

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 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
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 – Increase in derivative liability	(13,376)	542
Net (increase) decrease in current tax asset	27,800	529
Net increase in current tax liability	328	(539)
Change in accrued interest – (Increase) decrease in interest receivable – Increase (decrease) in interest payable	156	143
Changes in other items and accruals, net	(1,170)	75
Net increase in deposits	1,312	(366)
Net (increase) in loans	(6,222)	751
Net increase in securities sold but not yet purchased	45,232	52,244
Net increase in securities lent or sold under repurchase agreements	(74,748)	(23,748)
Net (increase) in securities borrowed or purchased under resale agreements	7,515	3,545
Net increase (decrease) in securitization and structured entities' liabilities	810	12,866
Net Cash Provided by Operating Activities	(954)	(289)
	1,023	(968)
	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:

Note Topic	Page	Note Topic	Page
1 Basis of Presentation	146	16 Equity	183
2 Cash and Interest Bearing Deposits with Banks	152	17 Fair Value of Financial Instruments and Trading-Related Revenue	186
3 Securities	152	18 Offsetting of Financial Assets and Financial Liabilities	192
4 Loans and Allowance for Credit Losses	155	19 Capital Management	193
5 Risk Management	162	20 Employee Compensation – Share-Based Compensation	194
6 Transfers of Financial Assets	162	21 Employee Compensation – Pension and Other Employee Future Benefits	196
7 Structured Entities	163	22 Income Taxes	201
8 Derivative Instruments	166	23 Earnings Per Share	203
9 Premises and Equipment	175	24 Commitments, Guarantees, Pledged Assets, Provisions and Contingent Liabilities	203
10 Acquisitions and Divestitures	176	25 Operating and Geographic Segmentation	206
11 Goodwill and Intangible Assets	177	26 Significant Subsidiaries	208
12 Other Assets	178	27 Related Party Transactions	209
13 Deposits	179		
14 Other Liabilities	180		
15 Subordinated Debt	182		

