.

**Tier 1 Capital Ratio** reflects Tier 1 Capital divided by risk-weighted assets.

**Tier 2 Capital** comprises subordinated debentures and may include certain credit loss provisions, less regulatory deductions.

**Total Capital** includes Tier 1 and Tier 2 Capital.

**Total Capital Ratio** reflects Total Capital divided by risk-weighted assets.

**Total Loss Absorbing Capacity (TLAC)** comprises Total Capital and senior unsecured debt subject to the Canadian Bail-In Regime, less regulatory deductions. The largest Canadian banks are required to meet the minimum TLAC Ratio and TLAC Leverage Ratio effective November 1, 2021, as calculated under OSFI's TLAC Guideline.

**Total Loss Absorbing Capacity (TLAC) Ratio** reflects TLAC divided by risk-weighted assets.

**Total Loss Absorbing Capacity (TLAC) Leverage Ratio** reflects TLAC divided by leverage exposures.

**Total Shareholder Return:** The annual total shareholder return (TSR) represents the average annual total return earned on an investment in BMO common shares made at the beginning of the respective period. The return includes the change in share price and assumes dividends received were reinvested in additional common shares.

**Trading and Underwriting Market Risk** is associated with buying and selling financial products in the course of meeting customer requirements, including market-making and related financing activities, and assisting clients to raise funds by way of securities issuance.

**Trading-Related Revenue** includes net interest income and non-interest revenue earned from on-balance sheet and off-balance sheet positions undertaken for trading purposes. The management of these positions typically includes marking them to market on daily basis. Trading-related revenue also includes income (expense) and gains (losses) from both on-balance sheet instruments and interest rate, foreign exchange (including spot positions), equity, commodity and credit contracts.

**Value-at-Risk (VaR)** measures the maximum loss likely to be experienced in the trading and underwriting portfolios, measured at a 99% confidence level over a one-day holding period. VaR is calculated for specific classes of risk in BMO's trading and underwriting activities related to interest rates, foreign exchange rates, credit spreads, equity and commodity prices and their implied volatilities.

# Statement of Management's Responsibility for Financial Information

Management of Bank of Montreal (the bank) is responsible for the preparation and presentation of the annual consolidated financial statements, Management's Discussion and Analysis (MD&A) and all other information in the Annual Report.

The consolidated financial statements have been prepared in accordance with International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board and meet the applicable requirements of the Canadian Securities Administrators (CSA) and the Securities and Exchange Commission (SEC) in the United States. The financial statements also comply with the provisions of the *Bank Act (Canada)* and related regulations, including interpretations of IFRS by our regulator, the Office of the Superintendent of Financial Institutions Canada. The MD&A has been prepared in accordance with the requirements of securities regulators, including National Instrument 51-102 *Continuous Disclosure Obligations* of the CSA.

The consolidated financial statements and information in the MD&A necessarily include amounts based on informed judgments and estimates of the expected effects of current events and transactions with appropriate consideration to materiality. In addition, in preparing the financial information we must interpret the requirements described above, make determinations as to the relevancy of information to be included, and make estimates and assumptions that affect reported information. The MD&A also includes information regarding the impact of current transactions and events, sources of liquidity and capital resources, operating trends, risks and uncertainties. Actual results in the future may differ materially from our present assessment of this information because events and circumstances in the future may not occur as expected.

The financial information presented in the bank's Annual Report is consistent with that in the consolidated financial statements.

In meeting our responsibility for the reliability and timeliness of financial information, we maintain and rely on a comprehensive system of internal controls, including organizational and procedural controls, disclosure controls and procedures, and internal control over financial reporting. Our system of internal controls includes written communication of our policies and procedures governing corporate conduct and risk management; comprehensive business planning; effective segregation of duties; delegation of authority and personal accountability; escalation of relevant information for decisions regarding public disclosure; careful selection and training of personnel; and accounting policies that we regularly update. Our internal controls are designed to provide reasonable assurance that transactions are authorized, assets are safeguarded and proper records are maintained and that we are in compliance with all regulatory requirements. The system of internal controls is further supported by a compliance function, which is designed to ensure that we and our employees comply with securities legislation and conflict of interest rules, and by an internal audit staff, which conducts periodic audits of all aspects of our operations.

As of October 31, 2022, we, as the bank's Chief Executive Officer and Chief Financial Officer, have determined that the bank's internal control over financial reporting is effective. We have certified Bank of Montreal's annual filings with the CSA and with the SEC pursuant to National Instrument 52-109, *Certification of Disclosure in Issuers' Annual and Interim Filings* and the *Securities Exchange Act of 1934*.

In order to provide their audit opinions on our consolidated financial statements and on the bank's internal control over financial reporting, the Shareholders' Auditors audit our system of internal controls over financial reporting and conduct work to the extent that they consider appropriate. Their audit opinion on the bank's internal control over financial reporting as of October 31, 2022 is set forth on page 140.

The Board of Directors, based on recommendations from its Audit and Conduct Review Committee, reviews and approves the financial information contained in the Annual Report, including the MD&A. The Board of Directors and its relevant committees oversee management's responsibilities for the preparation and presentation of financial information, maintenance of appropriate internal controls, compliance with legal and regulatory requirements, management and control of major risk areas, and assessment of significant and related party transactions.

The Audit and Conduct Review Committee, which is comprised entirely of independent directors, is also responsible for selecting the Shareholders' Auditors and reviewing the qualifications, independence and performance of both the Shareholders' Auditors and internal audit. The Shareholders' Auditors and the bank's Chief Auditor have full and free access to the Board of Directors, its Audit and Conduct Review Committee and other relevant committees to discuss audit, financial reporting and related matters.

The Office of the Superintendent of Financial Institutions Canada conducts examinations and inquiries into the affairs of the bank as are deemed necessary to ensure that the provisions of the *Bank Act*, with respect to the safety of the depositors, are being duly observed and that the bank is in sound financial condition.

KPMG LLP, the independent auditors appointed by the shareholders of the bank who have audited the consolidated financial statements, have also audited the effectiveness of the bank's internal control over financial reporting as at October 31, 2022 and have issued their report below.

**Darryl White**
Chief Executive Officer

**Tayfun Tuzun**
Chief Financial Officer

Toronto, Canada
December 1, 2022

# Independent Auditor's Report

## To the Shareholders and the Board of Directors of Bank of Montreal

***Opinion***

We have audited the consolidated financial statements of Bank of Montreal (the Bank), which comprise:

- the consolidated balance sheets as at October 31, 2022 and October 31, 2021;
- the consolidated statements of income for the years then ended;
- the consolidated statements of comprehensive income for the years then ended;
- the consolidated statements of changes in equity for the years then ended;
- the consolidated statements of cash flows for the years then ended;
- and notes to the consolidated financial statements, including a summary of significant accounting policies

(Hereinafter referred to as the consolidated financial statements).

In our opinion, the consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Bank as at October 31, 2022 and October 31, 2021, and its consolidated financial performance and its consolidated cash flows for the years then ended in accordance with International Financial Reporting Standards (IFRS) 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 auditor's report.

We are independent of the Bank 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 for the year ended October 31, 2022. These matters were addressed in the context of our 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.

We have determined the matters described below to be the key audit matters to be communicated in our auditor's report.

**Assessment of the Allowances for Credit Losses for Loans**

Refer to Notes 1 and 4 to the consolidated financial statements.

The Bank's allowances for credit losses (ACL) as at October 31, 2022 were $2,998 million. The Bank's ACL consists of allowances for impaired loans and allowances for performing loans (APL), both calculated under the IFRS 9 Financial Instruments expected credit losses framework. APL is calculated for each exposure in the loan portfolio as a function of the key modelled inputs being probability of default (PD), exposure at default (EAD) and loss given default (LGD). In establishing APL, the Bank's methodology attaches probability weightings to three economic scenarios, which represent the Bank's judgment about a range of forecast economic variables – a base case scenario being the Bank's view of the most probable outcome, as well as benign and adverse scenarios. Where there has been a significant increase in credit risk, lifetime APL is recorded; otherwise 12 months of APL are generally recorded. The Bank's methodology for determining significant increase in credit risk is based on the change in PD between the origination date and reporting date and is assessed using probability weighted scenarios. The Bank uses experienced credit judgment (ECJ) to reflect factors not captured in the results produced by the APL models.

We identified the assessment of the ACL for loans as a key audit matter. Significant auditor judgment was required because there was a high degree of measurement uncertainty in the Bank's key modelled inputs, methodology and judgments and their resulting impact on the APL, as described above, including the impact of the current macro-economic environment. Assessing the APL also required significant auditor attention and complex auditor judgment to evaluate the results of audit procedures. Further, specialized skills and knowledge, including experience in the industry, were required to apply audit procedures and evaluate the results of those procedures.

The following are the primary procedures we performed to address this key audit matter. We evaluated the design and tested the operating effectiveness of certain internal controls over the Bank's APL process with the involvement of credit risk, economics, and information technology professionals with specialized skills, industry knowledge and relevant experience. This included internal controls related to (1) monitoring and periodic validation of the models used to derive the key modelled inputs, (2) monitoring of the methodology for identifying significant increase in credit risk, and (3) review of the economic variables, probability weighting of scenarios and ECJ. We also tested the controls over the Bank's APL process related to loan reviews for determination of loan risk grades for wholesale loans. We involved credit risk and economics professionals with specialized skills, industry knowledge and relevant experience, who assisted in evaluating the (1) key modelled inputs and APL methodology including the determination of significant increases in credit risk by evaluating the methodology for compliance with IFRS 9 and re-calculating model monitoring tests in respect of the key modelled inputs and thresholds used for significant increases in credit risk, (2) economic variables and probability weighting of scenarios used in the models by assessing the variables and scenarios against external economic data, and (3) ECJ overlays to the APL used by the Bank by applying our knowledge of the industry and credit judgment to assess management's judgments. For a selection of wholesale loans, we developed an independent estimate of the loan risk grades using the Bank's borrower risk rating scale and compared that to the Bank's assigned loan risk grade.

**Assessment of the Measurement of the Fair Value of Certain Securities**

Refer to Notes 1, 3 and 17 to the consolidated financial statements.

The Bank's securities portfolio included $165,379 million of securities as at October 31, 2022 that are measured at fair value. Included in these amounts are certain securities for which the Bank determines fair value using models that use significant unobservable inputs and third-party net asset valuations (NAVs). Unobservable inputs require the use of significant judgment. Certain of the significant unobservable inputs used in the valuation of such securities are NAVs and prepayment rates.

We identified the assessment of the measurement of the fair value of certain securities as a key audit matter. Significant auditor judgment was required because there was a high degree of measurement uncertainty in the significant unobservable inputs. Significant auditor attention and complex auditor judgment was required to evaluate the results of audit procedures. Further, specialized skills and knowledge, including experience in the industry, were required to apply audit procedures and evaluate the results of those procedures.

The following are the primary procedures we performed to address this key audit matter. We evaluated the design and tested the operating effectiveness of certain internal controls over the Bank's process to determine the fair value of certain securities with the involvement of valuation and information technology professionals with specialized skills, industry knowledge and relevant experience. This included controls related to (1) the assessment of rate sources used in independent price verification, and (2) segregation of duties and access controls. We also evaluated the design and tested the operating effectiveness of the controls related to the 1) review of third-party NAVs, and 2) independent price verification.

We tested, with involvement of valuation professionals with specialized skills, industry knowledge and relevant experience, the fair value of a selection of securities, for which prepayment rates are used in valuation, by developing an independent estimate of fair value and comparing it to the fair value determined by the Bank; and for a selection of securities, we compared the NAVs to external information or developed an independent estimate of fair value and comparing it to the fair value determined by the Bank.

**Assessment of Income Tax Uncertainties**

Refer to Notes 1 and 22 to the consolidated financial statements.

In determining the provision for income taxes, the Bank interprets tax legislation, case law and administrative positions, and, based on its judgment, records a provision for an estimate of the amount required to settle tax obligations.

We identified the assessment of income tax uncertainties as a key audit matter. Significant auditor judgment was required because there was a high degree of subjectivity in assessing the need to record a provision, based on interpretation of tax legislation, case law and administrative positions, for these uncertainties and estimating the amount of such provision, if necessary. This required significant auditor attention and complex auditor judgment to evaluate the results of audit procedures. Further, specialized skills and knowledge, including experience in the industry, were required to apply audit procedures and evaluate the results of those audit procedures.

The following are the primary procedures we performed to address this key audit matter. We evaluated the design and tested the operating effectiveness of certain internal controls over the Bank's process for evaluating income tax uncertainties with the involvement of tax professionals with specialized skills, industry knowledge and relevant experience. This included controls related to the 1) identification of tax uncertainties based on interpretation of tax legislation, case law and administrative positions, and 2) determination of the best estimate of the provision required, if any, to settle these uncertainties. We involved tax professionals with specialized skills, industry knowledge and relevant experience, who assisted in 1) evaluating, based on their knowledge and experience, the Bank's interpretations of tax legislation, case law and administrative positions and the assessment of certain tax uncertainties and expected outcomes, including, if applicable, the measurement thereof, 2) reading advice obtained by the Bank from external specialists and evaluating its impact on the Bank's provision, if necessary, and 3) reading correspondence with taxation authorities and evaluating its impact on the Bank's provision, if necessary.

**Assessment of Insurance-related Liabilities**

Refer to Notes 1 and 14 to the consolidated financial statements.

The Bank's insurance-related liabilities as at October 31, 2022 were $11,201 million. The Bank determines the liabilities for life insurance contracts by applying the Canadian Asset Liability Method for Insurance Contracts, which incorporates best-estimate assumptions. Certain significant assumptions include mortality, policy lapses and future investment yields.

We identified the assessment of insurance-related liabilities as a key audit matter. Significant auditor judgment was required because there was a high degree of measurement uncertainty in the significant assumptions. Significant auditor attention and complex auditor judgment was required to evaluate the results of audit procedures. Further, specialized skills and knowledge, including experience in the industry, were required to apply audit procedures and evaluate the results of those audit procedures.

The following are the primary procedures we performed to address this key audit matter. With the assistance of actuarial professionals with specialized skills, industry knowledge and relevant experience, we evaluated the design and tested the operating effectiveness of internal controls over the assessment of the significant assumptions. We involved these actuarial professionals also in testing the significant assumptions by examining the Bank's internal and external experience for policy lapses and mortality, and examining management's calculations and comparing certain inputs into the future investment yields to externally available data.

***Other Information***

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

- the information included in Management's Discussion and Analysis filed with the relevant Canadian Securities Commissions;
- the information, other than the consolidated financial statements and the auditor's report thereon, included in a document entitled the "Annual Report".

Our opinion on the consolidated financial statements does not cover the other information and we do not and will 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 identified above and, in doing so, consider whether the other information is materially inconsistent with the consolidated financial statements or our knowledge obtained in the audit and remain alert for indications that the other information appears to be materially misstated.

We obtained the information included in Management's Discussion and Analysis and the Annual Report filed with the relevant Canadian Securities Commissions as at the date of this auditor's report. If, based on the work we have performed on this other information, we conclude that there is a material misstatement of this other information, we are required to report that fact in the auditor's report. We have nothing to report in this regard.

***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 IFRS as issued by the International Accounting Standards Board, 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 Bank'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 Bank or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Bank'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 the 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 Bank'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 Bank'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 Bank 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.
- 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.
- Provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Bank 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.
- Determine, from the matters communicated with those charged with governance, 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 auditor's report 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 auditor's report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

KPMG LLP

**Chartered Professional Accountants, Licensed Public Accountants**

The engagement partner on the audit resulting in this auditor's report is Naveen Kumar Kalia.

Toronto, Canada
December 1, 2022

# Report of Independent Registered Public Accounting Firm

## To the Shareholders and the Board of Directors of Bank of Montreal

***Opinion on the Consolidated Financial Statements***

We have audited the accompanying consolidated balance sheets of Bank of Montreal (the Bank) as of October 31, 2022 and 2021, the related consolidated statements of income, comprehensive income, changes in equity, and cash flows for the years then ended, and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Bank as of October 31, 2022 and 2021, and its financial performance and its cash flows for each of the years then ended, in conformity with International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Bank's internal control over financial reporting as of October 31, 2022, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated December 1, 2022 expressed an unqualified opinion on the effectiveness of the Bank's internal control over financial reporting.

***Basis for Opinion***

These consolidated financial statements are the responsibility of the Bank's management. Our responsibility is to express an opinion on these 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 Bank 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 consolidated 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 consolidated 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 consolidated 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 consolidated 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 and Conduct Review 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.

**Assessment of the Allowances for Credit Losses for Loans**

As discussed in Notes 1 and 4 to the consolidated financial statements, the Bank's allowances for credit losses (ACL) as at October 31, 2022 were $2,998 million. The Bank's ACL consists of allowances for impaired loans and allowances for performing loans (APL), both calculated under the IFRS 9 Financial Instruments expected credit losses framework. APL is calculated for each exposure in the loan portfolio as a function of the key modelled inputs being probability of default (PD), exposure at default (EAD) and loss given default (LGD). In establishing APL, the Bank's methodology attaches probability weightings to three economic scenarios, which represent the Bank's judgment about a range of forecast economic variables – a base case scenario being the Bank's view of the most probable outcome, as well as benign and adverse scenarios. Where there has been a significant increase in credit risk, lifetime APL is recorded; otherwise 12 months of APL are generally recorded. The Bank's methodology for determining significant increase in credit risk is based on the change in PD between the origination date and reporting date and is assessed using probability weighted scenarios. The Bank uses experienced credit judgment (ECJ) to reflect factors not captured in the results produced by the APL models.

We identified the assessment of the ACL for loans as a critical audit matter. Significant auditor judgment was required because there was a high degree of measurement uncertainty in the Bank's key modelled inputs, methodology and judgments and their resulting impact on the APL, as described above, including the impact of the macro-economic environment. Assessing the APL also required significant auditor attention and complex auditor judgment to evaluate the results of audit procedures. Further, specialized skills and knowledge, including experience in the industry, were required to apply audit procedures and evaluate the results of those procedures.

The following are the primary procedures we performed to address this critical audit matter. We evaluated the design and tested the operating effectiveness of certain internal controls over the Bank's APL process, with the involvement of credit risk, economics, and information technology professionals with specialized skills, industry knowledge and relevant experience. This included internal controls related to (1) monitoring and periodic validation of the models used to derive the key modelled inputs, (2) monitoring of the methodology for identifying significant increase in credit risk, and (3) review of the economic variables, probability weighting of scenarios and ECJ. We also tested the controls over the Bank's APL process related to loan reviews for determination of loan risk grades for wholesale loans. We involved credit risk and economics professionals with specialized skills, industry knowledge and relevant experience, who assisted in evaluating the (1) key modelled inputs and APL methodology including the determination of significant increases in credit risk by evaluating the methodology for compliance with IFRS 9 and re-calculating model monitoring tests in respect of the key modelled inputs and thresholds used for significant increases in credit risk, (2) economic variables and probability weighting of scenarios used in the models by assessing the variables and scenarios against external economic data, and (3) ECJ overlays to the APL used by the Bank by applying our knowledge of the industry and credit judgment to assess management's judgments. For a selection of wholesale loans, we developed an independent estimate of the loan risk grades using the Bank's borrower risk rating scale, and compared that to the Bank's assigned loan risk grade.

**Assessment of the Measurement of the Fair Value of Certain Securities**
As discussed in Notes 1, 3 and 17 to the consolidated financial statements, the Bank's securities portfolio included $165,379 million of securities as at October 31, 2022 that are measured at fair value. Included in these amounts are certain securities for which the Bank determines fair value using models that use significant unobservable inputs and third-party net asset valuations (NAVs). Unobservable inputs require the use of significant judgment. Certain of the significant unobservable inputs used in the valuation of such securities are NAVs and prepayment rates.

We identified the assessment of the measurement of the fair value of certain securities as a critical audit matter. Significant auditor judgment was required because there was a high degree of measurement uncertainty in the significant unobservable inputs. Significant auditor attention and complex auditor judgment was required to evaluate the results of audit procedures. Further, specialized skills and knowledge, including experience in the industry, were required to apply audit procedures and evaluate the results of those procedures.

The following are the primary procedures we performed to address this critical audit matter. We evaluated the design and tested the operating effectiveness of certain internal controls over the Bank's process to determine the fair value of certain securities with the involvement of valuation and information technology professionals with specialized skills, industry knowledge and relevant experience. This included controls related to (1) the assessment of rate sources used in independent price verification, and (2) segregation of duties and access controls. We also evaluated the design and tested the operating effectiveness of the controls related to the 1) review of third-party NAVs, and 2) independent price verification. We tested, with involvement of valuation professionals with specialized skills, industry knowledge and relevant experience, the fair value of a selection of securities, for which prepayment rates are used in valuation, by developing an independent estimate of fair value and comparing it to the fair value determined by the Bank; and for a selection of securities, we compared the NAVs to external information or developed an independent estimate of fair value, comparing it to the fair value determined by the Bank.

**Assessment of Income Tax Uncertainties**
As discussed in Notes 1 and 22 to the consolidated financial statements, in determining the provision for income taxes, the Bank interprets tax legislation, case law and administrative positions, and, based on its judgment, records a provision for an estimate of the amount required to settle tax obligations.