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	2,235	843	6,261	3,159	-	-	12,498	13,087
Amortized cost	2,229	816	6,122	3,134	-	-	12,301	13,065
Fair value	2.08	1.68	1.65	3.29	-	-	2.14	1.48
Canadian provincial and municipal governments	720	632	1,360	1,929	83	-	4,724	2,973
Amortized cost	714	611	1,300	1,866	80	-	4,571	2,987
Fair value	1.22	2.51	2.74	3.21	4.29	-	2.70	1.45
U.S. federal government	1,006	49	751	1,249	348	-	3,403	21,041
Amortized cost	989	46	680	1,067	328	-	3,110	21,026
Fair value	2.65	1.02	1.67	1.50	4.05	-	2.13	1.48
U.S. states, municipalities and agencies	485	1,062	602	864	850	-	3,863	4,034
Amortized cost	483	1,030	567	809	825	-	3,714	4,114
Fair value	2.26	2.16	2.31	2.37	2.44	-	2.30	1.91
Other governments	3,385	1,420	1,589	138	-	-	6,532	6,476
Amortized cost	3,377	1,390	1,511	133	-	-	6,411	6,502
Fair value	0.86	1.95	2.64	5.04	-	-	1.62	1.19
NHA MBS (1)	25	102	1,212	-	37	-	1,376	1,122
Amortized cost	21	102	1,204	-	36	-	1,363	1,125
Fair value	0.46	0.85	2.22	-	1.53	-	2.07	1.23
U.S. agency MBS and CMO (1)	70	44	78	1,215	6,789	-	8,196	10,894
Amortized cost	70	42	72	1,181	6,540	-	7,905	11,011
Fair value	3.42	2.96	2.67	2.34	2.38	-	2.39	1.22
Corporate debt	1,439	1,249	1,084	238	193	-	4,203	3,147
Amortized cost	1,391	1,221	1,024	206	191	-	4,033	3,161
Fair value	0.82	3.28	2.34	4.74	3.59	-	2.29	1.37
Corporate equity	-	-	-	-	-	122	122	103
Amortized cost	-	-	-	-	-	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	2,146	3,537	1,319	134	-	-	7,136	7,084
Amortized cost	2,223	3,513	1,267	126	-	-	7,129	7,120
Fair value	0.89	1.85	1.71	2.66	-	-	1.55	1.49
Canadian provincial and municipal governments	984	2,113	1,345	1,146	-	-	5,588	5,642
Amortized cost	1,044	2,133	1,299	1,107	-	-	5,583	5,723
Fair value	2.71	1.91	2.32	2.90	-	-	2.35	2.07
U.S. federal government	924	15,825	15,098	23,511	3,887	-	59,245	5,633
Amortized cost	942	14,785	13,414	19,703	2,873	-	51,717	5,589
Fair value	0.94	1.46	1.29	1.56	2.05	-	1.49	1.51
U.S. states, municipalities and agencies	-	-	-	109	-	-	109	-
Amortized cost	-	-	-	105	-	-	105	-
Fair value	-	-	-	4.26	-	-	4.26	-
Other governments	419	577	376	15	-	-	1,387	1,413
Amortized cost	456	544	364	13	-	-	1,377	1,420
Fair value	1.44	1.31	2.46	1.00	-	-	1.66	1.24
NHA MBS, U.S. agency MBS and CMO (1)	79	1,757	3,579	2,747	22,851	-	31,013	28,557
Amortized cost	77	1,675	3,254	2,383	19,475	-	26,864	28,307
Fair value	1.10	1.47	1.65	1.73	1.57	-	1.59	1.30
Corporate debt	407	530	988	128	59	-	2,112	1,641
Amortized cost	457	501	919	125	55	-	2,057	1,651
Fair value	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)		Cost or amortized cost	Gross unrealized gains	Gross unrealized losses	Fair value	Cost or amortized cost	Gross unrealized gains	Gross unrealized losses	Fair value	2022	2021
										2022	2021
Issued or guaranteed by:											
Canadian federal government	12,498	11	208	12,301	13,087	62	84	84	13,065		
Canadian provincial and municipal governments	4,724	6	159	4,571	2,973	29	15	15	2,987		
U.S. federal government	3,403	—	293	3,110	21,041	282	297	297	21,026		
U.S. states, municipalities and agencies	3,863	5	154	3,714	4,034	85	5	5	4,114		
Other governments	6,532	4	125	6,411	6,476	55	29	29	6,502		
NHA MBS	1,376	1	14	1,363	1,122	6	3	3	1,125		
U.S. agency MBS and CMO	8,196	12	303	7,905	10,894	151	34	34	11,011		
Corporate debt	4,203	25	195	4,033	3,147	34	20	20	3,161		
Corporate equity	122	31	—	153	103	29	—	—	132		
Total	44,917	95	1,451	43,561	62,877	733	487	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)	Stage 1	Stage 2	Stage 3 (5)	Total	2022	Stage 1	Stage 2	Stage 3 (5)	2021
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).

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.

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.

All figures are average annual values	As at October 31, 2022						As at October 31, 2021					
	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:

		2022		2021
		Carrying value (1)	Fair value	Carrying value (1)
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
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:

	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)	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
Trading					
Interest Rate Contracts					
Swaps (1)	7,176	(4,249)	2,927	6,132	(4,323)
Forward rate agreements	437	(120)	317	42	(105)
Purchased options	3,157	—	3,157	641	—
Written options	—	(2,391)	(2,391)	—	(520)
Futures	16	(27)	(11)	—	(3)
Foreign Exchange Contracts (2)					
Cross-currency swaps	1,688	(2,096)	(408)	1,438	(1,207)
Cross-currency interest rate swaps	10,722	(11,254)	(532)	8,595	(5,827)
Forward foreign exchange contracts	8,387	(7,267)	1,120	3,505	(3,925)
Purchased options	1,096	—	1,096	381	—
Written options	—	(1,151)	(1,151)	—	(384)
Commodity Contracts					
Swaps	4,198	(1,725)	2,473	5,916	(1,256)
Purchased options	1,851	—	1,851	1,383	—
Written options	—	(1,627)	(1,627)	—	(815)
Futures	275	(237)	38	319	(120)
Equity Contracts					
Credit Contracts					
Purchased	27	(3)	24	—	(3)
Written	34	(72)	(38)	—	(4)
Total fair value – trading derivatives	45,537	(46,803)	(1,266)	34,350	(27,875)
Hedging					
Interest Rate Contracts (3)					
Cash flow hedges – swaps	41	(6,824)	(6,783)	354	(1,166)
Fair value hedges – swaps	1,935	(2,987)	(1,052)	903	(662)
Total swaps	1,976	(9,811)	(7,835)	1,257	(1,828)
Foreign Exchange Contracts (4)					
Cash flow hedges (1)	629	(3,342)	(2,713)	1,020	(1,112)
Net investment hedges	—	—	—	46	—
Total foreign exchange contracts	629	(3,342)	(2,713)	1,066	(1,112)
Equity Contracts					
Cash flow hedges	18	—	18	40	—
Total equity contracts	18	—	18	40	—
Total fair value – hedging derivatives (5)	2,623	(13,153)	(10,530)	2,363	(2,940)
Total fair value – trading and hedging derivatives	48,160	(59,956)	(11,796)	36,713	(30,815)
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)

(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 notional 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.

(Canadian \$ in millions, except as noted)	Remaining term to maturity					2022	2021
	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
	Average fixed interest rate	0.60%	2.10%	2.45%	1.58%	3.42%	1.31%
	Average exchange rate: CAD-USD	1.3329	1.3076	1.2757	1.3407	1.3076	1.3196
CAD-EUR pair	Notional amount	6,710	1,924	8,756	1,839	200	19,429
	Average fixed interest rate	1.76%	2.41%	3.12%	1.89%	2.97%	2.47%
	Average exchange rate: CAD-EUR	1.4919	1.5395	1.3904	1.4711	1.4870	1.4489
Other currency pairs (4)	Notional amount (5)	1,801	2,077	3,621	143	76	7,718
	Average fixed interest rate	3.15%	2.35%	1.96%	4.33%	5.24%	2.42%
	Average exchange rate: CAD-Non USD/EUR	1.0536	1.2744	1.6947	0.1500	0.9038	1.3956
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.

Cash Flow Hedges

Cash flow hedges modify exposure to variability in cash flows for variable interest rate bearing instruments, foreign currency denominated assets and liabilities and certain cash-settled share-based payment grants subject to equity price risk. We use interest rate swaps with or without embedded options, cross-currency swaps, forwards and total return swaps to hedge this variability. We hedge the full amount of foreign exchange risk, but interest rate risk is hedged only to the extent of benchmark interest rates. The benchmark interest rate is a component of interest rate risk that is observable in the relevant financial markets, for example LIBOR, bankers' acceptance (BA) rates or Secured Overnight Financing Rate (SOFR).

We determine the amount of the exposure to which hedge accounting is applied by assessing the potential impact of changes in interest rates, foreign exchange rates, and equity prices on the future cash flows of floating rate loans and deposits, foreign currency denominated assets and liabilities and certain cash-settled share-based payments. This assessment is performed using analytical techniques, such as simulation, sensitivity analysis, stress testing and gap analysis.

We record interest that we pay or receive on these cash flow hedge derivatives as an adjustment to net interest income in our Consolidated Statement of Income over the life of the hedge.

We entered into forward contracts, to hedge variability in the fixed cash USD purchase price we will pay BNP Paribas to acquire Bank of the West and its subsidiaries. Refer to Note 10 for further details.