We identified the assessment of income tax uncertainties as a critical audit matter. Significant auditor judgment was required because there was a high degree of subjectivity in assessing the need to record a provision, based on interpretation of tax legislation, case law and administrative positions, for these uncertainties and estimating the amount of such provision, if necessary. This required significant auditor attention and complex auditor judgment to evaluate the results of audit procedures. Further, specialized skills and knowledge, including experience in the industry, were required to apply audit procedures and evaluate the results of those audit procedures.

The following are the primary procedures we performed to address this critical audit matter. We evaluated the design and tested the operating effectiveness of certain internal controls over the Bank's process for evaluating income tax uncertainties with the involvement of tax professionals with specialized skills, industry knowledge and relevant experience. This included controls related to the 1) identification of tax uncertainties based on interpretation of tax legislation, case law and administrative positions, and 2) determination of the best estimate of the provision required, if any, to settle these uncertainties. We involved tax professionals with specialized skills, industry knowledge and relevant experience, who assisted in 1) evaluating, based on their knowledge and experience, the Bank's interpretations of tax legislation, case law and administrative positions and the assessment of certain tax uncertainties and expected outcomes, including, if applicable, the measurement thereof, 2) reading advice obtained by the Bank from external specialists and evaluating its impact on the Bank's provision, if necessary, and 3) reading correspondence with taxation authorities and evaluating its impact on the Bank's provision, if necessary.

**Assessment of Insurance-related Liabilities**
As discussed in Notes 1 and 14 to the consolidated financial statements, the Bank's insurance-related liabilities as at October 31, 2022 were $11,201 million. The Bank determines the liabilities for life insurance contracts by applying the Canadian Asset Liability Method for Insurance Contracts, which incorporates best-estimate assumptions. Certain significant assumptions include mortality, policy lapses and future investment yields.

We identified the assessment of insurance-related liabilities as a critical audit matter. Significant auditor judgment was required because there was a high degree of measurement uncertainty in the significant assumptions. Significant auditor attention and complex auditor judgment was required to evaluate the results of audit procedures. Further, specialized skills and knowledge, including experience in the industry, were required to apply audit procedures and evaluate the results of those audit procedures.

The following are the primary procedures we performed to address this critical audit matter. With the assistance of actuarial professionals with specialized skills, industry knowledge and relevant experience, we evaluated the design and tested the operating effectiveness of internal controls over the assessment of the significant assumptions. We involved these actuarial professionals also in testing the significant assumptions by examining the Bank's internal and external experience for policy lapses and mortality, and examining management's calculations and comparing certain inputs into the future investment yields to externally available data.

KPMG LLP

**Chartered Professional Accountants, Licensed Public Accountants**
We have served as the Bank's auditor since 2004 and as joint auditor for the prior 14 years.

Toronto, Canada
December 1, 2022

# Report of Independent Registered Public Accounting Firm

## To the Shareholders and Board of Directors of Bank of Montreal

**Opinion on Internal Control over Financial Reporting**

We have audited Bank of Montreal's internal control over financial reporting as of October 31, 2022, based on the criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, the Bank maintained, in all material respects, effective internal control over financial reporting as of October 31, 2022, based on the criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Bank as of October 31, 2022 and 2021, the related consolidated statements of income, comprehensive income, changes in equity and cash flows for the years then ended, and the related notes (collectively, the consolidated financial statements) and our report dated December 1, 2022 expressed an unqualified opinion on those consolidated financial statements.

**Basis for Opinion**

The Bank'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 the accompanying Management's Annual Report on Disclosure Controls and Procedures and Internal Control over Financial Reporting, on page 120 of Management's Discussion and Analysis. Our responsibility is to express an opinion on the Bank'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 Bank 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 of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included 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 generally accepted accounting principles. 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 generally accepted accounting principles, 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.

KPMG LLP

**Chartered Professional Accountants, Licensed Public Accountants**
Toronto, Canada
December 1, 2022

# Consolidated Statement of Income

| For the Year Ended October 31 (Canadian $ in millions, except as noted) | 2022 | 2021 |
|---|---|---|
| **Interest, Dividend and Fee Income** | | |
| Loans | $ 20,464 | $ 15,727 |
| Securities (Note 3) (1) | 5,590 | 3,963 |
| Deposits with banks | 843 | 197 |
| | 26,897 | 19,887 |
| **Interest Expense** | | |
| Deposits | 6,711 | 3,220 |
| Subordinated debt | 227 | 195 |
| Other liabilities (Note 14) | 4,074 | 2,162 |
| | 11,012 | 5,577 |
| **Net Interest Income** | 15,885 | 14,310 |
| **Non-Interest Revenue** | | |
| Securities commissions and fees | 1,082 | 1,107 |
| Deposit and payment service charges | 1,318 | 1,243 |
| Trading revenues (Notes 10 and 17) | 8,250 | 296 |
| Lending fees | 1,440 | 1,391 |
| Card fees | 548 | 442 |
| Investment management and custodial fees | 1,770 | 1,982 |
| Mutual fund revenues | 1,312 | 1,595 |
| Underwriting and advisory fees | 1,193 | 1,421 |
| Securities gains, other than trading (Note 3) | 281 | 591 |
| Foreign exchange gains, other than trading | 181 | 167 |
| Insurance revenue | (157) | 1,941 |
| Share of profit (loss) in associates and joint ventures | 274 | 248 |
| Other | 333 | 452 |
| | 17,825 | 12,876 |
| **Total Revenue** | 33,710 | 27,186 |
| **Provision for Credit Losses** (Note 4) | 313 | 20 |
| **Insurance Claims, Commissions and Changes in Policy Benefit Liabilities** (Note 14) | (683) | 1,399 |
| **Non-Interest Expense** | | |
| Employee compensation (Notes 20 and 21) | 8,795 | 8,322 |
| Premises and equipment (Note 9) | 3,635 | 3,396 |
| Amortization of intangible assets (Note 11) | 604 | 634 |
| Advertising and business development | 517 | 397 |
| Communications | 278 | 264 |
| Professional fees | 788 | 607 |
| Other | 1,577 | 1,889 |
| | 16,194 | 15,509 |
| **Income Before Provision for Income Taxes** | 17,886 | 10,258 |
| Provision for income taxes (Note 22) | 4,349 | 2,504 |
| **Net Income** | $ 13,537 | $ 7,754 |
| **Earnings Per Common Share** (Canadian $) (Note 23) | | |
| Basic | $ 20.04 | $ 11.60 |
| Diluted | $ 19.99 | $ 11.58 |
| Dividends per common share | $ 5.44 | $ 4.24 |

(1) Includes interest income on securities measured at fair value through other comprehensive income and amortized cost, calculated using the effective interest rate method, of $1,945 million for the year ended October 31, 2022 ($889 million in 2021).

The accompanying notes are an integral part of these consolidated financial statements.

**Darryl White**
Chief Executive Officer

**Jan Babiak**
Chair, Audit and Conduct Review Committee

# Consolidated Statement of Comprehensive Income

| For the Year Ended October 31 (Canadian $ in millions) | 2022 | 2021 |
|---|---|---|
| **Net Income** | **$ 13,537** | $ 7,754 |
| **Other Comprehensive Income (Loss), net of taxes** (Note 22) | | |
| Items that may subsequently be reclassified to net income | | |
| Net change in unrealized (losses) on fair value through OCI debt securities | | |
| Unrealized (losses) on fair value through OCI debt securities arising during the year | **(520)** | (161) |
| Reclassification to earnings of (gains) during the year | **(11)** | (43) |
| | **(531)** | (204) |
| Net change in unrealized gains (losses) on cash flow hedges | | |
| (Losses) on derivatives designated as cash flow hedges arising during the year | **(4,999)** | (1,380) |
| Reclassification to earnings of (gains) on derivatives designated as cash flow hedges during the year | **(315)** | (414) |
| | **(5,314)** | (1,794) |
| Net gains (losses) on translation of net foreign operations | | |
| Unrealized gains (losses) on translation of net foreign operations | **3,202** | (2,207) |
| Unrealized gains (losses) on hedges of net foreign operations | **(332)** | 496 |
| Reclassification to earnings of net losses related to divestitures (Note 10) | **29** | – |
| | **2,899** | (1,711) |
| Items that will not be reclassified to net income | | |
| Unrealized gains on fair value through OCI equity securities arising during the year | **1** | 20 |
| Gains on remeasurement of pension and other employee future benefit plans | **659** | 923 |
| Gains (losses) on remeasurement of own credit risk on financial liabilities designated at fair value | **1,282** | (196) |
| | **1,942** | 747 |
| **Other Comprehensive (Loss), net of taxes** (Note 22) | **(1,004)** | (2,962) |
| **Total Comprehensive Income** | **$ 12,533** | $ 4,792 |

The accompanying notes are an integral part of these consolidated financial statements.

Consolidated Financial Statements

# Consolidated Balance Sheet

| As at October 31 (Canadian $ in millions) | 2022 | 2021 |
|---|---|---|
| **Assets** | | |
| **Cash and Cash Equivalents** (Note 2) | **$ 87,466** | $ 93,261 |
| **Interest Bearing Deposits with Banks** (Note 2) | **5,734** | 8,303 |
| **Securities** (Note 3) | | |
| Trading | **108,177** | 104,411 |
| Fair value through profit or loss | **13,641** | 14,210 |
| Fair value through other comprehensive income | **43,561** | 63,123 |
| Debt securities at amortized cost | **106,590** | 49,970 |
| Investments in associates and joint ventures | **1,293** | 1,135 |
| | **273,262** | 232,849 |
| **Securities Borrowed or Purchased Under Resale Agreements** (Note 4) | **113,194** | 107,382 |
| **Loans** (Notes 4 and 6) | | |
| Residential mortgages | **148,880** | 135,750 |
| Consumer instalment and other personal | **86,103** | 77,164 |
| Credit cards | **9,663** | 8,103 |
| Business and government | **309,310** | 239,809 |
| | **553,956** | 460,826 |
| Allowance for credit losses (Note 4) | **(2,617)** | (2,564) |
| | **551,339** | 458,262 |
| **Other Assets** | | |
| Derivative instruments (Note 8) | **48,160** | 36,713 |
| Customers' liability under acceptances (Note 12) | **13,235** | 14,021 |
| Premises and equipment (Notes 1 and 9) | **4,841** | 4,454 |
| Goodwill (Note 11) | **5,285** | 5,378 |
| Intangible assets (Note 11) | **2,193** | 2,266 |
| Current tax assets | **1,421** | 1,588 |
| Deferred tax assets (Note 22) | **1,175** | 1,287 |
| Other (Note 12) | **31,894** | 22,411 |
| | **108,204** | 88,118 |
| **Total Assets** | **$ 1,139,199** | $ 988,175 |
| **Liabilities and Equity** | | |
| **Deposits** (Note 13) | **$ 769,478** | $ 685,631 |
| **Other Liabilities** | | |
| Derivative instruments (Note 8) | **59,956** | 30,815 |
| Acceptances (Note 14) | **13,235** | 14,021 |
| Securities sold but not yet purchased (Note 14) | **40,979** | 32,073 |
| Securities lent or sold under repurchase agreements (Note 6) | **103,963** | 97,556 |
| Securitization and structured entities' liabilities (Notes 6 and 7) | **27,068** | 25,486 |
| Current tax liabilities | **425** | 221 |
| Deferred tax liabilities (Note 22) | **102** | 192 |
| Other (Note 14) | **44,805** | 37,764 |
| | **290,533** | 238,128 |
| **Subordinated Debt** (Note 15) | **8,150** | 6,893 |
| **Total Liabilities** | **1,068,161** | 930,652 |
| **Equity** | | |
| Preferred shares and other equity instruments (Note 16) | **6,308** | 5,558 |
| Common shares (Note 16) | **17,744** | 13,599 |
| Contributed surplus | **317** | 313 |
| Retained earnings | **45,117** | 35,497 |
| Accumulated other comprehensive income | **1,552** | 2,556 |
| **Total Equity** | **71,038** | 57,523 |
| **Total Liabilities and Equity** | **$ 1,139,199** | $ 988,175 |

The accompanying notes are an integral part of these consolidated financial statements.

# Consolidated Statement of Changes in Equity

| For the Year Ended October 31 (Canadian $ in millions) | 2022 | 2021 |
|---|---|---|
| **Preferred Shares and Other Equity Instruments** (Note 16) | | |
| Balance at beginning of year | $ 5,558 | $ 6,598 |
| Issued during the year | 2,250 | – |
| Redeemed during the year | (1,500) | (1,040) |
| Balance at End of Year | 6,308 | 5,558 |
| **Common Shares** (Note 16) | | |
| Balance at beginning of year | 13,599 | 13,430 |
| Issued under the Shareholder Dividend Reinvestment and Share Purchase Plan | 999 | – |
| Issued under the Stock Option Plan | 57 | 122 |
| Treasury shares sold/purchased | (17) | 47 |
| Issued to finance a portion of the announced acquisition (Notes 10 and 16) | 3,106 | – |
| Balance at End of Year | 17,744 | 13,599 |
| **Contributed Surplus** | | |
| Balance at beginning of year | 313 | 302 |
| Stock option expense, net of options exercised (Note 20) | 3 | 10 |
| Other | 1 | 1 |
| Balance at End of Year | 317 | 313 |
| **Retained Earnings** | | |
| Balance at beginning of year | 35,497 | 30,745 |
| Net income | 13,537 | 7,754 |
| Dividends on preferred shares and distributions payable on other equity instruments (Note 16) | (231) | (244) |
| Dividends on common shares (Note 16) | (3,634) | (2,746) |
| Equity issue expense and premium paid on redemption of preferred shares | (52) | (6) |
| Net discount on sale of treasury shares | – | (6) |
| Balance at End of Year | 45,117 | 35,497 |
| **Accumulated Other Comprehensive Income (Loss) on Fair Value through OCI Securities, net of taxes** (Note 22) | | |
| Balance at beginning of year | 171 | 355 |
| Unrealized (losses) on fair value through OCI debt securities arising during the year | (520) | (161) |
| Unrealized gains on fair value through OCI equity securities arising during the year | 1 | 20 |
| Reclassification to earnings of (gains) during the year | (11) | (43) |
| Balance at End of Year | (359) | 171 |
| **Accumulated Other Comprehensive Income (Loss) on Cash Flow Hedges, net of taxes** (Note 22) | | |
| Balance at beginning of year | 185 | 1,979 |
| (Losses) on derivatives designated as cash flow hedges arising during the year (Note 8) | (4,999) | (1,380) |
| Reclassification to earnings of (gains) on derivatives designated as cash flow hedges during the year | (315) | (414) |
| Balance at End of Year | (5,129) | 185 |
| **Accumulated Other Comprehensive Income on Translation of Net Foreign Operations, net of taxes** (Note 22) | | |
| Balance at beginning of year | 2,269 | 3,980 |
| Unrealized gains (losses) on translation of net foreign operations | 3,202 | (2,207) |
| Unrealized gains (losses) on hedges of net foreign operations | (332) | 496 |
| Reclassification to earnings of net losses related to divestitures (Note 10) | 29 | – |
| Balance at End of Year | 5,168 | 2,269 |
| **Accumulated Other Comprehensive Income (Loss) on Pension and Other Employee Future Benefit Plans, net of taxes** (Note 21) | | |
| Balance at beginning of year | 285 | (638) |
| Gains on remeasurement of pension and other employee future benefit plans (Note 21) | 659 | 923 |
| Balance at End of Year | 944 | 285 |
| **Accumulated Other Comprehensive Income (Loss) on Own Credit Risk on Financial Liabilities Designated at Fair Value, net of taxes** (Note 22) | | |
| Balance at beginning of year | (354) | (158) |
| Gains (losses) on remeasurement of own credit risk on financial liabilities designated at fair value | 1,282 | (196) |
| Balance at End of Year | 928 | (354) |
| **Total Accumulated Other Comprehensive Income** | 1,552 | 2,556 |
| **Total Equity** | $ 71,038 | $ 57,523 |

The accompanying notes are an integral part of these consolidated financial statements.

# Consolidated Statement of Cash Flows

| For the Year Ended October 31 (Canadian $ in millions) | 2022 | 2021 |
|---|---|---|
| **Cash Flows from Operating Activities** | | |
| Net Income | $ **13,537** | $ 7,754 |
| Adjustments to determine net cash flows provided by (used in) operating activities: | | |
| Securities (gains), other than trading (Note 3) | **(281)** | (591) |
| Depreciation of premises and equipment (Note 9) | **780** | 791 |
| Depreciation of other assets | **96** | 140 |
| Amortization of intangible assets (Note 11) | **604** | 634 |
| Write-down of goodwill (Notes 10 and 11) | **–** | 779 |
| Provision for credit losses (Note 4) | **313** | 20 |
| Deferred taxes (Note 22) | **475** | 184 |
| Net loss on divestitures (Note 10) | **29** | – |
| Changes in operating assets and liabilities: | | |
| Net (increase) decrease in trading securities | **1,698** | (10,447) |
| Change in derivative instruments – (Increase) decrease in derivative asset | **(13,376)** | 542 |
| – Increase in derivative liability | **27,800** | 529 |
| Net (increase) decrease in current tax asset | **328** | (539) |
| Net increase in current tax liability | **156** | 143 |
| Change in accrued interest – (Increase) decrease in interest receivable | **(1,170)** | 75 |
| – Increase (decrease) in interest payable | **1,312** | (366) |
| Changes in other items and accruals, net | **(6,222)** | 751 |
| Net increase in deposits | **45,232** | 52,244 |
| Net (increase) in loans | **(74,748)** | (23,748) |
| Net increase in securities sold but not yet purchased | **7,515** | 3,545 |
| Net increase in securities lent or sold under repurchase agreements | **810** | 12,866 |
| Net (increase) in securities borrowed or purchased under resale agreements | **(954)** | (289) |
| Net increase (decrease) in securitization and structured entities' liabilities | **1,023** | (968) |
| Net Cash Provided by Operating Activities | **4,957** | 44,049 |
| **Cash Flows from Financing Activities** | | |
| Net increase in liabilities of subsidiaries | **6,927** | – |
| Proceeds from issuance of covered bonds (Note 13) | **12,443** | 4,396 |
| Redemption/buyback of covered bonds (Note 13) | **(5,829)** | (4,074) |
| Proceeds from issuance of subordinated debt (Note 15) | **2,337** | 1,000 |
| Repayment of subordinated debt (Note 15) | **(850)** | (2,250) |
| Proceeds from issuance of preferred shares and other equity instruments, net of issuance costs (Note 16) | **2,245** | – |
| Redemption of preferred shares (Note 16) | **(1,500)** | (1,046) |
| Net proceeds from issuance of common shares (Note 16) | **3,113** | 112 |
| Net proceeds from the sale (purchase) of treasury shares (Note 16) | **(17)** | 47 |
| Cash dividends and distributions paid | **(2,595)** | (2,980) |
| Repayment of lease liabilities | **(294)** | (327) |
| Net Cash Provided by (Used in) Financing Activities | **15,980** | (5,122) |
| **Cash Flows from Investing Activities** | | |
| Net decrease in interest bearing deposits with banks | **3,316** | 144 |
| Purchases of securities, other than trading | **(96,598)** | (49,620) |
| Maturities of securities, other than trading | **21,204** | 27,377 |
| Proceeds from sales of securities, other than trading | **42,829** | 22,720 |
| Premises and equipment – net (purchases) (Note 9) | **(777)** | (484) |
| Purchased and developed software – net (purchases) (Note 11) | **(671)** | (499) |
| Net proceeds from divestitures (Note 10) | **1,226** | 63 |
| Net Cash (Used in) Investing Activities | **(29,471)** | (299) |
| Effect of Exchange Rate Changes on Cash and Cash Equivalents | **2,739** | (2,775) |
| Net increase (decrease) in Cash and Cash Equivalents | **(5,795)** | 35,853 |
| Cash and Cash Equivalents at Beginning of Year | **93,261** | 57,408 |
| **Cash and Cash Equivalents at End of Year** (Note 2) | $ **87,466** | $ 93,261 |
| **Supplemental Disclosure of Cash Flow Information** | | |
| Net cash provided by operating activities includes: | | |
| Interest paid in the year (1) | $ **9,557** | $ 5,864 |
| Income taxes paid in the year | $ **2,374** | $ 2,167 |
| Interest received in the year | $ **24,046** | $ 18,323 |
| Dividends received in the year | $ **1,823** | $ 1,732 |

(1) Includes dividends paid on securities sold but not yet purchased.

The accompanying notes are an integral part of these consolidated financial statements.

Certain comparative figures have been reclassified to conform with the current year's presentation.

# Note 1: Basis of Presentation

Bank of Montreal (the bank or BMO) is a chartered bank under the *Bank Act (Canada)* and is a public company incorporated in Canada. We are a highly diversified financial services company, providing a broad range of personal and commercial banking, wealth management and investment banking products and services. The bank's head office is at 129 rue Saint-Jacques, Montreal, Quebec. Our executive offices are at 100 King Street West, 1 First Canadian Place, Toronto, Ontario. Our common shares are listed on the Toronto Stock Exchange (TSX) and the New York Stock Exchange.

We have prepared these consolidated financial statements in accordance with International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board (IASB). We also comply with interpretations of IFRS by our regulator, the Office of the Superintendent of Financial Institutions of Canada (OSFI).

Our consolidated financial statements have been prepared on a historic cost basis, except for the revaluation of the following items: assets and liabilities held for trading; financial assets and liabilities measured or designated at fair value through profit or loss (FVTPL); financial assets measured or designated at fair value through other comprehensive income (FVOCI); financial assets and financial liabilities designated as hedged items in qualifying fair value hedge relationships; cash-settled share-based payment liabilities; defined benefit pension and other employee future benefit liabilities; and insurance-related liabilities.

These consolidated financial statements were authorized for issue by the Board of Directors on December 1, 2022.

## Basis of Consolidation

These consolidated financial statements are inclusive of the financial statements of our subsidiaries as at October 31, 2022. We conduct business through a variety of corporate structures, including subsidiaries, structured entities (SEs), associates and joint ventures. Subsidiaries are those entities where we exercise control through our ownership of the majority of the voting shares. We also hold interests in SEs, which we consolidate when we control the SEs. These are more fully described in Note 7. All of the assets, liabilities, revenues and expenses of our subsidiaries and consolidated SEs are included in our consolidated financial statements. All intercompany transactions and balances are eliminated on consolidation.

We hold investments in associates, where we exert significant influence over operating and financing decisions (generally companies in which we own between 20% and 50% of the voting shares). These are accounted for using the equity method. The equity method is also applied to our investments in joint ventures, which are entities where we exercise joint control through an agreement with other shareholders. Under the equity method of accounting, investments are initially recorded at cost, and the carrying amount is increased or decreased to recognize our share of investee's net income or loss, including other comprehensive income or loss. Additional information regarding accounting for investments in associates and joint ventures is included in Note 3.

## Significant Accounting Policies

To facilitate a better understanding of our consolidated financial statements, we have disclosed our significant accounting policies throughout the following notes with the related financial disclosures by major caption:



## Translation of Foreign Currencies

We conduct business in a variety of foreign currencies and present our consolidated financial statements in Canadian dollars, which is our functional currency. Monetary assets and liabilities, as well as non-monetary assets and liabilities measured at fair value that are denominated in foreign currencies, are translated into Canadian dollars at the exchange rate in effect at the balance sheet date. Non-monetary assets and liabilities not measured at fair value are translated into Canadian dollars at historical rates. Revenues and expenses denominated in foreign currencies are translated using the average exchange rate for the year.

Unrealized gains and losses arising from translating our net investment in foreign operations into Canadian dollars, net of related hedging activities and applicable income taxes, are included in our Consolidated Statement of Comprehensive Income within net gains (losses) on translation of net foreign operations. When we dispose of a foreign operation such that control, significant influence or joint control is lost, the cumulative amount of the translation gain (loss) and any applicable hedging activities and related income taxes is reclassified to our Consolidated Statement of Income as part of the gain or loss on disposition.

Foreign currency translation gains and losses on equity securities measured at FVOCI that are denominated in foreign currencies are included in accumulated other comprehensive income on FVOCI equity securities, net of taxes, in our Consolidated Statement of Changes in Equity. All other foreign currency translation gains and losses are included in foreign exchange gains, other than trading, in our Consolidated Statement of Income as they arise.

From time to time, we enter into foreign exchange hedge contracts to reduce our exposure to changes in the value of foreign currencies. Realized and unrealized gains and losses that arise on the mark-to-market of foreign exchange contracts related to economic hedges are included in non-interest revenue in our Consolidated Statement of Income. Changes in the fair value of derivative contracts that qualify as accounting hedges are recorded in our Consolidated Statement of Comprehensive Income within net change in unrealized gains (losses) on derivatives designated as cash flow hedges, with the spot/forward differential (the difference between the foreign currency exchange rate at the inception of the contract and the rate at the end of the contract) recorded in interest income (expense) over the term of the hedge.

## Revenue

*Dividend Income*

Dividend income is recognized when the right to receive payment is established. This is the ex-dividend date for listed equity securities.

*Fee Income*

**Securities commissions and fees** are earned in BMO Wealth Management and BMO Capital Markets on brokerage transactions executed for customers, generally as a fixed fee per share traded, and the commissions and related clearing expense are recognized on trade date. There are also fees based on a percentage of the customer's portfolio holdings that entitle clients to investment advice and a certain number of trades, which are recorded over the period to which the fees relate.

**Deposit and payment service charges** are primarily earned in Personal and Commercial Banking and include monthly account maintenance fees and other activity-based fees earned on deposit and cash management services. Fees are recognized over time when account maintenance and cash management services are provided, or at a point in time when an income-generating activity is performed.

**Card fees** arise in Personal and Commercial Banking and primarily include interchange income, late fees and annual fees. Card fees are recorded when the related services are provided, except for annual fees, which are recorded evenly throughout the year. Interchange income is calculated as a percentage of the transaction amount and/or a fixed price per transaction, as established by the payment network, and is recognized when the card transaction is settled. Reward costs for our cards are recorded as a reduction in card fees.

**Investment management and custodial fees** are earned in BMO Wealth Management and are based primarily on the balance of assets under management or assets under administration, as at the period end, for investment management, custodial, estate and trustee services provided. Fees are recorded over the period the services are performed.

**Mutual fund revenues** arise in BMO Wealth Management and are earned on fund management services which are primarily calculated and recorded based on a percentage of the fund's net asset value. The Fees are recorded over the period the services are performed.

**Underwriting and advisory fees** are earned in BMO Capital Markets and arise from securities offerings in which we act as an underwriter or agent, structuring and administering loan syndications, and fees earned from providing merger-and-acquisition services and structuring advice. Underwriting and advisory fees are generally recognized when the services are completed.

## Leases

We are lessors in both financing leases and operating leases. Leases are classified as financing leases if they transfer substantially all the risks and rewards incidental to ownership of the leased asset to the lessee. Otherwise they are classified as operating leases, as we retain substantially all the risks and rewards of asset ownership.

As lessor in a financing lease, a loan is recognized equal to the investment in the lease, which is calculated as the present value of the minimum payments to be received from the lessee, discounted at the interest rate implicit in the lease, plus any unguaranteed residual value we expect to recover at the end of the lease. Finance lease income is recognized in interest, dividend and fee income, loans, in our Consolidated Statement of Income.

Assets under operating leases are recorded in other assets in our Consolidated Balance Sheet. Rental income is recognized on a straight-line basis over the term of the lease in non-interest revenue, other, in our Consolidated Statement of Income. Depreciation on these assets is recognized on a straight-line basis over the life of the lease in non-interest expense, other, in our Consolidated Statement of Income.

Refer to Note 9 for our policy on lessee accounting.

## Assets Held-for-Sale

Non-current non-financial assets classified as held-for-sale are measured at the lower of their carrying amount and fair value less costs to sell and are presented within other assets in our Consolidated Balance Sheet. Subsequent to its initial classification, a non-current asset is no longer depreciated or amortized, and any subsequent write-down in fair value less costs to sell is recognized in non-interest revenue, other, in our Consolidated Statement of Income.

## Changes in Accounting Policies

*Interbank Offered Rate (IBOR) Reform – Phase 2 Amendments*

Effective November 1, 2020, we early adopted the IASB's IBOR Phase 2 amendments to IFRS 9 *Financial Instruments* (IFRS 9), IAS 39 *Financial Instruments: Recognition and Measurement* (IAS 39), IFRS 7 *Financial Instruments: Disclosures* (IFRS 7) and IFRS 4 *Insurance Contracts* (IFRS 4), as well as IFRS 16 *Leases*. These amendments address issues that arise from implementation of IBOR reform, where IBORs will be replaced with alternative benchmark rates.

For financial instruments at amortized cost, the amendments introduce a practical expedient such that if a change in the contractual cash flows is as a direct consequence of IBOR reform and occurs on an economically equivalent basis, the change will be accounted for by updating the effective interest rate with no immediate gain or loss recognized. The amendments also provide additional temporary relief from applying specific IAS 39 hedge accounting requirements to hedging relationships affected by IBOR reform. For example, there is an exemption from the requirement to discontinue hedge accounting when changes to hedge documentation are solely the result of IBOR reform.

With the cessation dates for London Interbank Offered Rate (LIBOR) determined and the transition from IBORs to alternative reference rates (ARRs) well underway, and as both a holder and an issuer of IBOR-based instruments, BMO continues to be exposed to financial, operational, legal and regulatory, and reputational risks. These risks arise principally from amending legacy contracts from LIBOR to an ARR or existing fallback clauses for new ARRs and the resulting impact on economic risk management, as well as updating hedge designations as the new ARRs emerge. Our enterprise IBOR Transition Office (ITO) continues to coordinate and oversee the transition from IBORs to ARRs, with a focus on managing and mitigating internal risks, as well as managing our client relationships. The ITO, sponsored and supported by senior management has a global mandate, including to address the bank's industry and regulatory engagement, internal and external communications, technology and operations modifications, introduction of new products, migration of existing client contracts, program strategy and governance, and to evaluate financial reporting impacts, including impacts on hedge accounting. As the market continues to develop, we have added and will continue to add ARR-based products to our suite of offerings.

We adhered to the International Swaps and Derivatives Association Fallbacks Protocol (ISDA Protocol), which took effect on January 25, 2021. The ISDA Protocol provides specific fallbacks depending on whether the relevant IBOR (for example, USD LIBOR) has been permanently discontinued or is temporarily unavailable. We continue to incorporate contractual fallback provisions in new IBOR-based cash products in order to ensure there is an alternative benchmark rate at the time of the relevant IBOR cessation.

On March 5, 2021, the Financial Conduct Authority (FCA) confirmed that LIBOR settings will cease to be provided by any administrator immediately after December 31, 2021 for all Sterling, Euro, Swiss Franc and Japanese Yen settings as well as the 1-week and 2-month USD LIBOR settings. The remaining USD LIBOR settings will cease to be provided immediately after June 30, 2023. U.S. prudential regulators have issued supervisory guidance that the extension of these certain USD LIBOR settings to June 30, 2023 applies only to legacy contracts; new issuances of LIBOR-based instruments must cease by December 31, 2021. The ITO adjusted all impacted project plans to align with these timelines.

As planned, BMO transitioned all exposure to Sterling, Euro, Swiss Franc and Japanese Yen LIBOR, as well as the 1-week and 2-month USD LIBOR to ARRs, in advance of the December 31, 2021 discontinuation of such settings.

In addition, BMO ceased issuing new USD LIBOR-based loans and financial instruments after December 31, 2021, except in permitted circumstances, in compliance with U.S. prudential regulator supervisory guidance. As we approach the June 30, 2023 cessation date for the remaining USD LIBOR settings, overall USD LIBOR exposures are being reduced and existing USD LIBOR derivative exposures are expected to largely transition when central counterparties convert existing LIBOR trades to Secured Overnight Financing Rate by the cessation date.

On December 16, 2021, the Canadian Alternative Reference Rate working group (CARR) recommended the administrator, Refinitiv Benchmark Services UK Limited (RBSL), to cease publication of Canadian Dollar Offered Rate (CDOR) settings immediately after June 28, 2024, using a two-stage transition approach. By the end of the first stage on June 30, 2023, CARR expects that all new derivative contracts and securities will use the Canadian Overnight Repo Rate Average (CORRA), with the exception of derivatives that hedge or reduce CDOR exposures from derivatives or securities transacted before June 30, 2023, or loan agreements entered into before June 28, 2024. All remaining CDOR exposures should be transitioned to CORRA by June 28, 2024, marking the end of the second stage. On May 16, 2022, following public consultation, RBSL announced that all remaining CDOR settings will cease publication immediately after June 28, 2024, in line with CARR recommendations. The ITO adjusted all affected project plans as a result of the RBSL announcement.

The following table presents quantitative information for financial instruments that referenced certain IBORs as at October 31, 2021, which were either due to mature after June 30, 2023 for USD LIBOR settings other than 1-week and 2-month US LIBOR, or after December 31, 2021 for all other in-scope IBORs, or are demand facilities with no maturity date. The quantitative information for October 31, 2022 includes financial instruments that referenced remaining USD LIBOR settings due to mature after June 30, 2023, or after June 28, 2024 for remaining CDOR and bankers' acceptance (BA) rate settings, or are demand facilities that will be subject to remediation to amend the benchmark interest rate. Changes in our exposure during fiscal 2022 did not result in significant changes to the risks arising from transition since adoption of these Phase 2 amendments. In the normal course of business, our exposures may continue to fluctuate with no significant impact expected on our IBOR conversion plans.

| (Canadian $ in millions) | | **2022** | | | 2021 |
|---|---|---|---|---|---|
| | **USD LIBOR** | **CDOR** | USD LIBOR | GBP LIBOR | Other (1) |
| Non-derivative assets (2) | **48,162** | **37,101** | 91,991 | 730 | 884 |
| Non-derivative liabilities (2) | **3,335** | **4,583** | 3,043 | 678 | – |
| Derivative notional amounts (3)(4) | **1,870,472** | **1,554,518** | 1,340,121 | 28,385 | 4,898 |
| Authorized and committed loan commitments (5)(6)(7) | **90,797** | **26,106** | 62,174 | 241 | 15,047 |

(1) Includes CHF LIBOR, EONIA and JPY LIBOR, which have been discontinued after December 31, 2021.
(2) All amounts are presented based on contractual amounts outstanding with the exception of securities, recorded in non-derivative assets, which are presented based on carrying value.
(3) Notional amounts represent the amount to which a rate or price is applied in order to calculate the amount of cash that must be exchanged under the contract. Notional amounts do not represent assets or liabilities and therefore are not recorded in our Consolidated Balance Sheet.
(4) Includes certain cross-currency swap positions where both the pay and receive legs currently reference an IBOR. For those derivatives, the table above includes the notional amounts for both the pay and receive legs in the relevant columns aligning with the IBOR exposure.
(5) Excludes personal lines of credit and credit cards that are unconditionally cancellable at our discretion. A large majority of these commitments expire without being drawn upon. As a result, the total contractual amounts may not be representative of the funding likely to be required for these commitments.
(6) Other includes loan commitments where our customers have the option to draw from their facility in multiple currencies. Amounts drawn will be subject to prevailing IBORs for the foreign currency, including those that are in scope of IBOR reform.
(7) Commitments also include backstop liquidity facilities provided by the bank to external parties.

*Conceptual Framework*
Effective November 1, 2020, we adopted the revised Conceptual Framework (Framework), which sets out the fundamental concepts for financial reporting to ensure consistency in standard-setting decisions and that similar transactions are treated in a similar way, so as to provide useful information to users of financial statements. The revised Framework had no impact on our accounting policies.

## Use of Estimates and Judgments
The preparation of the consolidated financial statements requires management to use estimates and assumptions that affect the carrying amounts of certain assets and liabilities, certain amounts reported in net income and other related disclosures.

The most significant assets and liabilities for which we must make estimates and judgments include the allowance for credit losses; financial instruments measured at fair value; pension and other employee future benefits; impairment of securities; income taxes and deferred tax assets; goodwill and intangible assets; insurance-related liabilities; provisions, including legal proceedings and restructuring charges; transfers of financial assets and consolidation of structured entities. We make judgments in assessing the business model for financial assets as well as whether substantially all risks and rewards have been transferred in respect of transfers of financial assets and whether we control SEs, as discussed in Notes 6 and 7, respectively. If actual results were to differ from the estimates, the impact would be recorded in future periods.

The economic outlook for Canada and the U.S. is subject to several risks that could lead to a severe downturn, including, persistent high inflation and significant further increases in interest rates, an escalation of the conflict in Ukraine, rising geopolitical tensions between the U.S. and China, and the pandemic. A significant housing market correction could also occur if monetary policy becomes overly restrictive to control inflation. The impact on BMO's business, results of operations, reputation, financial performance and condition, including the potential for credit, counterparty and mark-to-market losses, its credit ratings and regulatory capital and liquidity ratios, as well as impacts to its customers and competitors, will depend on future developments, which remain uncertain. By their very nature, the judgments and estimates we make for the purposes of preparing our consolidated financial statements relate to matters that are inherently uncertain. However, we have detailed policies and internal controls that are intended to ensure the judgments made in estimating these amounts are well controlled and independently reviewed, and that our policies are consistently applied from period to period. We believe that our estimates of the value of our assets and liabilities are appropriate as at October 31, 2022.

*Allowance for Credit Losses*
The expected credit loss (ECL) model requires the recognition of credit losses generally based on 12 months of expected losses for performing loans and the recognition of lifetime losses on performing loans that have experienced a significant increase in credit risk since origination.

The determination of a significant increase in credit risk takes into account many different factors and varies by product and risk segment. The bank's methodology for determining significant increase in credit risk is based on the change in probability of default (PD) between origination and reporting date, assessed using probability-weighted scenarios as well as certain other criteria, such as 30-day past due and watchlist status. The assessment of a significant increase in credit risk requires experienced credit judgment.

In determining whether there has been a significant increase in credit risk and in calculating the amount of expected credit losses, we must rely on estimates and exercise judgment regarding matters for which the ultimate outcome is unknown. These judgments include changes in circumstances that may cause future assessments of credit risk to be materially different from current assessments, which could require an increase or decrease in the allowance for credit losses. The calculation of expected credit losses includes the explicit incorporation of forecasts of future economic conditions. We have developed models incorporating specific macroeconomic variables that are relevant to each portfolio. Key economic variables for our retail portfolios include primary operating markets of Canada, the United States (U.S.) and regional markets where considered significant. Forecasts are developed internally by our Economics group, considering external data and our view of future economic conditions. We exercise experienced credit judgment to incorporate multiple economic forecasts which are probability-weighted in the determination of the final expected credit loss. The allowance is sensitive to changes in both economic forecasts and the probability weight assigned to each forecast scenario.

Additional information regarding the allowance for credit losses is included in Note 4.

*Financial Instruments Measured at Fair Value*
Fair value measurement techniques are used to value various financial assets and financial liabilities, and are also used in performing impairment testing on certain non-financial assets.

Additional information regarding our fair value measurement techniques is included in Note 17.

*Pension and Other Employee Future Benefits*
Our pension and other employee future benefit expense is calculated by our independent actuaries using assumptions determined by management. If actual experience were to differ from the assumptions used, we would recognize this difference in other comprehensive income.

Pension and other employee future benefit expense, plan assets and defined benefit obligations are also sensitive to changes in discount rates. We determine discount rates for all of our plans using high-quality AA rated corporate bond yields with terms matching the plans' specific cash flows.

Additional information regarding our accounting for pension and other employee future benefits is included in Note 21.

*Impairment of Securities*
We review investments in associates and joint ventures at each quarter-end reporting period to identify and evaluate investments that show indications of possible impairment. For these equity securities, a significant or prolonged decline in the fair value of a security below its cost is objective evidence of impairment.

Debt securities measured at amortized cost or FVOCI are assessed for impairment using the expected credit loss model. For securities determined to have low credit risk, the allowance for credit losses is measured at a 12-month expected credit loss.

Additional information regarding our accounting for debt securities measured at amortized cost or FVOCI and investments in associates and joint ventures, allowance for credit losses and the determination of fair value is included in Notes 3 and 17.

*Income Taxes and Deferred Tax Assets*

The provision for income taxes is calculated based on the expected tax treatment of transactions recorded in either our Consolidated Statement of Income or Consolidated Statement of Changes in Equity. In determining the provision for income taxes, we interpret tax legislation, case law and administrative positions in numerous jurisdictions and, based on our judgment, record our estimate of the amount required to settle tax obligations. We also make assumptions about the expected timing of the reversal of deferred tax assets and liabilities. If our interpretations and assumptions differ from those of tax authorities or if the timing of reversals is not as expected, our provision for income taxes could increase or decrease in future periods. The amount of any such increase or decrease cannot be reasonably estimated.

Deferred tax assets are recognized only when it is probable that sufficient taxable profit will be available in future periods against which deductible temporary differences or unused tax losses and tax credits may be utilized. We are required to assess whether it is probable that our deferred tax assets will be realized. The factors used to assess the probability of realization are our past experience of income and capital gains, our forecast of future net income before taxes, and the remaining expiration period of tax loss carryforwards and tax credits. Changes in our assessment of these factors could increase or decrease our provision for income taxes in future periods.

Additional information regarding our accounting for income taxes is included in Note 22.

*Goodwill and Intangible Assets*

For the purpose of impairment testing, goodwill is allocated to our groups of cash-generating units (CGUs), which represent the lowest level within the bank at which goodwill is monitored for internal management purposes. Impairment testing is performed at least annually, by comparing the carrying values and the recoverable amounts of the CGUs to which goodwill has been allocated to determine whether the recoverable amount of each group is greater than its carrying value. If the carrying value of the group were to exceed its recoverable amount, an impairment calculation would be performed. The recoverable amount of a CGU is the higher of its fair value less costs to sell and value in use.

In determining fair value less costs to sell, we employ a discounted cash flow model consistent with those used when we acquire businesses. This model is dependent on assumptions related to revenue growth, discount rates, synergies achieved on acquisition and the availability of comparable acquisition data. Changes in any of these assumptions would affect the determination of fair value for each of the business units in a different manner. Management must exercise judgment and make assumptions in determining fair value less costs to sell, and differences in judgment and assumptions could affect the determination of fair value and any resulting impairment write-down.