The accounting mismatch that would otherwise occur is eliminated by recording changes in the fair value of the derivative that offset changes in the fair value of the hedged item for the designated hedged risk in other comprehensive income. Hedge ineffectiveness, the portion of the change in fair value of the derivative that does not offset changes in the fair value of the hedged item, is recorded directly in non-interest revenue, other, in our Consolidated Statement of Income as it arises.

For cash flow hedges that are discontinued before the end of the original hedge term, the cumulative unrealized gain or loss recorded in other comprehensive income is amortized to our Consolidated Statement of Income in net interest income for interest rate swaps and in employee compensation for total return swaps as the hedged item is recorded in earnings. If the hedged item is sold or settled, the entire unrealized gain or loss is recognized immediately in net interest income in our Consolidated Statement of Income. In general, we do not terminate our foreign exchange hedges before maturity.

For cash flow hedges, we use a hypothetical derivative to measure the hedged risk of floating rate loans, deposits, foreign currency denominated assets and liabilities, or share-based payment grants. This hypothetical derivative matches the critical terms of the hedged items identically, and it perfectly offsets the hedged cash flow.

In our cash flow hedge relationships, the main sources of ineffectiveness are differences in interest rate indices, tenor and reset/settlement frequencies between the hedging instrument and the hedged item.

Net Investment Hedges

Net investment hedges mitigate our exposure to foreign currency exchange rate fluctuations related to our net investment in foreign operations.

Deposits denominated in foreign currencies, cross-currency swaps, foreign exchange forwards and options are designated as a hedging instrument for a portion of the net investment in foreign operations. We designate the spot rate component of our hedging instrument in net investment hedges. The foreign currency translation of our net investment in foreign operations and the effective portion of the corresponding hedging instrument are recorded in unrealized gains (losses) on translation of net foreign operations in other comprehensive income, instead of through the income statement in the case of the hedging instrument if hedge accounting had not been elected.

The effectiveness of our net investment hedge is determined using the dollar offset method with spot foreign currency rates. As the notional amount of the hedging instruments and the hedged net investment in foreign operations are the same, there is no source of ineffectiveness in these hedging relationships.

For cash flow hedges and net investment hedges, the following table contains information related to items designated as hedging instruments, hedged items and hedge ineffectiveness for the years ended October 31, 2022 and October 31, 2021.

(Canadian \$ in millions)	2022					
	Carrying amount of hedging instruments (1)		Hedge ineffectiveness			
	Asset	Liability	Gains (losses) on hedging derivatives used to calculate hedge ineffectiveness (2)	Gains (losses) on hypothetical derivatives used to calculate hedge ineffectiveness (2)	Ineffectiveness recorded in non-interest revenue - other	
Cash Flow Hedges						
Interest rate risk – Interest rate swaps	41	(6,824)	(8,481)	8,588	(33)	
Foreign exchange risk – Cross-currency swaps, foreign exchange forwards and options (3)	629	(3,342)	1,684	(1,684)	-	
Equity price risk – Total return swaps	18	-	(29)	29	-	
	688	(10,166)	(6,826)	6,933	(33)	
Net Investment Hedges						
Foreign exchange risk – Cross-currency swaps, foreign exchange forwards and options	-	-	429	(429)	-	
Foreign exchange risk – Deposit liabilities	-	(1,251)	(886)	886	-	
Total	688	(11,417)	(7,283)	7,390	(33)	
	2021					
Cash Flow Hedges						
Interest rate risk – Interest rate swaps	354	(1,166)	(2,467)	2,447	(5)	
Foreign exchange risk – Cross-currency swaps, foreign exchange forwards and options	1,020	(1,112)	276	(276)	-	
Equity price risk – Total return swaps	40	-	313	(313)	-	
	1,414	(2,278)	(1,878)	1,858	(5)	
Net Investment Hedges						
Foreign exchange risk – Cross-currency swaps, foreign exchange forwards and options	46	-	29	(29)	-	
Foreign exchange risk – Deposit liabilities	-	(6,692)	647	(647)	-	
Total	1,460	(8,970)	(1,202)	1,182	(5)	

(1) Represents unrealized gains (losses) recorded as part of the derivative instruments in assets and liabilities, respectively, in our Consolidated Balance Sheet.