Intangible assets with a definite life are amortized to income on either a straight-line or an accelerated basis over a period not exceeding 15 years, depending on the nature of the asset. We test definite-life intangible assets for impairment when circumstances indicate the carrying value may not be recoverable. Indefinite-life intangible assets are tested annually for impairment. If any intangible assets are determined to be impaired, we write them down to their recoverable amount, the higher of value in use and fair value less costs to sell, when this is less than the carrying value.

Additional information regarding goodwill and intangible assets is included in Note 11.

*Insurance-Related Liabilities*

Insurance claims and policy benefit liabilities represent current claims and estimates of future insurance policy benefit liabilities. Liabilities for life insurance contracts are determined using the Canadian Asset Liability Method, which incorporates best-estimate assumptions for mortality, morbidity, policy lapses, surrenders, future investment yields, policy dividends, administration costs and margins for adverse deviation. These assumptions are reviewed at least annually and updated to reflect actual experience and market conditions. The most significant impact on the valuation of a liability would result from a change in the assumption for future investment yields.

Additional information regarding insurance-related liabilities is included in Note 14.

*Provisions*

A provision, including for legal proceedings and restructuring charges, is recognized if, as a result of a past event, the bank has a present legal or constructive obligation that can be estimated reliably, and it is probable that an outflow of economic benefits will be required to settle the obligation. Provisions are recorded at the best estimate of the amounts required to settle the obligation as at the balance sheet date, taking into account the risks and uncertainties associated with the obligation. Management and external experts are involved in estimating any provision, as necessary. The actual costs of settling some obligations may be substantially higher or lower than the amounts of the provisions.

Additional information regarding provisions is included in Note 24.

*Transfer of Assets*

We enter into transactions in which we transfer assets, typically mortgage loans, mortgage-backed securities and credit card loans, to a structured entity or third party to obtain alternate sources of funding or as part of our trading activities. We assess whether substantially all of the risks and rewards of or control over the assets have been transferred to determine if they qualify for derecognition. Where we continue to be exposed to substantially all of the repayment, interest rate and/or credit risk associated with the securitized assets, they do not qualify for derecognition. We continue to recognize the assets and the related cash proceeds as secured financings in our Consolidated Balance Sheet.

Transferred assets are discussed in greater detail in Note 6.

*Consolidation of Structured Entities*

For securitization vehicles sponsored by the bank, the vehicles typically have limited decision-making authority. The structure of these vehicles limits the activities they can undertake, the types of assets they can hold and the funding of their activities. We control and consolidate these vehicles when we have the key decision-making powers necessary to obtain the majority of the benefits from their activities.

For certain investments in limited partnerships, we exercise judgment in determining whether we control an entity. Based on an assessment of our interests and rights, we have determined that we do not control certain entities, even though we may have an ownership interest greater than 50%. This may be the case when we are not the general partner in an arrangement and the general partner's rights most significantly affect the returns of the entity. Additionally, we have determined that we control certain entities despite having an ownership interest of less than 50%. This may be the case when we are the general partner in an arrangement and the general partner's rights most significantly affect the returns of the entity.

Structured entities are discussed in greater detail in Notes 7 and 20.

## Future Changes in IFRS

*Insurance Contracts*

In May 2017, the IASB issued IFRS 17 *Insurance Contracts* (IFRS 17), which provides a comprehensive approach to accounting for all types of insurance contracts and will replace the existing IFRS 4 *Insurance Contracts* (IFRS 4). The standard was subsequently amended in June 2020 with additional narrow-scope amendments in December 2021. IFRS 17 will be effective for our fiscal year beginning November 1, 2023. We established an enterprise-wide project in order to meet the requirements of IFRS 17, and we continue to evaluate the potential impacts of adoption, including available accounting policy and transition choices.

IFRS 17 will change the fundamental principles used to recognize and measure insurance contracts, including life insurance contracts, reinsurance contracts and investment contracts with discretionary participation features.

Key differences from IFRS 4 are as follows:

IFRS 17 requires us to measure groups of contracts based on our estimates of the present value of future cash flows that are expected to arise as we fulfill the contracts, an explicit risk adjustment for non-financial risk and a contractual service margin (CSM) which represents unearned profits. The CSM component of the insurance contract liability will be amortized into income as services/insurance coverage is provided and groups of contracts that result in losses are recorded in income immediately. Under IFRS 4, there is no similar grouping requirement and gains/losses on new business are recognized in income immediately. When we adopt IFRS 17, we will establish the CSM for insurance contracts in effect which will increase liabilities and decrease equity.

The discount rate we use under IFRS 4 is connected to the assets held to support insurance contract liabilities. Under IFRS 17, the discount rate will reflect the characteristics of the insurance contract liabilities. We have an accounting policy choice under IFRS 17 to recognize changes in the discount rate on insurance contract liabilities, either through other comprehensive income or in our statement of income.

On transition, we will either apply a full retrospective approach where we restate prior periods as if we had always applied IFRS 17, a modified retrospective approach where we apply specific modifications to the full retrospective application, or a full fair value method where we measure the contracts at fair value to determine a value for the CSM.

# Note 2: Cash and Interest Bearing Deposits with Banks

## Cash and Cash Equivalents

| (Canadian $ in millions) | 2022 | 2021 |
|---|---|---|
| Cash and deposits with banks (1) | **85,234** | 91,377 |
| Cheques and other items in transit, net | **2,232** | 1,884 |
| Total cash and cash equivalents | **87,466** | 93,261 |

(1) Includes deposits with the Bank of Canada, the U.S. Federal Reserve and other central banks.

*Cheques and Other Items in Transit, Net*
Cheques and other items in transit are recorded at cost and represent the net position of the uncleared cheques and other items in transit between us and other banks.

*Cash Restrictions*
Certain of our foreign operations are required to maintain reserves or minimum balances with central banks in their respective countries of operation, totalling $87 million as at October 31, 2022 ($110 million as at October 31, 2021).

## Interest Bearing Deposits with Banks

Deposits with banks are recorded at amortized cost and include acceptances we have purchased that were issued by other banks. Interest income earned on these deposits is recorded on an accrual basis.

# Note 3: Securities

Securities are divided into six types, each with a different purpose and accounting treatment. The types of securities we hold are as follows:

**Trading securities** are securities purchased for resale over a short period of time. Trading securities are recorded at fair value through profit or loss (FVTPL). Transaction costs and changes in fair value are recorded in our Consolidated Statement of Income in trading revenues.

**Fair value through profit or loss securities** are measured at fair value, with changes in fair value and related transaction costs recorded in our Consolidated Statement of Income in securities gains, other than trading, except as noted below. This category includes the following:

*Securities Designated at FVTPL*
In order to qualify for this designation, the security must have a reliably measurable fair value, and the designation eliminates or significantly reduces the inconsistent treatment that would otherwise arise from measuring the gains and losses on a different basis. Securities must be designated on initial recognition, and the designation is irrevocable. If these securities were not designated at FVTPL, they would be accounted for at either FVOCI or amortized cost.

We designate certain securities held by our insurance subsidiaries that support our insurance liabilities at FVTPL, since the actuarial calculation of insurance liabilities is based on the fair value of the investments supporting them. This designation aligns the accounting result with the way the portfolio is managed on a fair value basis. The change in fair value of the securities is recorded in non-interest revenue, insurance revenue, and the change in fair value of the liabilities is recorded in insurance claims, commissions and changes in policy benefit liabilities. The fair value of these investments of $9,231 million as at October 31, 2022 ($11,172 million as at October 31, 2021) is recorded in securities in our Consolidated Balance Sheet. The impact of recording these investments at fair value through profit or loss was a decrease of $1,954 million in non-interest revenue, insurance revenue, for the year ended October 31, 2022 (a decrease of $202 million in 2021).

*Securities Mandatorily Measured at FVTPL*
Securities managed on a fair value basis, but not held for trading, or debt securities with cash flows that do not represent solely payments of principal and interest and equity securities not held for trading or designated at FVOCI, are classified as FVTPL. The fair value of these investments of $4,410 million as at October 31, 2022 ($3,038 million as at October 31, 2021) is recorded in securities in our Consolidated Balance Sheet.

**Debt securities at FVOCI** are debt securities purchased with the objective of both collecting contractual cash flows and selling the securities. The securities' cash flows represent solely payments of principal and interest. These securities may be sold in response to, or in anticipation of, changes in interest rates and any resulting prepayment risk, changes in credit risk, changes in foreign currency risk or changes in funding sources or terms, or in order to meet liquidity needs.

Debt securities measured at FVOCI are initially recorded at fair value plus transaction costs. They are subsequently measured at fair value, with unrealized gains and losses recorded in our Consolidated Statement of Comprehensive Income until the security is sold or impaired. Gains and losses on disposal and impairment losses (recoveries) are recorded in our Consolidated Statement of Income in non-interest revenue, securities gains, other than trading. Interest income earned is recorded in our Consolidated Statement of Income in interest, dividend and fee income, securities, using the effective interest method.

**Equity securities at FVOCI** are equity securities for which we have elected to record changes in the fair value of the instrument in other comprehensive income as opposed to fair value through profit or loss. Gains or losses recorded on these instruments will never be recognized in profit or loss. Equity securities measured at FVOCI are not subject to an impairment assessment.

**Debt securities at amortized cost** are debt securities purchased with the objective of collecting contractual cash flows, and those cash flows represent solely payments of principal and interest. These securities are initially recorded at fair value plus transaction costs and are subsequently measured at amortized cost using the effective interest method. Impairment losses (recoveries) are recorded in our Consolidated Statement of Income in non-interest revenue, securities gains, other than trading. Interest income earned and amortization of premiums, discounts and transaction costs are recorded in our Consolidated Statement of Income in interest, dividend and fee income, securities.

**Investments in associates and joint ventures** are accounted for using the equity method of accounting. Investments in associates are those in which we exert significant influence over operating and financing decisions; generally companies in which we own between 20% and 50% of the voting shares. Investments in joint ventures are where we have joint control. Our share of the net income or loss, including any impairment losses, is recorded in non-interest revenue, share of profit (loss) in associates and joint ventures in our Consolidated Statement of Income. Any other comprehensive income amounts are reflected in the relevant sections of our Consolidated Statement of Comprehensive Income.

We account for all of our securities transactions using settlement date accounting in our Consolidated Balance Sheet.

## Impairment Review

Debt securities at amortized cost or FVOCI are assessed for impairment using the ECL model, with the exception of those determined to have low credit risk, where the allowance for credit losses is measured at a 12-month expected credit loss. A debt security is considered to have low credit risk if it has a low risk of default, the borrower has a strong capacity to meet its contractual cash flow obligations in the near term and adverse changes in economic and business conditions in the longer term may, but will not necessarily, reduce the ability of the borrower to fulfill its contractual cash flow obligations.

Debt securities at amortized cost totalling $106,590 million as at October 31, 2022 ($49,970 million as at October 31, 2021) are net of allowances for credit losses of $3 million as at October 31, 2022 ($2 million as at October 31, 2021).

Debt securities at FVOCI totalling $43,408 million as at October 31, 2022 ($62,991 million as at October 31, 2021) are net of allowances for credit losses of $3 million as at October 31, 2022 ($2 million as at October 31, 2021).

## Fair Value Measurement

For traded securities, quoted market value is considered to be fair value. Quoted market value is based on bid or ask prices, depending on which is the most appropriate to measure fair value. Where market quotes are not available, we use estimation techniques to determine fair value. Additional information regarding fair value measurement techniques is included in Note 17.

## Remaining Term to Maturity of Securities

The following table shows the remaining term to maturity of securities.

| (Canadian $ in millions, except as noted) | | | Term to maturity | | | | 2022 | 2021 |
|---|---|---|---|---|---|---|---|---|
| | **Within 1 year** | **1 to 3 years** | **3 to 5 years** | **5 to 10 years** | **Over 10 years** | **No maturity** | **Total** | Total |
| **Trading Securities** | | | | | | | | |
| Issued or guaranteed by: | | | | | | | | |
| Canadian federal government | **3,361** | **3,617** | **759** | **1,815** | **1,384** | **–** | **10,936** | 7,596 |
| Canadian provincial and municipal governments | **1,247** | **826** | **390** | **876** | **2,771** | **–** | **6,110** | 5,838 |
| U.S. federal government | **2,269** | **6,034** | **3,051** | **3,572** | **1,773** | **–** | **16,699** | 9,582 |
| U.S. states, municipalities and agencies | **–** | **60** | **42** | **16** | **21** | **–** | **139** | 458 |
| Other governments | **1,337** | **1,432** | **742** | **367** | **92** | **–** | **3,970** | 1,898 |
| NHA MBS, U.S. agency MBS and CMO (1) | **32** | **165** | **432** | **176** | **13,507** | **–** | **14,312** | 14,054 |
| Corporate debt | **2,375** | **1,685** | **2,117** | **2,521** | **894** | **–** | **9,592** | 9,894 |
| Trading loans | **–** | **96** | **49** | **201** | **–** | **–** | **346** | 160 |
| Corporate equity | **–** | **–** | **–** | **–** | **–** | **46,073** | **46,073** | 54,931 |
| Total trading securities | **10,621** | **13,915** | **7,582** | **9,544** | **20,442** | **46,073** | **108,177** | 104,411 |
| **FVTPL Securities** | | | | | | | | |
| Issued or guaranteed by: | | | | | | | | |
| Canadian federal government | **319** | **2** | **9** | **–** | **163** | **–** | **493** | 863 |
| Canadian provincial and municipal governments | **36** | **10** | **8** | **90** | **936** | **–** | **1,080** | 1,380 |
| U.S. federal government | **4** | **–** | **–** | **–** | **–** | **–** | **4** | 38 |
| Other governments | **39** | **48** | **–** | **–** | **–** | **–** | **87** | 92 |
| NHA MBS, U.S. agency MBS and CMO (1) | **–** | **–** | **–** | **8** | **–** | **–** | **8** | 9 |
| Corporate debt | **136** | **152** | **285** | **937** | **4,969** | **–** | **6,479** | 7,704 |
| Corporate equity | **–** | **–** | **–** | **–** | **–** | **5,490** | **5,490** | 4,124 |
| Total FVTPL securities | **534** | **212** | **302** | **1,035** | **6,068** | **5,490** | **13,641** | 14,210 |
| **FVOCI Securities** | | | | | | | | |
| Issued or guaranteed by: | | | | | | | | |
| Canadian federal government | | | | | | | | |
| Amortized cost | **2,235** | **843** | **6,261** | **3,159** | **–** | **–** | **12,498** | 13,087 |
| Fair value | **2,229** | **816** | **6,122** | **3,134** | **–** | **–** | **12,301** | 13,065 |
| Yield (%) | **2.08** | **1.68** | **1.65** | **3.29** | **–** | **–** | **2.14** | 1.48 |
| Canadian provincial and municipal governments | | | | | | | | |
| Amortized cost | **720** | **632** | **1,360** | **1,929** | **83** | **–** | **4,724** | 2,973 |
| Fair value | **714** | **611** | **1,300** | **1,866** | **80** | **–** | **4,571** | 2,987 |
| Yield (%) | **1.22** | **2.51** | **2.74** | **3.21** | **4.29** | **–** | **2.70** | 1.45 |
| U.S. federal government | | | | | | | | |
| Amortized cost | **1,006** | **49** | **751** | **1,249** | **348** | **–** | **3,403** | 21,041 |
| Fair value | **989** | **46** | **680** | **1,067** | **328** | **–** | **3,110** | 21,026 |
| Yield (%) | **2.65** | **1.02** | **1.67** | **1.50** | **4.05** | **–** | **2.13** | 1.48 |
| U.S. states, municipalities and agencies | | | | | | | | |
| Amortized cost | **485** | **1,062** | **602** | **864** | **850** | **–** | **3,863** | 4,034 |
| Fair value | **483** | **1,030** | **567** | **809** | **825** | **–** | **3,714** | 4,114 |
| Yield (%) | **2.26** | **2.16** | **2.31** | **2.37** | **2.44** | **–** | **2.30** | 1.91 |
| Other governments | | | | | | | | |
| Amortized cost | **3,385** | **1,420** | **1,589** | **138** | **–** | **–** | **6,532** | 6,476 |
| Fair value | **3,377** | **1,390** | **1,511** | **133** | **–** | **–** | **6,411** | 6,502 |
| Yield (%) | **0.86** | **1.95** | **2.64** | **5.04** | **–** | **–** | **1.62** | 1.19 |
| NHA MBS (1) | | | | | | | | |
| Amortized cost | **25** | **102** | **1,212** | **–** | **37** | **–** | **1,376** | 1,122 |
| Fair value | **21** | **102** | **1,204** | **–** | **36** | **–** | **1,363** | 1,125 |
| Yield (%) | **0.46** | **0.85** | **2.22** | **–** | **1.53** | **–** | **2.07** | 1.23 |
| U.S. agency MBS and CMO (1) | | | | | | | | |
| Amortized cost | **70** | **44** | **78** | **1,215** | **6,789** | **–** | **8,196** | 10,894 |
| Fair value | **70** | **42** | **72** | **1,181** | **6,540** | **–** | **7,905** | 11,011 |
| Yield (%) | **3.42** | **2.96** | **2.67** | **2.34** | **2.38** | **–** | **2.39** | 1.22 |
| Corporate debt | | | | | | | | |
| Amortized cost | **1,439** | **1,249** | **1,084** | **238** | **193** | **–** | **4,203** | 3,147 |
| Fair value | **1,391** | **1,221** | **1,024** | **206** | **191** | **–** | **4,033** | 3,161 |
| Yield (%) | **0.82** | **3.28** | **2.34** | **4.74** | **3.59** | **–** | **2.29** | 1.37 |
| Corporate equity | | | | | | | | |
| Amortized cost | **–** | **–** | **–** | **–** | **–** | **122** | **122** | 103 |
| Fair value | **–** | **–** | **–** | **–** | **–** | **153** | **153** | 132 |
| Total cost or amortized cost | **9,365** | **5,401** | **12,937** | **8,792** | **8,300** | **122** | **44,917** | 62,877 |
| Total fair value | **9,274** | **5,258** | **12,480** | **8,396** | **8,000** | **153** | **43,561** | 63,123 |
| Yield (%) | **1.45** | **2.30** | **2.04** | **2.86** | **2.50** | **–** | **2.19** | 1.42 |
| **Amortized Cost Securities** | | | | | | | | |
| Issued or guaranteed by: | | | | | | | | |
| Canadian federal government | | | | | | | | |
| Amortized cost | **2,146** | **3,537** | **1,319** | **134** | **–** | **–** | **7,136** | 7,084 |
| Fair value | **2,223** | **3,513** | **1,267** | **126** | **–** | **–** | **7,129** | 7,120 |
| Yield (%) | **0.89** | **1.85** | **1.71** | **2.66** | **–** | **–** | **1.55** | 1.49 |
| Canadian provincial and municipal governments | | | | | | | | |
| Amortized cost | **984** | **2,113** | **1,345** | **1,146** | **–** | **–** | **5,588** | 5,642 |
| Fair value | **1,044** | **2,133** | **1,299** | **1,107** | **–** | **–** | **5,583** | 5,723 |
| Yield (%) | **2.71** | **1.91** | **2.32** | **2.90** | **–** | **–** | **2.35** | 2.07 |
| U.S. federal government | | | | | | | | |
| Amortized cost | **924** | **15,825** | **15,098** | **23,511** | **3,887** | **–** | **59,245** | 5,633 |
| Fair value | **942** | **14,785** | **13,414** | **19,703** | **2,873** | **–** | **51,717** | 5,589 |
| Yield (%) | **0.94** | **1.46** | **1.29** | **1.56** | **2.05** | **–** | **1.49** | 1.51 |
| U.S. states, municipalities and agencies | | | | | | | | |
| Amortized cost | **–** | **–** | **–** | **109** | **–** | **–** | **109** | – |
| Fair value | **–** | **–** | **–** | **105** | **–** | **–** | **105** | – |
| Yield (%) | **–** | **–** | **–** | **4.26** | **–** | **–** | **4.26** | – |
| Other governments | | | | | | | | |
| Amortized cost | **419** | **577** | **376** | **15** | **–** | **–** | **1,387** | 1,413 |
| Fair value | **456** | **544** | **364** | **13** | **–** | **–** | **1,377** | 1,420 |
| Yield (%) | **1.44** | **1.31** | **2.46** | **1.00** | **–** | **–** | **1.66** | 1.24 |
| NHA MBS, U.S. agency MBS and CMO (1) | | | | | | | | |
| Amortized cost | **79** | **1,757** | **3,579** | **2,747** | **22,851** | **–** | **31,013** | 28,557 |
| Fair value | **77** | **1,675** | **3,254** | **2,383** | **19,475** | **–** | **26,864** | 28,307 |
| Yield (%) | **1.10** | **1.47** | **1.65** | **1.73** | **1.57** | **–** | **1.59** | 1.30 |
| Corporate debt | | | | | | | | |
| Amortized cost | **407** | **530** | **988** | **128** | **59** | **–** | **2,112** | 1,641 |
| Fair value | **457** | **501** | **919** | **125** | **55** | **–** | **2,057** | 1,651 |
| Yield (%) | **1.05** | **1.59** | **2.39** | **1.54** | **0.22** | **–** | **1.82** | 1.30 |
| Total amortized cost | **4,959** | **24,339** | **22,705** | **27,790** | **26,797** | **–** | **106,590** | 49,970 |
| Total fair value | **5,199** | **23,151** | **20,517** | **23,562** | **22,403** | **–** | **94,832** | 49,810 |
| Yield (%) | **1.32** | **1.56** | **1.50** | **1.65** | **1.64** | **–** | **1.58** | 1.44 |
| **Investments in Associates and Joint Ventures** | | | | | | | | |
| Carrying value | **–** | **–** | **–** | **–** | **–** | **1,293** | **1,293** | 1,135 |
| Total carrying value or amortized cost of securities | **25,479** | **43,867** | **43,526** | **47,161** | **61,607** | **52,978** | **274,618** | 232,603 |
| Total carrying value of securities | **25,388** | **43,724** | **43,069** | **46,765** | **61,307** | **53,009** | **273,262** | 232,849 |
| **Total by Currency** (in Canadian $ equivalent) | | | | | | | | |
| Canadian dollar | **13,049** | **13,167** | **14,499** | **10,823** | **10,895** | **25,203** | **87,636** | 85,933 |
| U.S. dollar | **9,620** | **29,363** | **28,094** | **35,743** | **50,334** | **24,217** | **177,371** | 140,422 |
| Other currencies | **2,719** | **1,194** | **476** | **199** | **78** | **3,589** | **8,255** | 6,494 |
| Total securities | **25,388** | **43,724** | **43,069** | **46,765** | **61,307** | **53,009** | **273,262** | 232,849 |

(1) These amounts are either supported by insured mortgages or issued by U.S. agencies and government-sponsored enterprises. NHA refers to the National Housing Act, MBS refers to mortgage-backed securities and CMO refers to collateralized mortgage obligations.

Yields in the table above are calculated using the cost of the security and the contractual interest rate associated with each security, adjusted for any amortization of premiums and discounts. Tax effects are not taken into consideration. The term to maturity included in the table above is based on the contractual maturity date of the security. Actual maturities could differ, as issuers may have the right to call or prepay obligations.

## Unrealized Gains and Losses on FVOCI Securities

The following table summarizes unrealized gains and losses:

| (Canadian $ in millions) | | | | 2022 | | | | 2021 |
|---|---|---|---|---|---|---|---|---|
| | **Cost or amortized cost** | **Gross unrealized gains** | **Gross unrealized losses** | **Fair value** | Cost or amortized cost | Gross unrealized gains | Gross unrealized losses | Fair value |
| Issued or guaranteed by: | | | | | | | | |
| Canadian federal government | **12,498** | **11** | **208** | **12,301** | 13,087 | 62 | 84 | 13,065 |
| Canadian provincial and municipal governments | **4,724** | **6** | **159** | **4,571** | 2,973 | 29 | 15 | 2,987 |
| U.S. federal government | **3,403** | **–** | **293** | **3,110** | 21,041 | 282 | 297 | 21,026 |
| U.S. states, municipalities and agencies | **3,863** | **5** | **154** | **3,714** | 4,034 | 85 | 5 | 4,114 |
| Other governments | **6,532** | **4** | **125** | **6,411** | 6,476 | 55 | 29 | 6,502 |
| NHA MBS | **1,376** | **1** | **14** | **1,363** | 1,122 | 6 | 3 | 1,125 |
| U.S. agency MBS and CMO | **8,196** | **12** | **303** | **7,905** | 10,894 | 151 | 34 | 11,011 |
| Corporate debt | **4,203** | **25** | **195** | **4,033** | 3,147 | 34 | 20 | 3,161 |
| Corporate equity | **122** | **31** | **–** | **153** | 103 | 29 | – | 132 |
| Total | **44,917** | **95** | **1,451** | **43,561** | 62,877 | 733 | 487 | 63,123 |

Unrealized gains (losses) may be offset by related (losses) gains on hedge contracts.

## Interest, Dividend and Fee Income

Interest, dividend and fee income has been included in our Consolidated Statement of Income as follows, excluding our share of profit (loss) in associates and joint ventures and trading securities. Related income for trading securities is included under trading-related revenue in Note 17.

| (Canadian $ in millions) | 2022 | 2021 |
|---|---|---|
| FVTPL | **28** | 22 |
| FVOCI | **650** | 470 |
| Amortized cost | **1,295** | 419 |
| Total | **1,973** | 911 |

## Non-Interest Revenue

Net gains and losses from securities, excluding gains and losses on trading securities, have been included in our Consolidated Statement of Income as follows:

| (Canadian $ in millions) | 2022 | 2021 |
|---|---|---|
| FVTPL securities | **268** | 535 |
| FVOCI securities – realized gains (losses) (1) | **14** | 57 |
| Impairment losses | **(1)** | (1) |
| Securities gains, other than trading | **281** | 591 |

(1) Gains (losses) are net of (losses) gains on hedge contracts.

Gains and losses on trading securities are included in trading-related revenue in Note 17.

Interest and dividend income and gains (losses) on securities held in our insurance business are recorded in non-interest revenue, insurance revenue, in our Consolidated Statement of Income. These include:

- Interest and dividend income of $397 million for the year ended October 31, 2022 ($379 million for the year ended October 31, 2021). Interest income is calculated using the effective interest method;
- Gains (losses) from securities designated at FVTPL of $(1,954) million for the year ended October 31, 2022 ($(202) million for the year ended October 31, 2021); and
- Realized gains (losses) from FVOCI securities of $nil million for the year ended October 31, 2022 ($1 million for the year ended October 31, 2021).

# Note 4: Loans and Allowance for Credit Losses

## Loans

Loans are initially measured at fair value plus directly attributable costs, and are subsequently measured at amortized cost using the effective interest method where the cash flows of those loans represent solely payments of principal and interest, otherwise those loans are measured at FVTPL. Where the loans are held with the objective of both collecting contractual cash flows and selling the loans, and the cash flows represent solely payments of principal and interest, these loans are measured at FVOCI. The effective interest method allocates interest income over the expected term of the loan by applying the effective interest rate to the carrying amount of the loan. The effective interest rate is defined as the rate that exactly discounts estimated future cash receipts through the expected term of the loan to the net carrying amount of the loan. Under the effective interest method, the amount recognized in interest, dividend and fee income, loans, varies over the term of the loan based on the principal outstanding. The treatment of interest income for impaired loans is described below.

## Securities Borrowed or Purchased Under Resale Agreements

Securities borrowed or purchased under resale agreements represent the amounts we will receive as a result of our commitment to return or resell securities that we have borrowed or purchased, back to the original lender or seller, on a specified date at a specified price. We account for these instruments as if they were loans.

## Lending Fees

Lending fees primarily arise in Personal and Commercial Banking and BMO Capital Markets. The accounting treatment for lending fees varies depending on the transaction. Some loan origination, restructuring and renegotiation fees are recorded as interest income over the term of the loan, while other lending fees are taken into income at the time of loan origination. Commitment fees are calculated as a percentage of the facility balance at the end of each period. The fees are recorded as interest income over the term of the loan, unless we believe the loan commitment will not be used. In the latter case, commitment fees are recorded as lending fees earned over the commitment period. Loan syndication fees are payable and included in lending fees at the time the syndication is completed, unless the yield on any loans we retain is less than that of other comparable lenders involved in the financing. In the latter case, an appropriate portion of the syndication fee is recorded as interest income over the term of the loan.

## Impaired Loans

We classify a loan as impaired (Stage 3) when one or more loss events have occurred, such as bankruptcy, payment default or when collection of the full amount of principal and interest is no longer reasonably assured. Loans are in default when the borrower is unlikely to pay its credit obligations in full without recourse by the bank, such as realizing security, or when the borrower's payments are more than a defined number of days past due.

Generally, consumer loans in both Canada and the U.S. are classified as impaired when payment is contractually 90 days past due, or one year past due for residential mortgages if guaranteed by the Government of Canada. Credit card loans are immediately written off when principal or interest payments are 180 days past due, and are not reported as impaired. In Canada, consumer instalment loans, other personal loans and some small business loans are normally written off when they are one year past due. In the U.S., all consumer loans are generally written off when they are 180 days past due, except for non-real estate term loans, which are generally written off when they are 120 days past due. For the purpose of measuring the amount to be written off, the determination of the recoverable amount includes an estimate of future recoveries.

Corporate and commercial loans are classified as impaired when we determine there is no longer reasonable assurance that principal or interest will be collected in their entirety on a timely basis. Generally, we consider corporate and commercial loans to be impaired when payments are 90 days past due. Corporate and commercial loans are written off following a review on an individual loan basis that confirms all reasonable recovery attempts have been exhausted.

Overdrafts are considered to be past due once the customer has breached an advised limit or has been advised of a limit lower than currently outstanding or, in the case of retail overdrafts, has not brought the overdraft down to a $nil balance within a specified time period.

A loan will be reclassified to performing status when we determine that there is reasonable assurance of full and timely repayment of interest and principal in accordance with the terms and conditions of the loan, and that none of the criteria for classification of the loan as impaired continues to apply.

Once a loan is identified as impaired, we continue to recognize interest income based on the original effective interest rate on the loan amount net of its related allowance. In the periods following the recognition of impairment, adjustments to the allowance for these loans reflecting the time value of money are recognized as interest income. Interest income on impaired loans of $55 million was recognized for the year ended October 31, 2022 ($71 million in 2021).

During the year ended October 31, 2022, we recorded a net gain of $3 million before tax (loss of $10 million in 2021) on the sale of impaired and written-off loans.

## Allowance for Credit Losses (ACL)

The allowance for credit losses recorded in our Consolidated Balance Sheet is maintained at a level that we consider adequate to absorb credit-related losses on our loans and other credit instruments. The allowance for credit losses amounted to $2,998 million as at October 31, 2022 ($2,958 million as at October 31, 2021), of which $2,617 million ($2,564 million as at October 31, 2021) was recorded in loans and $381 million ($394 million as at October 31, 2021) was recorded in other liabilities in our Consolidated Balance Sheet.

Significant changes in the gross balances, including originations, maturities and repayments in the normal course of operations, impact the allowance for credit losses.

*Allowance on Performing Loans*

We maintain an allowance in order to cover impairment in the existing portfolio for loans that have not yet been individually identified as impaired. Our approach to establishing and maintaining the allowance on performing loans is based on the requirements of IFRS, considering guidelines issued by OSFI.

Under the IFRS 9 ECL methodology, an allowance is recorded for expected credit losses on financial assets regardless of whether there has been an actual impairment. We recognize a loss allowance at an amount generally equal to 12-month expected credit losses, if the credit risk at the reporting date has not increased significantly since initial recognition (Stage 1). We will record expected credit losses over the remaining life of performing financial assets which are considered to have experienced a significant increase in credit risk (Stage 2).

The determination of a significant increase in credit risk takes into account many different factors and varies by product and risk segment. The bank's methodology for determining significant increase in credit risk is based on the change in probability of default (PD) between origination and reporting date, assessed using probability-weighted scenarios as well as certain other criteria, such as 30-day past due and watchlist status.

For each exposure, ECL is a function of PD, exposure at default (EAD) and loss given default (LGD), with the timing of the loss also considered, and is estimated by incorporating forward-looking economic information and through the use of experienced credit judgment to reflect factors not captured in ECL models.

PD represents the likelihood that a loan will not be repaid and will go into default in either a 12-month horizon for Stage 1 or a lifetime horizon for Stage 2. PD for each individual instrument is modelled based on historical data and is estimated based on current market conditions and reasonable and supportable information about future economic conditions.

EAD is modelled based on historical data and represents an estimate of the amount of credit exposure outstanding at the time a default may occur. For off-balance sheet and undrawn amounts, EAD includes an estimate of any further amounts to be drawn at the time of default.

LGD is the amount that may not be recovered in the event of default and is modelled based on historical data and reasonable and supportable information about future economic conditions, where appropriate. LGD takes into consideration the amount and quality of any collateral held.

We consider past events, current market conditions and reasonable and supportable forward-looking information about future economic conditions in determining the amount of expected losses. In assessing information about possible future economic conditions, we utilize multiple economic scenarios, including our base case scenario, which in our view represents the most probable outcome, as well as benign and adverse scenarios, all of which are developed by our Economics group. Key economic variables used in the determination of the allowance for credit losses reflect the geographic diversity of our portfolios, where appropriate.

In considering the lifetime of a loan, the contractual period of the loan, including prepayment, extension and other options, is generally used. For revolving instruments, such as credit cards, which may not have a defined contractual period, the lifetime is based on historical behaviour.

Our ECL methodology also requires the use of experienced credit judgment to incorporate the estimated impact of factors that are not captured in the modelled ECL results. We applied experienced credit judgment to reflect the continuing impact of the uncertain environment on credit conditions and the economy as a result of the pandemic, as well as the estimated impacts of high inflation and supply-chain disruptions.

*Allowance on Impaired Loans*

We review our loans on an ongoing basis to assess whether any loans should be classified as impaired and whether an allowance or write-off should be recorded (excluding credit card loans, which are written off when principal or interest payments are 180 days past due). The review of individually significant problem loans is conducted at least quarterly by the account managers, each of whom assesses the ultimate collectability and estimated recoveries for a specific loan based on all events and conditions that are relevant to the loan. This assessment is then reviewed and approved by an independent credit officer.

**Individually Significant Impaired Loans**

To determine the amount we expect to recover from an individually significant impaired loan, we use the value of the estimated future cash flows discounted at the loan's original effective interest rate. The determination of estimated future cash flows of a collateralized impaired loan reflects the expected realization of the underlying security, net of expected costs and any amounts legally required to be paid to the borrower. Security can vary by type of loan and may include cash, securities, real estate properties, accounts receivable, guarantees, inventory or other capital assets.

**Individually Insignificant Impaired Loans**

Residential mortgages and consumer instalment and other personal loans are individually insignificant and may be assessed individually or collectively for losses at the time of impairment, taking into account historical loss experience and expectations of future economic conditions. Collectively assessed loans are grouped together by similar risk characteristics, such as type of instrument, geographic location, industry, type of collateral and term to maturity.

*Loans: Credit Risk Exposure*

The following table sets out our credit risk exposure for all loans carried at amortized cost, FVOCI or FVTPL as at October 31, 2022 and 2021. Stage 1 represents those performing loans carried with up to a 12-month expected credit loss, Stage 2 represents those performing loans carried with a lifetime expected credit loss, and Stage 3 represents those loans with a lifetime expected credit loss that are credit impaired.

| (Canadian $ in millions) | | | | 2022 | | | | 2021 |
|---|---|---|---|---|---|---|---|---|
| | **Stage 1** | **Stage 2** | **Stage 3** (5) | **Total** | Stage 1 | Stage 2 | Stage 3 (5) | Total |
| **Loans: Residential mortgages** | | | | | | | | |
| Exceptionally low | **7** | **–** | **–** | **7** | 4 | – | – | 4 |
| Very low | **94,743** | **81** | **–** | **94,824** | 94,566 | 179 | – | 94,745 |
| Low | **31,617** | **3,134** | **–** | **34,751** | 23,471 | 1,293 | – | 24,764 |
| Medium | **13,474** | **3,871** | **–** | **17,345** | 12,066 | 2,250 | – | 14,316 |
| High | **138** | **341** | **–** | **479** | 167 | 306 | – | 473 |
| Not rated | **1,126** | **53** | **–** | **1,179** | 1,051 | 46 | – | 1,097 |
| Impaired | **–** | **–** | **295** | **295** | – | – | 351 | 351 |
| Gross residential mortgages | **141,105** | **7,480** | **295** | **148,880** | 131,325 | 4,074 | 351 | 135,750 |
| Allowance for credit losses | **59** | **66** | **10** | **135** | 46 | 39 | 12 | 97 |
| Carrying amount | **141,046** | **7,414** | **285** | **148,745** | 131,279 | 4,035 | 339 | 135,653 |
| **Loans: Consumer instalment and other personal** | | | | | | | | |
| Exceptionally low | **1,792** | **35** | **–** | **1,827** | 1,487 | 37 | – | 1,524 |
| Very low | **33,554** | **83** | **–** | **33,637** | 30,672 | 8 | – | 30,680 |
| Low | **24,369** | **1,307** | **–** | **25,676** | 21,660 | 534 | – | 22,194 |
| Medium | **13,536** | **4,633** | **–** | **18,169** | 13,336 | 3,607 | – | 16,943 |
| High | **873** | **1,525** | **–** | **2,398** | 661 | 1,375 | – | 2,036 |
| Not rated | **4,052** | **32** | **–** | **4,084** | 3,450 | 50 | – | 3,500 |
| Impaired | **–** | **–** | **312** | **312** | – | – | 287 | 287 |
| Gross consumer instalment and other personal | **78,176** | **7,615** | **312** | **86,103** | 71,266 | 5,611 | 287 | 77,164 |
| Allowance for credit losses | **101** | **288** | **102** | **491** | 113 | 333 | 91 | 537 |
| Carrying amount | **78,075** | **7,327** | **210** | **85,612** | 71,153 | 5,278 | 196 | 76,627 |
| **Loans: Credit cards** (1) | | | | | | | | |
| Exceptionally low | **2,920** | **–** | **–** | **2,920** | 2,532 | – | – | 2,532 |
| Very low | **442** | **1** | **–** | **443** | 450 | – | – | 450 |
| Low | **1,569** | **51** | **–** | **1,620** | 1,801 | 66 | – | 1,867 |
| Medium | **2,918** | **792** | **–** | **3,710** | 1,743 | 663 | – | 2,406 |
| High | **316** | **563** | **–** | **879** | 75 | 287 | – | 362 |
| Not rated | **90** | **1** | **–** | **91** | 486 | – | – | 486 |
| Impaired | **–** | **–** | **–** | **–** | – | – | – | – |
| Gross credit cards | **8,255** | **1,408** | **–** | **9,663** | 7,087 | 1,016 | – | 8,103 |
| Allowance for credit losses | **69** | **207** | **–** | **276** | 67 | 209 | – | 276 |
| Carrying amount | **8,186** | **1,201** | **–** | **9,387** | 7,020 | 807 | – | 7,827 |
| **Loans: Business and government** (2) | | | | | | | | |
| Acceptable | | | | | | | | |
| Investment grade | **187,245** | **6,765** | **–** | **194,010** | 144,807 | 1,446 | – | 146,253 |
| Sub-investment grade | **98,451** | **22,390** | **–** | **120,841** | 85,375 | 14,534 | – | 99,909 |
| Watchlist | **–** | **6,310** | **–** | **6,310** | – | 6,137 | – | 6,137 |
| Impaired | **–** | **–** | **1,384** | **1,384** | – | – | 1,531 | 1,531 |
| Gross business and government | **285,696** | **35,465** | **1,384** | **322,545** | 230,182 | 22,117 | 1,531 | 253,830 |
| Allowance for credit losses | **608** | **675** | **432** | **1,715** | 529 | 730 | 395 | 1,654 |
| Carrying amount | **285,088** | **34,790** | **952** | **320,830** | 229,653 | 21,387 | 1,136 | 252,176 |
| Gross total loans and acceptances | **513,232** | **51,968** | **1,991** | **567,191** | 439,860 | 32,818 | 2,169 | 474,847 |
| Net total loans and acceptances | **512,395** | **50,732** | **1,447** | **564,574** | 439,105 | 31,507 | 1,671 | 472,283 |
| **Commitments and financial guarantee contracts** | | | | | | | | |
| Acceptable | | | | | | | | |
| Investment grade | **182,153** | **5,134** | **–** | **187,287** | 154,975 | 2,367 | – | 157,342 |
| Sub-investment grade | **45,920** | **14,047** | **–** | **59,967** | 46,827 | 8,164 | – | 54,991 |
| Watchlist | **2** | **2,176** | **–** | **2,178** | – | 2,453 | – | 2,453 |
| Impaired | **–** | **–** | **292** | **292** | – | – | 682 | 682 |
| Allowance for credit losses | **194** | **174** | **13** | **381** | 195 | 186 | 13 | 394 |
| Carrying amount (3)(4) | **227,881** | **21,183** | **279** | **249,343** | 201,607 | 12,798 | 669 | 215,074 |

(1) Credit card loans are immediately written off when principal or interest payments are 180 days past due, and as a result are not reported as impaired in Stage 3.
(2) Includes customers' liability under acceptances.
(3) Represents the total contractual amounts of undrawn credit facilities and other off-balance sheet exposures, excluding personal lines of credit and credit cards that are unconditionally cancellable at our discretion.
(4) Certain commercial borrower commitments are conditional and may include recourse to counterparties.
(5) 92% of Stage 3 loans were either fully or partially collateralized as at October 31, 2022 (92% as at October 31, 2021).