(2) Represents life to date amounts.

(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.

The following tables provide a reconciliation related to the impacts of our cash flow hedges and net investment hedges in our Consolidated Statement of Other Comprehensive Income, on a pre-tax basis for the years ended October 31, 2022 and October 31, 2021.

(Canadian \$ in millions)	2022					
	Gains / (losses) recognized in OCI	Amount reclassified to net income as the hedged item affects net income	Balance in cash flow hedge AOCI / net foreign operations AOCI			
	Balance October 31, 2021	October 31, 2022 (1)(2)	Active hedges	Discontinued hedges		
Cash Flow Hedges						
Interest rate risk	578	(8,448)	(334)	(8,204)	(6,713)	(1,491)
Foreign exchange risk (3)	(483)	1,684	22	1,223	1,168	55
Equity price risk	179	(29)	(117)	33	33	-
	274	(6,793)	(429)	(6,948)	(5,512)	(1,436)
Net Investment Hedges						
Foreign exchange risk	(1,263)	(457)	(3)	(1,723)	(1,723)	-
Total	(989)	(7,250)	(432)	(8,671)	(7,235)	(1,436)
	2021					
	Gains / (losses) recognized in OCI	Amount reclassified to net income as the hedged item affects net income	Balance in cash flow hedge AOCI / net foreign operations AOCI			
	Balance October 31, 2020	October 31, 2021 (1)(2)	Active hedges	Discontinued hedges		
Cash Flow Hedges						
Interest rate risk	3,529	(2,462)	(489)	578	(921)	1,499
Foreign exchange risk	(759)	266	10	(483)	(483)	-
Equity price risk	(50)	313	(84)	179	179	-
	2,720	(1,883)	(563)	274	(1,225)	1,499
Net Investment Hedges						
Foreign exchange risk	(1,939)	676	-	(1,263)	(1,263)	-
Total	781	(1,207)	(563)	(989)	(2,488)	1,499

(1) Tax balance related to cash flow hedges accumulated other comprehensive income was \$1,819 million as at October 31, 2022 (\$89 million as at October 31, 2021).

(2) Tax balance related to net investment hedges accumulated other comprehensive income was \$466 million as at October 31, 2022 (\$341 million as at October 31, 2021).

(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.

Fair Value Hedges

Fair value hedges modify exposure to changes in a fixed rate instrument's fair value caused by changes in interest rates. These hedges economically convert fixed rate assets and liabilities to floating rate. We use cross-currency swaps, interest rate swaps and bond futures to hedge foreign exchange risk and interest rate risk, including benchmark interest rates, inherent in fixed rate securities, a portfolio of mortgages, deposits and subordinated debt and other liabilities.

The carrying value of fixed rate assets or liabilities that are part of a hedging relationship is adjusted for the change in value of the risk being hedged. To the extent that the change in the fair value of the derivative does not offset changes in the fair value of the hedged item for the risk being hedged, the net amount (hedge ineffectiveness) is recorded directly in non-interest revenue, other, in our Consolidated Statement of Income.

For fair value hedges that are discontinued, we cease adjusting the hedged item. The cumulative fair value adjustment of the hedged item is then amortized to net interest income over the hedged item's remaining term to maturity. If the hedged item is sold or settled, the cumulative fair value adjustment is included in the gain or loss on sale or settlement.

In our fair value hedge relationships, the main sources of ineffectiveness are our own credit risk on the fair value of the swap, and the difference in terms such as fixed interest rate or reset/settlement frequency between the swap and the hedged item.

The amounts related to derivatives designated as fair value hedging instruments, hedged items and hedge ineffectiveness for the years ended October 31, 2022 and 2021 are as follows:

(Canadian \$ in millions)	2022							
	Carrying amount of hedging derivatives (1)		Hedge ineffectiveness			Accumulated amount of fair value hedge gains (losses) on hedged items		
	Asset	Liability	Gains (losses) on hedging derivatives used to calculate hedge ineffectiveness	Gains (losses) on hedged item used to calculate hedge ineffectiveness	Ineffectiveness recorded in non-interest revenue – other	Carrying amount of the hedged item (2)	Active hedges	Discontinued hedges
Fair Value Hedge (3)								
Interest rate swaps	1,935	(2,987)	–	–	–	–	–	–
Securities and loans	–	–	2,633	(2,625)	8	36,394	(2,603)	122
Deposits, subordinated debt and other liabilities	–	–	(3,113)	3,128	15	(61,307)	2,841	425
Total	1,935	(2,987)	(480)	503	23	(24,913)	238	547
2021								
Fair Value Hedge (3)								
Interest rate swaps	903	(662)	–	–	–	–	–	–
Securities and loans	–	–	1,649	(1,654)	(5)	49,789	156	62
Deposits, subordinated debt and other liabilities	–	–	(644)	638	(6)	(31,530)	(121)	(91)
Total	903	(662)	1,005	(1,016)	(11)	18,259	35	(29)

(1) Represents the unrealized gains (losses) within derivative instruments in assets and liabilities, respectively, in the Consolidated Balance Sheet.

(2) Represents the carrying value in the Consolidated Balance Sheet and includes amortized cost, before allowance for credit losses, plus fair value hedge adjustments, except for FVOCI securities that are carried at fair value.

(3) Includes the fair value of USD-EUR cross-currency swaps and bond futures rounded down to \$nil million as at October 31, 2022 (we held no USD-EUR cross-currency swaps and bond futures as at October 31, 2021).

Derivative-Related Market Risk

Derivative instruments are subject to market risk. Market risk arises from the potential for a negative impact on the balance sheet and/or statement of income due to adverse changes in the value of derivative instruments as a result of changes in certain market variables. These variables include interest rates, credit spreads, foreign exchange rates, equity and commodity prices and their implied volatilities, credit migration and default. We strive to limit market risk by employing comprehensive governance and management processes for all market risk-taking activities.

Derivative-Related Credit Risk

Derivative instruments are subject to credit risk arising from the possibility that counterparties may default on their obligations. The credit risk associated with a derivative is normally a small fraction of the notional amount of the derivative instrument. Derivative contracts generally expose us to potential credit loss if changes in market rates affect the counterparty's position unfavourably and the counterparty defaults on payment. The credit risk is represented by the positive fair value of the derivative instrument. We strive to limit credit risk by dealing with counterparties that we believe are creditworthy, and we manage our credit risk for derivatives using the same credit risk process that is applied to loans and other credit assets.

We also pursue opportunities to reduce our exposure to credit losses on derivative instruments, by securing collateral and by entering into master netting agreements with counterparties. The credit risk associated with favourable contracts is mitigated by legally enforceable master netting agreements to the extent that unfavourable contracts with the same counterparty must be settled concurrently with favourable contracts.

Exchange-traded derivatives have limited potential for credit risk exposure, as they are settled net daily with each exchange.

Terms used in the credit risk tables below are as follows:

Replacement cost captures the loss that would occur if a counterparty were to default in the present or at a future time, assuming that the closeout and replacement of transactions occur instantaneously, and assuming no recovery on the value of those transactions in bankruptcy.

Credit risk equivalent represents the total replacement cost plus an amount representing the potential future credit exposure adjusted by a multiplier of 1.4, as outlined in OSFI's Capital Adequacy Requirements (CAR) Guideline.