Notes

The following table shows the continuity in the loss allowance, by product type, for the years ended October 31, 2022 and 2021. Transfers represent the amount of ECL that moved between stages during the year, for example, moving from a 12-month (Stage 1) to a lifetime (Stage 2) ECL measurement basis. Net remeasurements represent the ECL impact due to transfers between stages, as well as changes in economic forecasts and credit quality. Model changes include new calculation models or methodologies.

| (Canadian $ in millions) | | | | 2022 | | | | 2021 |
|---|---|---|---|---|---|---|---|---|
| | **Stage 1** | **Stage 2** | **Stage 3** | **Total** | Stage 1 | Stage 2 | Stage 3 | Total |
| **Loans: Residential mortgages** | | | | | | | | |
| Balance as at beginning of year | **46** | **40** | **19** | **105** | 51 | 75 | 26 | 152 |
| Transfer to Stage 1 | **39** | **(37)** | **(2)** | **–** | 62 | (53) | (9) | – |
| Transfer to Stage 2 | **(4)** | **10** | **(6)** | **–** | (4) | 21 | (17) | – |
| Transfer to Stage 3 | **–** | **(7)** | **7** | **–** | – | (13) | 13 | – |
| Net remeasurement of loss allowance | **(52)** | **61** | **8** | **17** | (93) | 24 | 29 | (40) |
| Loan originations | **34** | **–** | **–** | **34** | 38 | – | – | 38 |
| Derecognitions and maturities | **(5)** | **(7)** | **–** | **(12)** | (7) | (12) | – | (19) |
| Model changes | **2** | **5** | **–** | **7** | – | – | – | – |
| Total Provision for Credit Losses (PCL) (1) | **14** | **25** | **7** | **46** | (4) | (33) | 16 | (21) |
| Write-offs (2) | **–** | **–** | **(5)** | **(5)** | – | – | (12) | (12) |
| Recoveries of previous write-offs | **–** | **–** | **7** | **7** | – | – | 11 | 11 |
| Foreign exchange and other | **(1)** | **2** | **(12)** | **(11)** | (1) | (2) | (22) | (25) |
| Balance as at end of year | **59** | **67** | **16** | **142** | 46 | 40 | 19 | 105 |
| **Loans: Consumer instalment and other personal** | | | | | | | | |
| Balance as at beginning of year | **128** | **357** | **91** | **576** | 148 | 454 | 105 | 707 |
| Transfer to Stage 1 | **230** | **(221)** | **(9)** | **–** | 297 | (287) | (10) | – |
| Transfer to Stage 2 | **(41)** | **71** | **(30)** | **–** | (30) | 66 | (36) | – |
| Transfer to Stage 3 | **(5)** | **(82)** | **87** | **–** | (7) | (94) | 101 | – |
| Net remeasurement of loss allowance | **(263)** | **226** | **103** | **66** | (289) | 247 | 103 | 61 |
| Loan originations | **92** | **–** | **–** | **92** | 86 | – | – | 86 |
| Derecognitions and maturities | **(22)** | **(39)** | **–** | **(61)** | (27) | (49) | – | (76) |
| Model changes | **(9)** | **(13)** | **–** | **(22)** | (48) | 26 | – | (22) |
| Total PCL (1) | **(18)** | **(58)** | **151** | **75** | (18) | (91) | 158 | 49 |
| Write-offs (2) | **–** | **–** | **(205)** | **(205)** | – | – | (236) | (236) |
| Recoveries of previous write-offs | **–** | **–** | **80** | **80** | – | – | 86 | 86 |
| Foreign exchange and other | **1** | **5** | **(15)** | **(9)** | (2) | (6) | (22) | (30) |
| Balance as at end of year | **111** | **304** | **102** | **517** | 128 | 357 | 91 | 576 |
| **Loans: Credit cards** | | | | | | | | |
| Balance as at beginning of year | **114** | **245** | **–** | **359** | 110 | 321 | – | 431 |
| Transfer to Stage 1 | **149** | **(149)** | **–** | **–** | 194 | (194) | – | – |
| Transfer to Stage 2 | **(34)** | **34** | **–** | **–** | (28) | 28 | – | – |
| Transfer to Stage 3 | **(2)** | **(114)** | **116** | **–** | (1) | (172) | 173 | – |
| Net remeasurement of loss allowance | **(156)** | **236** | **74** | **154** | (191) | 292 | 21 | 122 |
| Loan originations | **54** | **–** | **–** | **54** | 39 | – | – | 39 |
| Derecognitions and maturities | **(5)** | **(23)** | **–** | **(28)** | (7) | (29) | – | (36) |
| Model changes | **(6)** | **18** | **–** | **12** | – | – | – | – |
| Total PCL (1) | **–** | **2** | **190** | **192** | 6 | (75) | 194 | 125 |
| Write-offs (2) | **–** | **–** | **(249)** | **(249)** | – | – | (266) | (266) |
| Recoveries of previous write-offs | **–** | **–** | **78** | **78** | – | – | 94 | 94 |
| Foreign exchange and other | **1** | **3** | **(19)** | **(15)** | (2) | (1) | (22) | (25) |
| Balance as at end of year | **115** | **250** | **–** | **365** | 114 | 245 | – | 359 |
| **Loans: Business and government** | | | | | | | | |
| Balance as at beginning of year | **662** | **855** | **401** | **1,918** | 658 | 1,258 | 608 | 2,524 |
| Transfer to Stage 1 | **313** | **(267)** | **(46)** | **–** | 505 | (496) | (9) | – |
| Transfer to Stage 2 | **(166)** | **243** | **(77)** | **–** | (101) | 172 | (71) | – |
| Transfer to Stage 3 | **(1)** | **(52)** | **53** | **–** | (2) | (97) | 99 | – |
| Net remeasurement of loss allowance | **(437)** | **127** | **224** | **(86)** | (549) | 334 | 138 | (77) |
| Loan originations | **488** | **–** | **–** | **488** | 329 | – | – | 329 |
| Derecognitions and maturities | **(223)** | **(168)** | **–** | **(391)** | (140) | (214) | – | (354) |
| Model changes | **19** | **(32)** | **–** | **(13)** | (5) | (19) | – | (24) |
| Total PCL (1) | **(7)** | **(149)** | **154** | **(2)** | 37 | (320) | 157 | (126) |
| Write-offs (2) | **–** | **–** | **(153)** | **(153)** | – | – | (336) | (336) |
| Recoveries of previous write-offs | **–** | **–** | **50** | **50** | – | – | 42 | 42 |
| Foreign exchange and other | **91** | **83** | **(13)** | **161** | (33) | (83) | (70) | (186) |
| Balance as at end of year | **746** | **789** | **439** | **1,974** | 662 | 855 | 401 | 1,918 |
| Total as at end of year | **1,031** | **1,410** | **557** | **2,998** | 950 | 1,497 | 511 | 2,958 |
| Comprised of: Loans | **837** | **1,236** | **544** | **2,617** | 755 | 1,311 | 498 | 2,564 |
| Other credit instruments (3) | **194** | **174** | **13** | **381** | 195 | 186 | 13 | 394 |

(1) Excludes PCL on other assets of $2 million for the year ended October 31, 2022 ($(7) million for the year ended October 31, 2021).

(2) Generally, we continue to seek recovery on amounts that were written off during the year, unless the loan is sold, we no longer have the right to collect or we have exhausted all reasonable efforts to collect.

(3) Other credit instruments, including off-balance sheet items, are recorded in other liabilities in our Consolidated Balance Sheet.

Notes

Loans and allowance for credit losses by geographic region as at October 31, 2022 and 2021 are as follows:

| (Canadian $ in millions) | 2022 | | | | 2021 | | | |
|---|---|---|---|---|---|---|---|---|
| | **Gross amount** | **Allowance for credit losses on impaired loans** (2) | **Allowance for credit losses on performing loans** (3) | **Net amount** | Gross amount | Allowance for credit losses on impaired loans (2) | Allowance for credit losses on performing loans (3) | Net amount |
| By geographic region (1): | | | | | | | | |
| Canada | **342,430** | **363** | **1,102** | **340,965** | 299,905 | 345 | 1,143 | 298,417 |
| United States | **200,439** | **176** | **959** | **199,304** | 153,479 | 153 | 910 | 152,416 |
| Other countries | **11,087** | **5** | **12** | **11,070** | 7,442 | – | 13 | 7,429 |
| Total | **553,956** | **544** | **2,073** | **551,339** | 460,826 | 498 | 2,066 | 458,262 |

(1) Geographic region is based upon the country of ultimate risk.
(2) Excludes allowance for credit losses on impaired loans of $13 million for other credit instruments, which is included in other liabilities ($13 million as at October 31, 2021).
(3) Excludes allowance for credit losses on performing loans of $368 million for other credit instruments, which is included in other liabilities ($381 million as at October 31, 2021).

Impaired (Stage 3) loans, including the related allowances, as at October 31, 2022 and 2021 are as follows:

| (Canadian $ in millions) | 2022 | | | 2021 | | |
|---|---|---|---|---|---|---|
| | **Gross impaired amount** (3) | **Allowance for credit losses on impaired loans** (4) | **Net impaired amount** (3) | Gross impaired amount (3) | Allowance for credit losses on impaired loans (4) | Net impaired amount (3) |
| Residential mortgages | **295** | **10** | **285** | 351 | 12 | 339 |
| Consumer instalment and other personal | **312** | **102** | **210** | 287 | 91 | 196 |
| Business and government (1) | **1,384** | **432** | **952** | 1,531 | 395 | 1,136 |
| Total | **1,991** | **544** | **1,447** | 2,169 | 498 | 1,671 |
| By geographic region (2): | | | | | | |
| Canada | **1,158** | **363** | **795** | 1,195 | 345 | 850 |
| United States | **820** | **176** | **644** | 974 | 153 | 821 |
| Other countries | **13** | **5** | **8** | – | – | – |
| Total | **1,991** | **544** | **1,447** | 2,169 | 498 | 1,671 |

(1) Includes customers' liability under acceptances.
(2) Geographic region is based upon the country of ultimate risk.
(3) Gross impaired loans and net impaired loans exclude purchased credit impaired loans.
(4) Excludes allowance for credit losses on impaired loans of $13 million for other credit instruments, which is included in other liabilities ($13 million as at October 31, 2021).

## Loans Past Due Not Impaired

Loans that are past due but not classified as impaired are loans where our customers have failed to make payments when contractually due but for which we expect the full amount of principal and interest payments to be collected, or loans which are held at fair value. The following table presents loans that are past due but not classified as impaired as at October 31, 2022 and 2021. Loans less than 30 days past due are excluded as they are not generally representative of the borrowers' ability to meet their payment obligations.

| (Canadian $ in millions) | 2022 | | | 2021 | | |
|---|---|---|---|---|---|---|
| | **30 to 89 days** | **90 days or more** | **Total** | 30 to 89 days | 90 days or more | Total |
| Residential mortgages | **411** | **19** | **430** | 404 | 14 | 418 |
| Credit card, consumer instalment and other personal | **392** | **84** | **476** | 279 | 59 | 338 |
| Business and government | **198** | **38** | **236** | 264 | 33 | 297 |
| Total | **1,001** | **141** | **1,142** | 947 | 106 | 1,053 |

Fully secured loans with amounts between 90 and 180 days past due that we have not classified as impaired totalled $43 million as at October 31, 2022 ($36 million as at October 31, 2021).

## ECL Sensitivity and Key Economic Variables

The allowance for performing loans is sensitive to changes in both economic forecasts and the probability-weight assigned to each forecast scenario. Many of the factors have a high degree of interdependency, although there is no single factor to which loan impairment allowances as a whole are sensitive.

As at October 31, 2022, our benign scenario involves a materially stronger economic environment than the base case forecast due to a resolution of the Ukraine war and a stronger response of households to elevated savings, with a considerably lower unemployment rate.

As at October 31, 2022, our base case scenario depicts a weak economy in both Canada and the U.S., as growth is tempered by high inflation, rapidly-rising interest rates, lingering supply-chain disruptions, and weaker global demand. In contrast, our base case economic forecast as at October 31, 2021, depicted a stronger economic forecast in both Canada and the U.S. over the projection period. If we assumed a 100% base case economic forecast and included the impact of loan migration by restaging, with other assumptions held constant including the application of experienced credit judgment, the allowance for performing loans would be approximately $1,900 million as at October 31, 2022 ($1,725 million as at October 31, 2021) compared to the reported allowance for performing loans of $2,441 million ($2,447 million as at October 31, 2021).

As at October 31, 2022, our adverse economic scenario depicts a contracting economy with annual average real GDP declining in both Canada and the U.S. in response to a potential escalation of the war in Ukraine. The adverse case as at October 31, 2021 depicted a slightly weaker economic environment in Canada and the U.S. due to higher initial levels for the unemployment rates. If we assumed a 100% adverse economic forecast and included the impact of loan migration by restaging, with other assumptions held constant including the application of experienced credit judgment, the allowance for performing loans would be approximately $3,250 million as at October 31, 2022 ($3,825 million as at October 31, 2021) compared to the reported allowance for performing loans of $2,441 million ($2,447 million as at October 31, 2021).

Actual results in a recession will differ as our portfolio will change through time due to migration, growth, risk mitigation actions and other factors. In addition, our allowance will reflect the three economic scenarios used in assessing the allowance, with weightings attached to adverse and benign scenarios often unequally weighted and the weightings will change through time.

The following table shows the key economic variables used to estimate the allowance on performing loans forecast over the next 12 months or lifetime measurement period. While the values disclosed below are national variables, we use regional variables in the underlying models and consider factors impacting particular industries where appropriate.

| | **As at October 31, 2022** | | | | | | As at October 31, 2021 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| All figures are average annual values | **Benign scenario** | | **Base scenario** | | **Adverse scenario** | | Benign scenario | | Base scenario | | Adverse scenario | |
| | **First 12 months** | **Remaining horizon** (1) | **First 12 months** | **Remaining horizon** (1) | **First 12 months** | **Remaining horizon** (1) | First 12 months | Remaining horizon (1) | First 12 months | Remaining horizon (1) | First 12 months | Remaining horizon (1) |
| Real GDP growth rates (2) | | | | | | | | | | | | |
| Canada | **3.7%** | **2.2%** | **1.5%** | **1.1%** | **(2.3)%** | **0.4%** | 6.3% | 4.0% | 4.0% | 2.9% | (2.7)% | 0.4% |
| United States | **2.4%** | **2.1%** | **0.2%** | **1.3%** | **(3.3)%** | **0.6%** | 7.1% | 3.2% | 4.8% | 2.4% | (1.2)% | 0.6% |
| Corporate BBB 10-year spread | | | | | | | | | | | | |
| Canada | **1.9%** | **1.9%** | **2.4%** | **2.2%** | **3.7%** | **3.9%** | 1.4% | 1.8% | 1.8% | 2.0% | 3.6% | 3.9% |
| United States | **1.8%** | **1.9%** | **2.2%** | **2.2%** | **4.2%** | **3.9%** | 0.9% | 1.3% | 1.2% | 1.6% | 4.2% | 3.9% |
| Unemployment rates | | | | | | | | | | | | |
| Canada | **4.3%** | **3.6%** | **5.9%** | **6.5%** | **8.0%** | **9.9%** | 6.0% | 4.8% | 6.6% | 5.6% | 10.8% | 12.4% |
| United States | **3.2%** | **2.6%** | **4.2%** | **4.8%** | **6.5%** | **8.4%** | 4.2% | 3.0% | 4.7% | 3.6% | 8.5% | 10.6% |
| Housing Price Index (2) | | | | | | | | | | | | |
| Canada (3) | **(6.7)%** | **2.1%** | **(10.0)%** | **(1.0)%** | **(13.6)%** | **(8.0)%** | 18.2% | 7.1% | 15.1% | 4.0% | (6.4)% | (9.5)% |
| United States (4) | **1.6%** | **(0.7)%** | **(0.9)%** | **(2.6)%** | **(7.5)%** | **(8.4)%** | 14.6% | 5.7% | 12.3% | 3.8% | (6.1)% | (7.8)% |

(1) The remaining forecast period is two years.
(2) Real gross domestic product (GDP) and housing price index are averages of quarterly year-over-year growth rates.
(3) In Canada, we use the HPI Benchmark Composite.
(4) In the United States, we use the National Case-Shiller House Price Index.

Certain comparative figures have been reclassified to conform with the current year's presentation.

The ECL approach requires the recognition of credit losses generally based on 12 months of expected losses for performing loans (Stage 1) and the recognition of lifetime expected losses on performing loans that have experienced a significant increase in credit risk since origination (Stage 2). Under our current probability-weighted scenarios, if all our performing loans were in Stage 1, our models would generate an allowance for performing loans of approximately $1,850 million compared to the reported allowance for performing loans of $2,441 million as at October 31, 2022 ($1,775 million compared to the reported allowance for performing loans of $2,447 million as at October 31, 2021).

## Renegotiated Loans

From time to time we modify the contractual terms of a loan due to the poor financial condition of the borrower. We assess renegotiated loans for impairment consistent with our existing policies for impairment. When renegotiation leads to significant concessions being granted, and the concessions are for economic or legal reasons related to the borrower's financial difficulty that we would not otherwise consider, the loan is classified as impaired. We consider one or a combination of the following to be significant concessions: (1) a reduction of the stated interest rate, (2) an extension of the maturity date or dates at a stated interest rate lower than the current market rate for a new loan with similar terms, or (3) forgiveness of principal or accrued interest.

Renegotiated loans remain in performing status if the modifications are not considered to be significant or are returned to performing status when none of the criteria for classification as impaired continues to apply.

The carrying value of loans with lifetime allowance for credit losses modified during the year ended October 31, 2022 was $91 million ($37 million in 2021). Modified loans of $16 million ($21 million in 2021) were written off during the year ended October 31, 2022. As at October 31, 2022, $13 million ($29 million as at October 31, 2021) of loans previously modified saw their loss allowance during the year change from lifetime to 12-month expected credit loss.

## Foreclosed Assets

Property or other assets that we receive from borrowers to satisfy their loan commitments are classified as either held for own use or held-for-sale according to management's intention, recorded initially at fair value for assets held for own use and at the lower of carrying value or fair value less costs to sell for any assets held-for-sale. Assets held for own use are subsequently accounted for in accordance with the relevant asset classification and assets held-for-sale are assessed for impairment.

During the year ended October 31, 2022, we foreclosed on impaired loans and received $24 million of real estate properties that we classified as held-for-sale ($27 million in 2021). As at October 31, 2022, real estate properties held-for-sale totalled $13 million ($11 million as at October 31, 2021). These properties are disposed of when considered appropriate.

## Collateral

Collateral is used to manage credit risk related to securities borrowed or purchased under resale agreements, residential mortgages, consumer instalment and other personal loans, and business and government loans. Additional information on our collateral requirements is included in Notes 14 and 24, as well as in the blue-tinted font in the Enterprise-Wide Risk Management section of Management's Discussion and Analysis within this report.

# Note 5: Risk Management

We have an enterprise-wide approach to the identification, measurement, monitoring and control of risks faced across our organization.
The key risks related to our financial instruments are classified as credit and counterparty, market, and liquidity and funding risk. The pandemic and economic headwinds, including rising interest rates and inflation, impact certain risks as outlined in the Enterprise-Wide Risk Management section of our Management's Discussion and Analysis and where those risks are related to financial instruments, they have been included in the blue-tinted font as referenced below.

## Credit and Counterparty Risk

Credit and counterparty risk is the potential for loss due to the failure of a borrower, endorser, guarantor or counterparty to repay a loan or honour another predetermined financial obligation. Credit risk arises predominantly with respect to loans, over-the-counter and centrally cleared derivatives and other credit instruments. This is the most significant measurable risk that we face.

Our risk management practices and key measures are disclosed in the blue-tinted font in the Enterprise-Wide Risk Management section of Management's Discussion and Analysis within this report. Additional information on credit risk related to loans and derivatives is included in Notes 4 and 8, respectively.

## Market Risk

Market risk is the potential for adverse changes in the value of our assets and liabilities resulting from changes in market variables such as interest rates, credit spreads, foreign exchange rates, equity and commodity prices and their implied volatilities, and includes the risk of credit migration and default in our trading book. We incur market risk in our trading and underwriting activities, as well as in our structural banking activities.

Our market risk management practices and key measures are disclosed in the blue-tinted font in the Enterprise-Wide Risk Management section of Management's Discussion and Analysis within this report.

## Liquidity and Funding Risk

Liquidity and funding risk is the potential for loss if we are unable to meet our financial commitments in a timely manner at reasonable prices as they become due. It is our policy to ensure that sufficient liquid assets and funding capacity are available to meet financial commitments, including liabilities to depositors and suppliers, as well as lending, investment and pledging commitments, even in times of stress. Managing liquidity and funding risk is essential to maintaining enterprise soundness and safety, depositor confidence and earnings stability.

Our liquidity and funding risk management practices and key measures are disclosed in the blue-tinted font in the Enterprise-Wide Risk Management section of Management's Discussion and Analysis within this report.

# Note 6: Transfers of Financial Assets

## Transfers of Financial Assets that do not Qualify for Derecognition

*Loan Securitization*

We sell Canadian residential mortgages to third-party Canadian securitization programs, including the Canada Mortgage Bond program, and directly to third-party investors under the National Housing Act Mortgage-Backed Securities (NHA MBS) program. In 2020, we also participated in the Government of Canada's Insured Mortgage Purchase Program, launched as part of its response to COVID-19. We assess whether substantially all of the risks and rewards of, or control over, the loans have been transferred to determine whether they qualify for derecognition.

Under these programs, we are entitled to the payment over time of the excess of the sum of interest and fees collected from customers, in connection with the mortgages that were sold, over the yield paid to investors, less credit losses and other costs. We also act as counterparty in interest rate swap agreements, where we pay the interest due to Canada Mortgage Bond holders and receive the interest on the underlying mortgages, which are converted into MBS through the NHA MBS program and sold to Canada Housing Trust. Since we continue to be exposed to substantially all the prepayment, interest rate and credit risk associated with the securitized mortgages, they do not qualify for derecognition. We continue to recognize the mortgages in our Consolidated Balance Sheet and the related cash proceeds are recognized as secured financing as part of securitization and structured entities' liabilities in our Consolidated Balance Sheet. The interest and fees collected, net of the yield paid to investors, are recorded in net interest income using the effective interest method over the term of the securitization. Credit losses associated with the mortgages are recorded in the provision for credit losses. During the year ended October 31, 2022, we sold $5,495 million of mortgages to these programs ($7,614 million in 2021).

*Securities Lent or Sold Under Repurchase Agreements*

Securities lent or sold under repurchase agreements represent short-term funding transactions in which we sell securities that we own and simultaneously commit to repurchase the same securities at a specified price on a specified date in the future. We retain substantially all the risks and rewards associated with the securities and we continue to recognize them in our Consolidated Balance Sheet, with the obligation to repurchase these securities recorded as secured borrowing transactions at the amount owing. The carrying value of these securities approximates the carrying value of the associated liabilities due to their short-term nature. As at October 31, 2022, the carrying values of securities lent and securities sold under repurchase agreements were $13,473 million and $90,490 million, respectively ($9,662 million and $87,894 million, respectively, as at October 31, 2021). The interest expense related to these liabilities is recorded on an accrual basis in interest expense, other liabilities, in our Consolidated Statement of Income.

The following table presents the carrying value and fair values of transferred assets that did not qualify for derecognition and the associated liabilities:

| (Canadian $ in millions) | | **2022** | | 2021 |
|---|---|---|---|---|
| | **Carrying value** (1) | **Fair value** | Carrying value (1) | Fair value |
| **Assets** | | | | |
| Trading securities (2) | **1,062** | **–** | 997 | – |
| Residential mortgages | **7,503** | **–** | 7,847 | – |
| Other related assets (3) | **10,012** | **–** | 10,009 | – |
| Total | **18,577** | **17,764** | 18,853 | 18,859 |
| Associated liabilities (4) | **17,471** | **16,846** | 18,208 | 18,323 |

(1) Carrying value of loans is net of allowance, where applicable.
(2) Trading securities represent collateralized mortgage obligations issued by third-party sponsored vehicles, where we do not substantially transfer all the risks and rewards of ownership to third-party investors.
(3) Other related assets represent payments received on account of mortgages pledged under securitization programs that have not yet been applied against the associated liabilities. The payments received are held in permitted instruments on behalf of the investors in the securitization vehicles until principal payments are required to be made on the associated liabilities. In order to compare all assets supporting the associated liabilities, this amount is added to the carrying amount of the securitized assets in the table above.
(4) Associated liabilities are recognized in securitization and structured entities' liabilities and securities lent or sold under repurchase agreements in our Consolidated Balance Sheet.

### Continuing Involvement in Transferred Financial Assets that Qualify for Derecognition

We retain the mortgage servicing rights, representing our continuing involvement, for certain mortgage loans purchased or originated in the U.S. which are sold and derecognized. During the year ended October 31, 2022, we sold and derecognized $556 million of these loans ($631 million in 2021) and recognized a $17 million gain ($32 million in 2021) in non-interest revenue, other. As at October 31, 2022, the carrying value of the mortgage servicing rights was $39 million ($29 million as at October 31, 2021) and the fair value was $54 million ($28 million as at October 31, 2021).

We retain the residual interests, representing our continuing involvement, for certain commercial mortgage loans purchased or originated in the U.S. which are sold and derecognized. During the year ended October 31, 2022, we sold and derecognized $4,014 million of these loans ($1,252 million in 2021) and recognized a gain of $7 million upon transfer ($3 million in 2021). The carrying values of our retained interests classified as debt securities at amortized cost and loans carried at amortized cost were $8 million and $37 million, respectively, as at October 31, 2022 ($7 million and $7 million as at October 31, 2021). Fair value was equal to carrying value on these dates.

In addition, we hold U.S. government agency collateralized mortgage obligations (CMOs) issued by third-party sponsored vehicles, which we may further securitize by packaging them into new CMOs prior to selling to third-party investors. Where we do not substantially transfer all the risks and rewards of ownership to third-party investors, we continue to recognize these CMOs and the related cash proceeds as secured financing in our Consolidated Balance Sheet. During the year, we sold CMOs that qualified for derecognition, where retained interests represent our continuing involvement and are managed as part of larger portfolios held for either trading, liquidity or hedging purposes. Where we sold these CMOs, associated gains and losses are recognized in non-interest revenue, trading revenues. As at October 31, 2022, the fair value of our retained interests in these CMOs was $10 million, classified as trading securities in our Consolidated Balance Sheet ($3 million as at October 31, 2021). Refer to Note 3 for further information.

### Transferred Financial Assets that Qualify for Derecognition

The Canadian government launched the Canada Emergency Business Account Program in 2020 as part of its response to COVID-19, in which we issued loans that were funded by the government, until the program was closed to new applicants as of June 30, 2021. We determined these loans qualify for derecognition, as substantially all the risks and rewards were transferred; therefore, we do not recognize these loans in our Consolidated Balance Sheet.

## Note 7: Structured Entities

We enter into certain transactions in the ordinary course of business which involve the establishment of structured entities (SEs) to facilitate or secure customer transactions and to obtain alternate sources of funding. We are required to consolidate a SE if we control the entity. We control a SE when we have power over the SE, exposure to variable returns as a result of our involvement, and the ability to exercise power to affect the amount of our returns.

In assessing whether we control a SE, we consider the entire arrangement to determine the purpose and design of the SE, the nature of any rights held through contractual arrangements, and whether we are acting as principal or agent.

We perform a reassessment of consolidation if facts and circumstances indicate that there have been changes to one or more of the elements of control over the SE. In the event such reassessment results in a loss of control, we will derecognize the related assets (including goodwill), liabilities and non-controlling interest at their carrying amounts and recognize any consideration received or retained interest at fair value with any differential recognized as a gain or loss in our Consolidated Statement of Income. Information regarding our basis of consolidation is included in Note 1.

### Consolidated Structured Entities

*Bank Securitization Vehicles*

We use securitization vehicles to securitize our Canadian credit card loans, Canadian real estate lines of credit, Canadian auto loans and U.S. equipment loans in order to obtain alternate sources of funding. The structure of these vehicles limits the activities they can undertake and the types of assets they can hold, and the vehicles have limited decision-making authority. The vehicles issue term asset-backed securities (ABS) to fund their activities. We control and consolidate these vehicles, as we have the key decision-making powers necessary to obtain the majority of the benefits of their activities.

The following table presents the carrying value and fair values of transferred assets that did not qualify for derecognition and the associated liabilities issued by our bank securitization vehicles:

| (Canadian $ in millions) | **2022** | | 2021 | |
|---|---|---|---|---|
| | **Carrying value** (1) | **Fair value** | Carrying value (1) | Fair value |
| **Assets** | | | | |
| Credit cards | **8,223** | **8,223** | 7,106 | 7,106 |
| Consumer instalment and other personal (2) | **4,769** | **4,738** | 5,228 | 5,238 |
| Business and government | **125** | **124** | 250 | 253 |
| Total | **13,117** | **13,085** | 12,584 | 12,597 |
| Associated liabilities (3) | **9,274** | **9,072** | 7,278 | 7,341 |

(1) Carrying value of loans is net of allowance.
(2) Includes real estate lines of credit and auto loans.
(3) Associated liabilities are recognized in securitization and structured entities' liabilities in our Consolidated Balance Sheet.

*Capital and Funding Vehicles*

We sponsor the Trust established in connection with the issuance of $1,250 million 4.3% Limited Recourse Capital Notes, Series 1 (Series 1 LRCNs), $750 million 5.625% Limited Recourse Capital Notes, Series 2 (Series 2 LRCNs) and $1,000 million 7.325% Limited Recourse Capital Notes, Series 3 (Series 3 LRCNs), which holds $1,250 million of BMO issued Non-Cumulative, 5-Year Rate Reset Class B Preferred Shares, Series 48 (Non-Viability Contingent Capital (NVCC)), $750 million of BMO issued Non-Cumulative, 5-Year Rate Reset Class B Preferred Shares, Series 49 (NVCC) and $1,000 million of BMO issued Non-Cumulative 5-Year Rate Reset Class B Preferred Shares, Series 51 (NVCC), issued concurrently with the Series 1, Series 2 and Series 3 LRCNs, respectively. We determined that we control and therefore consolidate this vehicle as we are exposed to its variable returns and have key decision-making powers over its activities. Refer to Note 16 for further information.

We have a funding vehicle, created under the covered bond program, that was established to guarantee payments due to bondholders on bonds issued by us. We sell assets to this funding vehicle in exchange for an intercompany loan. Refer to Note 13 for further information on our covered bond deposit liabilities.

We may also use capital vehicles to transfer our credit exposure on certain loan assets. We purchase credit protection against eligible credit events from these vehicles. The vehicles collateralize their obligation through the issuance of guarantee-linked notes. Loan assets are not sold or assigned to the vehicles and remain on our Consolidated Balance Sheet. During fiscal 2021, we redeemed all guarantee-linked notes issued by these vehicles.

For those vehicles that purchase assets from us or are designed to pass on our credit risk, we have determined that, based on the rights of the arrangements or through our equity interest, we have significant exposure to the variable returns of the vehicles, and we control and therefore consolidate these vehicles. Additional information related to notes issued by, and assets sold to, these vehicles is provided in Notes 13 and 24, respectively.

*Other*

We have other consolidated structured entities, created to meet the bank's and customers' needs. Aside from the exposure resulting from our involvement as a sponsor, the bank does not have other contractual or non-contractual arrangements to provide financial support to these consolidated structured entities.

## Unconsolidated Structured Entities

The table below presents amounts related to our interests in unconsolidated SEs:

| (Canadian $ in millions) | | | **2022** | | | 2021 |
|---|---|---|---|---|---|---|
| | **Customer securitization vehicles** (1) | **Capital vehicles** | **Other securitization vehicles** | Customer securitization vehicles (1) | Capital vehicles | Other Securitization vehicles |
| **Interests recorded on our Consolidated Balance Sheet** | | | | | | |
| Financial Assets | | | | | | |
| Cash and cash equivalents | **68** | **3,483** | **–** | 63 | 1,210 | – |
| Trading securities | **573** | **–** | **1,795** | 24 | – | 58 |
| FVTPL securities | **119** | **–** | **–** | 218 | – | – |
| FVOCI securities | **1,079** | **–** | **–** | 464 | – | – |
| Amortized cost securities | **–** | **–** | **–** | – | – | 93 |
| Derivatives | **–** | **–** | **–** | 2 | – | – |
| Other | **11** | **–** | **80** | 5 | – | – |
| Total | **1,850** | **3,483** | **1,875** | 776 | 1,210 | 151 |
| Financial Liabilities | | | | | | |
| Deposits | **68** | **3,483** | **–** | 63 | 1,210 | – |
| Derivatives | **17** | **–** | **–** | – | – | – |
| Other | **–** | **48** | **–** | – | 22 | – |
| Total | **85** | **3,531** | **–** | 63 | 1,232 | – |
| **Maximum exposure to loss** (2) | **20,141** | **1** | **1,875** | 14,208 | – | 151 |
| **Total assets of the entities** | **12,364** | **3,531** | **11,845** | 8,116 | 1,234 | 5,686 |

(1) Securities held that are issued by our Canadian and U.S. customer securitization vehicles are comprised of asset-backed commercial paper and are classified as either trading securities, FVTPL securities or FVOCI securities.
(2) Maximum exposure to loss represents securities held, undrawn liquidity facilities, any remaining unfunded committed amounts to the BMO funded vehicle, derivative assets and other assets.

*Customer Securitization Vehicles*

We sponsor customer securitization vehicles (also referred to as bank-sponsored multi-seller conduits) that provide our customers with alternate sources of funding through the securitization of their assets. These vehicles provide clients with access to financing either from BMO or in the asset-backed commercial paper (ABCP) markets by allowing them to either sell their assets directly into the vehicle or indirectly by selling an interest in the securitized assets into the vehicle, which then issues ABCP to either investors or BMO to fund the purchases. The sellers remain responsible for servicing the transferred assets and are first to absorb any losses realized on those assets. We are not responsible for servicing or absorbing the first loss and none of the sellers are affiliated with BMO. We earn fees for providing services related to the securitizations, including liquidity, distribution and financial arrangement fees for supporting the ongoing operations of the vehicles. We have determined that we do not control these vehicles because either we do not service the program assets, the key relevant activity, or we do not have any exposure to variable returns.

We provide liquidity facilities to the market-funded vehicles, which may require that we provide additional financing to the vehicles should certain events occur. The total committed and undrawn amount under these liquidity facilities and undrawn amounts of the BMO funded vehicle as at October 31, 2022 was $7,114 million ($5,400 million as at October 31, 2021). This amount comprises part of the commitments outlined in Note 24.

Effective October 31, 2021, our relationship with Fairway Financial Company LLC (a customer securitization vehicle in the U.S.) changed from principal to agent as reflected primarily in the change to our exposure to variable returns. At that point, we concluded we no longer control the entity and as a result, we deconsolidated our investment. No gain or loss was recognized in our Consolidated Statement of Income as a result of deconsolidating this entity.

We continue to provide liquidity facilities to this vehicle, which may require that we provide additional financing to the vehicle in the event that certain events occur. The total committed undrawn amount under these facilities as at October 31, 2022 was $11,245 million ($8,095 million as at October 31, 2021).

Our interest in this vehicle as at October 31, 2022 and 2021 has been included in the Unconsolidated Structured Entities table above.

*Capital Vehicles*

We also use capital vehicles to pass our credit risk to security holders of the vehicles. In these situations, we are not exposed to significant default or credit risk. Our remaining exposure to variable returns is less than that of the note holders in these vehicles, who are exposed to our default and credit risk. We are not required to consolidate these vehicles.

*Other Securitization Vehicles*

Other securitization vehicles include holdings in asset-backed securitizations. Where we sponsor SEs that securitize MBS into CMOs, we may have interests through our holdings of CMOs but do not consolidate the SEs as we do not have power to direct their relevant activities. These include government-sponsored agency securities such as U.S. government agency issuances. In determining whether we are a sponsor of a SE, we consider both qualitative and quantitative factors, including the purpose and nature of the entity, and our initial and continuing involvement. Subsequent to the securitization, we sell the CMOs to third parties. Our maximum exposure to loss is limited to our on-balance sheet investments in these entities, included in the Unconsolidated Structured Entities table above.

Where the asset-backed instruments in these securitizations are transferred to third parties, but we do not substantially transfer all risks and rewards of ownership to the third-party investors, we continue to recognize the transferred assets with the related cash proceeds recorded as secured financing in our Consolidated Balance Sheet in other liabilities, securitization and structured entities' liabilities. As at October 31, 2022, these transferred assets were carried at fair value totalling $1,385 million ($53 million as at October 31, 2021) with $323 million ($nil million as at October 31, 2021) recognized in securitization and structured entities' liabilities, also carried at fair value.

Where the asset-backed instruments in these securitizations are transferred to third parties and qualify for derecognition, we record the related gains or losses in non-interest revenue, trading revenues. We may also retain an interest in the CMOs sold, which represents our continuing involvement. As at October 31, 2022, we held retained interests of $410 million ($5 million as at October 31, 2021) carried at fair value on our Consolidated Balance Sheet in securities, trading.

During the year ended October 31, 2022, we sold $8,342 million of MBS to these sponsored securitization vehicles ($2,549 million in 2021), where we divested all interests in the securitized MBSs and any gains and losses were recorded in non-interest revenue, trading revenues.

We retain residual interests in certain commercial mortgage loans that are either purchased or originated in the U.S. which are then sold and derecognized through bank sponsored SEs that securitize these loans into MBS. During the year ended October 31, 2022, we sold and derecognized $2,142 million of these loans ($411 million in 2021) and recognized a gain of $3 million upon transfer ($nil million in 2021). The carrying values of our retained interests classified as loans carried at amortized cost were $80 million as at October 31, 2022 ($nil million as at October 31, 2021). Fair value was equal to carrying value on these dates.

*BMO Managed Funds*

We have established a number of funds that we also manage. We assess whether or not we control these funds based on the economic interest we have in the funds, including investments in the funds and management fees earned from the funds, and any investors' rights to remove us as investment manager. We only consolidate those funds that we control. Our total interest in unconsolidated BMO managed funds was $948 million as at October 31, 2022 ($1,345 million as at October 31, 2021), with $185 million included in FVTPL securities and $763 million included in trading securities as at October 31, 2022 ($321 million and $1,024 million, respectively, as at October 31, 2021) in our Consolidated Balance Sheet.

### Other Structured Entities

We purchase and hold investments in a variety of third-party SEs, including exchange-traded funds, mutual funds, limited partnerships investment trusts and government-sponsored ABS vehicles, which are recorded in securities in our Consolidated Balance Sheet. We are considered to have an interest in these entities through our holdings and because we may act as a counterparty in certain derivatives contracts. We are not the investment manager or the sponsor of any of these entities. We are generally a passive investor and do not have power over the key decision-making activities of these entities. Our maximum exposure to loss from our investments is limited to the carrying amounts of our investments in these entities and any unutilized commitment we have provided.

### Sponsored Structured Entities

We may be deemed to be the sponsor of a SE if we are involved in its design, legal set-up or marketing. We may also be deemed to be the sponsor of a SE if market participants would reasonably associate the entity with us. Any interests in securitization vehicles we have sponsored are disclosed in the interests in Unconsolidated Structured Entities table above.

### Financial Support Provided to Structured Entities

During the years ended October 31, 2022 and 2021, we did not provide any financial or non-financial support to any consolidated or unconsolidated SEs when we were not contractually obligated to do so. Furthermore, we have no intention of providing such support in the future.

## Note 8: Derivative Instruments

Derivative instruments are financial contracts that derive their value from underlying changes in interest rates, foreign exchange rates or other financial or commodity prices or indices.

Derivative instruments are either regulated exchange-traded contracts or negotiated over-the-counter contracts. We use these instruments for trading purposes, as well as to manage our exposures, mainly to foreign currency and interest rate fluctuations, as part of our asset/liability management program.

### Types of Derivatives

*Swaps*

Swaps are contractual agreements between two parties to exchange a series of cash flows. The various swap agreements that we enter into are as follows:

- Interest rate swaps – counterparties generally exchange fixed and floating rate interest payments based on a notional value in a single currency.
- Cross-currency swaps – fixed rate interest payments and principal amounts are exchanged in different currencies.
- Cross-currency interest rate swaps – fixed and/or floating rate interest payments and principal amounts are exchanged in different currencies.
- Commodity swaps – counterparties generally exchange fixed and floating rate payments based on a notional value of a single commodity.
- Equity swaps – counterparties exchange the return on an equity security or a group of equity securities for the return based on a fixed or floating interest rate or the return on another equity security or group of equity securities.
- Credit default swaps – one counterparty pays the other a fee in exchange for that other counterparty agreeing to make a payment if a credit event occurs, such as bankruptcy or failure to pay.
- Total return swaps – one counterparty agrees to pay or receive from the other cash amounts based on changes in the value of a reference asset or group of assets, including any returns such as interest earned on these assets, in exchange for amounts that are based on prevailing market funding rates.

*Forwards and Futures*

Forwards and futures are contractual agreements to either buy or sell a specified amount of a currency, commodity, interest rate-sensitive financial instrument or security at a specified price and date in the future.

Forwards are customized contracts transacted in the over-the-counter market. Futures are transacted in standardized amounts on regulated exchanges and are subject to daily cash margining.

*Options*

Options are contractual agreements that convey to the purchaser the right but not the obligation to either buy or sell a specified amount of a currency, commodity, interest rate-sensitive financial instrument or security at a fixed future date or at any time within a fixed future period.

For options written by us, we receive a premium from the purchaser for accepting market risk.

For options purchased by us, we pay a premium for the right to exercise the option. Since we have no obligation to exercise the option, our primary exposure to risk is the potential credit risk if the writer of an over-the-counter contract fails to meet the terms of the contract.

Caps, collars and floors are specialized types of written and purchased options. They are contractual agreements in which the writer agrees to pay the purchaser, based on a specified notional amount, the difference between the market rate and the prescribed rate of the cap, collar or floor. The writer receives a premium for selling this instrument.

A swaption is an option granting its owner the right but not the obligation to enter into an underlying swap.

A futures option is an option contract in which the underlying instrument is a single futures contract.

The main risks associated with these derivative instruments are related to exposure to movements in interest rates, foreign exchange rates, credit quality, value of the underlying financial instrument or commodity, as applicable, and the possible inability of counterparties to meet the terms of the contracts.

## Embedded Derivatives

From time to time, we purchase or issue financial instruments containing embedded derivatives. The embedded derivative in a financial liability is separated from the host contract and carried at fair value if the economic characteristics of the derivative are not closely related to those of the host contract, the terms of the embedded derivative are the same as those of a stand-alone derivative, and the combined contract is not measured at fair value. To the extent that we cannot reliably identify and measure the embedded derivative, the entire contract is carried at fair value, with changes in fair value reflected in our Consolidated Statement of Income. Embedded derivatives in certain of our GIC deposits are accounted for separately from the host instrument and presented within deposits in our Consolidated Balance Sheet.

## Contingent Features

Certain over-the-counter derivative instruments contain provisions that link the amount of collateral we are required to post or pay to our credit ratings, as determined by the major credit rating agencies. If our credit ratings were to be downgraded, certain counterparties to these derivative instruments could demand immediate and ongoing collateralization on derivative liability positions or request immediate payment. The aggregate fair value of all derivative instruments with collateral posting requirements that were in a liability position as at October 31, 2022 was $12,413 million ($4,537 million as at October 31, 2021), for which we have posted collateral of $10,464 million ($3,921 million as at October 31, 2021).

## Risks Hedged

*Interest Rate Risk*

We manage interest rate risk through interest rate futures, interest rate swaps and options, which are linked to and adjust the interest rate sensitivity of a specific asset, liability, forecasted transaction or firm commitment, or a specific pool of transactions with similar risk characteristics.

*Foreign Currency Risk*

We manage foreign currency risk through currency futures, foreign currency options, cross-currency swaps, foreign exchange spot transactions, forward contracts and deposits denominated in foreign currencies.

*Equity Price Risk*

We manage equity price risk through total return swaps.

## Trading Derivatives

Trading derivatives include derivatives entered into with customers to accommodate their risk management needs, market-making to facilitate customer-driven demand for derivatives, derivatives transacted on a limited basis to generate trading income from our principal trading positions, and certain derivatives that we enter into as part of our risk management strategy that do not qualify as hedges for accounting purposes (economic hedges).

We structure and market derivative products to enable customers to transfer, modify or reduce current or expected exposure to risks.

Principal trading activities include market-making and positioning activities. Market-making involves quoting bid and offer prices to other market participants with the intention of generating revenues based on spread and volume. Positioning activities involve managing market risk positions with the expectation of profiting from favourable movements in prices, rates or indices.

We may also economically hedge a portion of our U.S. dollar earnings through forward foreign exchange contracts and/or options to minimize fluctuations in our consolidated net income due to the translation of our U.S. dollar earnings. These contracts are recorded at fair value, with changes in fair value recorded in non-interest revenue, trading revenues, in our Consolidated Statement of Income. We entered into economic hedges in relation to the announced definitive agreement with BNP Paribas to acquire Bank of the West and its subsidiaries. Refer to Note 10 for further details.

Trading derivatives are recorded at fair value. Realized and unrealized gains and losses are generally recorded in non-interest revenue, trading revenues, in our Consolidated Statement of Income. Unrealized gains and losses on derivatives used to economically hedge certain exposures may be recorded in the Consolidated Statement of Income in the same line as the unrealized gains and losses arising from the exposures. Unrealized gains on trading derivatives are recorded as derivative instrument assets and unrealized losses are recorded as derivative instrument liabilities in our Consolidated Balance Sheet.

## Fair Value of Trading and Hedging Derivatives

Fair value represents point-in-time estimates that may change in subsequent reporting periods due to market conditions or other factors. A discussion of the fair value measurement of derivatives is included in Note 17.

Fair values of our derivative instruments are as follows:

| (Canadian $ in millions) | | | 2022 | | | 2021 |
|---|---|---|---|---|---|---|
| | **Gross assets** | **Gross liabilities** | **Net** | Gross assets | Gross liabilities | Net |
| **Trading** | | | | | | |
| **Interest Rate Contracts** | | | | | | |
| Swaps (1) | **7,176** | **(4,249)** | **2,927** | 6,132 | (4,323) | 1,809 |
| Forward rate agreements | **437** | **(120)** | **317** | 42 | (105) | (63) |
| Purchased options | **3,157** | **–** | **3,157** | 641 | – | 641 |
| Written options | **–** | **(2,391)** | **(2,391)** | – | (520) | (520) |
| Futures | **16** | **(27)** | **(11)** | – | (3) | (3) |
| **Foreign Exchange Contracts** (2) | | | | | | |
| Cross-currency swaps | **1,688** | **(2,096)** | **(408)** | 1,438 | (1,207) | 231 |
| Cross-currency interest rate swaps | **10,722** | **(11,254)** | **(532)** | 8,595 | (5,827) | 2,768 |
| Forward foreign exchange contracts | **8,387** | **(7,267)** | **1,120** | 3,505 | (3,925) | (420) |
| Purchased options | **1,096** | **–** | **1,096** | 381 | – | 381 |
| Written options | **–** | **(1,151)** | **(1,151)** | – | (384) | (384) |
| **Commodity Contracts** | | | | | | |
| Swaps | **4,198** | **(1,725)** | **2,473** | 5,916 | (1,256) | 4,660 |
| Purchased options | **1,851** | **–** | **1,851** | 1,383 | – | 1,383 |
| Written options | **–** | **(1,627)** | **(1,627)** | – | (815) | (815) |
| Futures | **275** | **(237)** | **38** | 319 | (120) | 199 |
| **Equity Contracts** | **6,473** | **(14,584)** | **(8,111)** | 5,998 | (9,383) | (3,385) |
| **Credit Contracts** | | | | | | |
| Purchased | **27** | **(3)** | **24** | – | (3) | (3) |
| Written | **34** | **(72)** | **(38)** | – | (4) | (4) |
| Total fair value – trading derivatives | **45,537** | **(46,803)** | **(1,266)** | 34,350 | (27,875) | 6,475 |
| **Hedging** | | | | | | |
| **Interest Rate Contracts** (3) | | | | | | |
| Cash flow hedges – swaps | **41** | **(6,824)** | **(6,783)** | 354 | (1,166) | (812) |
| Fair value hedges – swaps | **1,935** | **(2,987)** | **(1,052)** | 903 | (662) | 241 |
| Total swaps | **1,976** | **(9,811)** | **(7,835)** | 1,257 | (1,828) | (571) |
| **Foreign Exchange Contracts** (4) | | | | | | |
| Cash flow hedges (1) | **629** | **(3,342)** | **(2,713)** | 1,020 | (1,112) | (92) |
| Net investment hedges | **–** | **–** | **–** | 46 | – | 46 |
| Total foreign exchange contracts | **629** | **(3,342)** | **(2,713)** | 1,066 | (1,112) | (46) |
| **Equity Contracts** | | | | | | |
| Cash flow hedges | **18** | **–** | **18** | 40 | – | 40 |
| Total equity contracts | **18** | **–** | **18** | 40 | – | 40 |
| Total fair value – hedging derivatives (5) | **2,623** | **(13,153)** | **(10,530)** | 2,363 | (2,940) | (577) |
| Total fair value – trading and hedging derivatives | **48,160** | **(59,956)** | **(11,796)** | 36,713 | (30,815) | 5,898 |
| Less: impact of master netting agreements | **(31,878)** | **31,878** | **–** | (20,952) | 20,952 | – |
| Total | **16,282** | **(28,078)** | **(11,796)** | 15,761 | (9,863) | 5,898 |

(1) Includes derivatives entered into in relation to our announced agreement to acquire Bank of the West and its subsidiaries. Refer to Note 10 for further details.
(2) Gold contracts are included in foreign exchange contracts.
(3) Includes the fair value of bond futures in fair value hedges rounded down to $nil million as at October 31, 2022 (we held no bond futures as at October 31, 2021).
(4) Includes the fair value of USD-EUR cross-currency swaps in fair value hedges rounded down to $nil million as at October 31, 2022 (we held no USD-EUR cross-currency swaps as at October 31, 2021).
(5) The fair values of hedging derivatives wholly or partially offset the changes in fair values of the related on-balance sheet financial instruments.

Assets are shown net of liabilities to customers where we have a legally enforceable right to offset amounts and we intend to settle contracts on a net basis.

## Notional Amounts of Trading Derivatives

The notional amounts of our derivatives represent the amount to which a rate or price is applied in order to calculate the amount of cash that must be exchanged under the contract. Notional amounts do not represent assets or liabilities and therefore are not recorded in our Consolidated Balance Sheet.

| (Canadian $ in millions) | | | 2022 | | | 2021 |
|---|---|---|---|---|---|---|
| | **Exchange traded** | **Over-the-counter** | **Total** | Exchange traded | Over-the-counter | Total |
| **Interest Rate Contracts** | | | | | | |
| Swaps (1) | **–** | **5,683,145** | **5,683,145** | – | 3,976,428 | 3,976,428 |
| Forward rate agreements | **–** | **22,397** | **22,397** | – | 147,657 | 147,657 |
| Purchased options | **23,854** | **98,113** | **121,967** | 10,611 | 69,491 | 80,102 |
| Written options | **11,073** | **87,941** | **99,014** | 3,621 | 68,155 | 71,776 |
| Futures | **401,965** | **–** | **401,965** | 232,972 | – | 232,972 |
| Total interest rate contracts | **436,892** | **5,891,596** | **6,328,488** | 247,204 | 4,261,731 | 4,508,935 |
| **Foreign Exchange Contracts** (2) | | | | | | |
| Cross-currency swaps | **–** | **53,837** | **53,837** | – | 45,482 | 45,482 |
| Cross-currency interest rate swaps | **–** | **578,685** | **578,685** | – | 506,791 | 506,791 |
| Forward foreign exchange contracts | **–** | **481,773** | **481,773** | – | 489,081 | 489,081 |
| Purchased options | **1,127** | **72,733** | **73,860** | 1,762 | 54,145 | 55,907 |
| Written options | **5,421** | **74,041** | **79,462** | 4,735 | 54,147 | 58,882 |
| Futures | **1,032** | **–** | **1,032** | 222 | – | 222 |
| Total foreign exchange contracts | **7,580** | **1,261,069** | **1,268,649** | 6,719 | 1,149,646 | 1,156,365 |
| **Commodity Contracts** | | | | | | |
| Swaps | **–** | **24,525** | **24,525** | – | 28,892 | 28,892 |
| Purchased options | **34,177** | **5,686** | **39,863** | 10,020 | 4,526 | 14,546 |
| Written options | **34,245** | **5,011** | **39,256** | 11,000 | 3,132 | 14,132 |
| Futures | **44,836** | **–** | **44,836** | 39,448 | – | 39,448 |
| Total commodity contracts | **113,258** | **35,222** | **148,480** | 60,468 | 36,550 | 97,018 |
| **Equity Contracts** | **162,102** | **104,825** | **266,927** | 106,302 | 98,962 | 205,264 |
| **Credit Contracts** | | | | | | |
| Purchased | **–** | **16,771** | **16,771** | – | 12,358 | 12,358 |
| Written | **–** | **11,099** | **11,099** | – | 5,158 | 5,158 |
| Total | **719,832** | **7,320,582** | **8,040,414** | 420,693 | 5,564,405 | 5,985,098 |

(1) Includes derivatives entered into in relation to our announced agreement to acquire Bank of the West and its subsidiaries. Refer to Note 10 for further details.
(2) Gold contracts are included with foreign exchange contracts.

Table excludes loan commitment derivatives with notionals of $4,183 million ($5,613 million as at October 31, 2021).

## Derivatives Used in Hedge Accounting

The bank applies the requirements of IAS 39 *Financial Instruments: Recognition and Measurement* for hedge accounting purposes. In accordance with our risk management strategy, we enter into various derivative contracts to hedge our interest rate, foreign currency and equity price exposures. We also use deposits, cross-currency swaps, foreign exchange forwards and options to hedge foreign currency exposure in our net investment in foreign operations.

When the hedged item is accounted for at FVTPL, there is a natural offset within the income statement with the related derivative. However, when we manage risks incumbent in instruments that are accounted for at amortized cost, including loans and deposits, or FVOCI debt securities, we use hedge accounting in order to eliminate the mismatch between the hedged item and the mark-to-market derivative.

To the extent these instruments used to manage risk qualify for hedge accounting, we designate them in accounting hedge relationships. Our structural market risk strategies, including our approach to managing interest rate and foreign exchange risk, are included in the blue-tinted font in the Structural (Non-Trading) Market Risk section of Management's Discussion and Analysis within this report. In addition, our exposure to foreign exchange rate risk is discussed in the Non-Trading Foreign Exchange Risk section of Management's Discussion and Analysis. Our exposure to equity price risk and our approach to managing it are discussed in the Other Share-Based Compensation, Mid-Term Incentive Plans section of Note 20.

By using derivatives to hedge exposures to changes in interest rates, foreign currency exchange rates, and equity prices, we are also exposed to the credit risk of the derivative counterparty. We mitigate credit risk by entering into transactions with high-quality counterparties, requiring the counterparties to post collateral, entering into master netting agreements, or settling through centrally cleared counterparties.

In order to qualify as an accounting hedge, the hedging relationship must be designated and formally documented at its inception, detailing the particular risk management objective and strategy for the hedge and the specific asset, liability or cash flow being hedged, as well as how effectiveness is to be assessed. Changes in the fair value of the derivative must be highly effective in offsetting changes in the fair value or changes in the amount of future cash flows of the hedged item. We evaluate hedge effectiveness at the inception of the hedging relationship and on an ongoing basis, retrospectively and prospectively, primarily using a quantitative statistical regression analysis. We consider a hedging relationship highly effective when all of the following criteria are met: correlation between the variables in the regression is at least 0.8; the slope of the regression is within a 0.8 to 1.25 range; and the confidence level of the slope is at least 95%. The practice is different for our net investment hedge, which is discussed in the Net Investment Hedges section below.

Any ineffectiveness in the hedging relationship is recognized as it arises in non-interest revenue, other, in our Consolidated Statement of Income.

Under the IASB's Phase 1 Amendments to IAS 39 and IFRS 7, certain hedge accounting requirements were modified to provide relief from the uncertainty arising from IBOR reform during the period prior to replacement of IBORs. These amendments include allowing us to assume the interest rate benchmarks that are the basis for cash flows of the hedged item and hedging instrument are not altered as a result of IBOR reform, thereby allowing hedge accounting to continue. They also provide an exception from the requirement to discontinue hedge accounting if a hedging relationship does not meet the effectiveness requirements solely as a result of IBOR reform. We continue to apply these amendments as at October 31, 2022, with application ending at the earlier of the discontinuation of the impacted hedge relationship and when there is no longer uncertainty arising from IBOR reform over the timing and amount of IBOR-based cash flows.

The following table outlines the notional amounts, and average rates of derivatives and the carrying amounts of deposits designated as hedging instruments, by term to maturity, hedge type, and risk type, where applicable.

| | | Remaining term to maturity | | | | | 2022 | 2021 |
|---|---|---|---|---|---|---|---|---|
| (Canadian $ in millions, except as noted) | | Within 1 year | 1 to 3 years | 3 to 5 years | 5 to 10 years | Over 10 years | Total | Total |
| **Cash Flow Hedges** | | | | | | | | |
| **Interest rate risk – Interest rate swaps** | | | | | | | | |
| Notional amount (1) | | **54,197** | **29,562** | **41,475** | **41,028** | **1,683** | **167,945** | 94,152 |
| Average fixed interest rate | | **3.87%** | **3.37%** | **2.30%** | **2.56%** | **2.42%** | **3.06%** | 1.06% |
| **Foreign exchange risk – Cross-currency swaps and foreign exchange forwards** (2) | | | | | | | | |
| CAD-USD pair (3) | Notional amount | **33,018** | **12,436** | **9,943** | **6,979** | **327** | **62,703** | 38,292 |
| | Average fixed interest rate | **0.60%** | **2.10%** | **2.45%** | **1.58%** | **3.42%** | **1.31%** | 1.91% |
| | Average exchange rate: CAD-USD | **1.3329** | **1.3076** | **1.2757** | **1.3407** | **1.3076** | **1.3196** | 1.3137 |
| CAD-EUR pair | Notional amount | **6,710** | **1,924** | **8,756** | **1,839** | **200** | **19,429** | 14,517 |
| | Average fixed interest rate | **1.76%** | **2.41%** | **3.12%** | **1.89%** | **2.97%** | **2.47%** | 2.10% |
| | Average exchange rate: CAD-EUR | **1.4919** | **1.5395** | **1.3904** | **1.4711** | **1.4870** | **1.4489** | 1.5078 |
| Other currency pairs (4) | Notional amount (5) | **1,801** | **2,077** | **3,621** | **143** | **76** | **7,718** | 10,055 |
| | Average fixed interest rate | **3.15%** | **2.35%** | **1.96%** | **4.33%** | **5.24%** | **2.42%** | 2.39% |
| | Average exchange rate: CAD-Non USD/EUR | **1.0536** | **1.2744** | **1.6947** | **0.1500** | **0.9038** | **1.3956** | 1.4606 |
| **Equity price risk – Total return swap** (6) | | | | | | | | |
| Notional amount | | **–** | **455** | **–** | **–** | **–** | **455** | 515 |
| **Fair Value Hedges** | | | | | | | | |
| **Interest rate risk – Interest rate swaps** | | | | | | | | |
| Notional amount (7) | | **31,073** | **31,604** | **24,011** | **14,692** | **2,291** | **103,671** | 80,711 |
| Average fixed interest rate | | **2.85%** | **2.01%** | **2.28%** | **2.56%** | **2.90%** | **2.42%** | 1.21% |
| **Interest rate risk – Bond futures (exchange-traded derivatives)** | | | | | | | | |
| Notional amount | | **109** | **–** | **–** | **–** | **–** | **109** | – |
| Average price in dollars | | **104** | **–** | **–** | **–** | **–** | **104** | – |
| **Foreign exchange risk – Cross-currency swaps** | | | | | | | | |
| USD-EUR pair | Notional amount (8) | **–** | **19** | **–** | **–** | **–** | **19** | – |
| | Average fixed interest rate | **–** | **3.25%** | **–** | **–** | **–** | **3.25%** | – |
| | Average exchange rate: USD-EUR | **–** | **0.9706** | **–** | **–** | **–** | **0.9706** | – |
| **Net Investment Hedges** | | | | | | | | |
| **Foreign exchange risk – Cross-currency swaps and foreign exchange forwards** | | | | | | | | |
| CAD-GBP pair | Notional amount | **–** | **–** | **–** | **–** | **–** | **–** | 1,285 |
| **Foreign exchange risk – Deposit liabilities** | | | | | | | | |
| USD denominated deposit – carrying amount | | **1,251** | **–** | **–** | **–** | **–** | **1,251** | 5,964 |
| GBP denominated deposit – carrying amount | | **–** | **–** | **–** | **–** | **–** | **–** | 728 |

(1) The notional amount of the interest rate swaps likely subject to IBOR reform was $22,689 million of USD LIBOR maturing after June 30, 2023 and $49,560 million of CDOR maturing after June 28, 2024, as at October 31, 2022. We had a notional amount of $35,519 million as at October 31, 2021, likely subject to USD IBOR reform that were to mature after December 31, 2021, the cessation date at the time of adoption of the Phase 1 amendments.

(2) Under certain hedge strategies using cross-currency swaps, a CAD leg is inserted to create two swaps designated as separate hedges (for example, a EURO-USD cross-currency swap split into EURO-CAD and CAD-USD cross-currency swaps). The relevant notional amount is grossed up in this table, as the cross-currency swaps are disclosed by CAD-foreign currency pair.

(3) Includes derivatives entered into in relation to our announced agreement to acquire Bank of the West and its subsidiaries. Refer to Note 10 for further details.

(4) Includes CAD-AUD, CAD-CHF, CAD-CNH, CAD-GBP, CAD-HKD, CAD-JPY, or CAD-NOK cross-currency swaps where applicable. The notional amount of the cross-currency swaps likely subject to IBOR reform was $nil million of USD LIBOR maturing after June 30, 2023 and $nil million of CDOR maturing after June 28, 2024 as at October 31, 2022. We had a notional amount of $nil million of USD LIBOR as at October 31, 2021, likely subject to IBOR reform that were to mature after December 31, 2021, the cessation date at the time of adoption of the Phase 1 amendments.

(5) The notional amount of the cross-currency swaps likely subject to IBOR reform that mature after December 31, 2021 was $nil million of GBP LIBOR as at October 31, 2022 ($718 million as at October 31, 2021).

(6) The notional amount of the total return swaps likely subject to IBOR reform that mature after June 28, 2024 was $455 million of CDOR as at October 31, 2022.

(7) The notional amount of the interest rate swaps likely subject to IBOR reform was $31,455 million of USD LIBOR maturing after June 30, 2023 and $21,043 million of CDOR maturing after June 28, 2024 as at October 31, 2022. We had a notional amount of $43,642 million of USD LIBOR as at October 31, 2021, likely subject to IBOR reform that were to mature after December 31, 2021, the cessation date at the time of adoption of the Phase 1 amendments. The notional amount of GBP LIBOR interest rate swaps that mature after December 31, 2021 was $nil million as at October 31, 2022 ($nil million as at October 31, 2021).

(8) The notional amount of the cross-currency swaps likely subject to IBOR reform was $nil million of USD LIBOR maturing after June 30, 2023 and $nil million of CDOR maturing after June 28, 2024 as at October 31, 2022. We had a notional amount of $nil million of USD LIBOR as at October 31, 2021, likely subject to IBOR reform that were to mature after December 31, 2021, the cessation date at the time of adoption of the Phase 1 amendments.