Risk-weighted assets represent the credit risk equivalent, weighted on the basis of the creditworthiness of the counterparty, and considering collateral, netting and other credit risk mitigants, as prescribed by OSFI.

(Canadian \$ in millions)	2022			2021		
	Replacement cost (1)	Credit risk equivalent (1)	Risk-weighted assets	Replacement cost (1)	Credit risk equivalent (1)	Risk-weighted assets
Interest Rate Contracts						
Over-the-counter						
Swaps	4,133	8,718	764	2,636	6,936	1,422
Forward rate agreements	943	1,773	430	667	2,545	826
Purchased options	48	170	46	16	72	81
Written options	4	131	67	20	105	70
	5,128	10,792	1,307	3,339	9,658	2,399
Exchange traded						
Futures	231	359	7	71	141	3
Purchased options	159	227	5	2	4	-
Written options	7	11	-	2	4	-
	397	597	12	75	149	3
Total interest rate contracts	5,525	11,389	1,319	3,414	9,807	2,402
Foreign Exchange Contracts (2)						
Over-the-counter						
Swaps	1,645	5,535	880	1,087	4,609	987
Forward foreign exchange contracts	2,250	8,339	1,237	769	6,649	883
Purchased options	321	681	183	93	270	104
Written options	2	88	30	11	115	38
	4,218	14,643	2,330	1,960	11,643	2,012
Exchange traded						
Futures	-	2	-	1	2	-
Purchased options	-	2	-	15	22	-
Written options	7	10	-	26	37	1
	7	14	-	42	61	1
Total foreign exchange contracts	4,225	14,657	2,330	2,002	11,704	2,013
Commodity Contracts						
Over-the-counter						
Swaps	3,160	6,107	1,281	4,357	8,183	2,148
Purchased options	435	936	194	1,537	2,601	457
Written options	126	403	107	6	175	51
	3,721	7,446	1,582	5,900	10,959	2,656
Exchange traded						
Futures	1,122	2,055	41	1,829	3,244	65
Purchased options	356	552	11	474	721	14
Written options	303	471	9	463	727	15
	1,781	3,078	61	2,766	4,692	94
Total commodity contracts	5,502	10,524	1,643	8,666	15,651	2,750
Equity Contracts						
Over-the-counter						
	582	9,076	2,406	467	9,754	2,663
Exchange traded	1,580	3,888	78	3,873	7,938	159
Total equity contracts	2,162	12,964	2,484	4,340	17,692	2,822
Credit Contracts						
	97	562	103	277	721	79
Total	17,511	50,096	7,879	18,699	55,575	10,066

(1) Replacement cost and credit risk equivalent are presented after the impact of master netting agreements and calculated using the Standardized Approach Counterparty Credit Risk (SA-CCR) in accordance with the Capital Adequacy Requirements (CAR) Guideline issued by OSFI. The table therefore excludes loan commitment derivatives.

(2) Gold contracts are included in foreign exchange contracts.

Term to Maturity

Our derivative contracts have varying maturity dates. The remaining contractual terms to maturity for the notional amounts of our derivative contracts are set out below:

(Canadian \$ in millions)	Term to maturity					2022	2021
	Within 1 year	1 to 3 years	3 to 5 years	5 to 10 years	Over 10 years	Total notional amounts	Total notional amounts
Interest Rate Contracts							
Swaps (1)	2,458,155	1,520,032	829,127	878,514	268,933	5,954,761	4,151,291
Forward rate agreements, futures and options	418,903	166,623	37,057	19,511	3,358	645,452	532,507
Total interest rate contracts	2,877,058	1,686,655	866,184	898,025	272,291	6,600,213	4,683,798
Foreign Exchange Contracts (2)							
Swaps	179,823	208,539	152,167	124,941	36,598	702,068	599,333
Forward foreign exchange contracts (1)	454,751	21,846	3,646	1,514	16	481,773	489,426
Futures	992	40	—	—	—	1,032	222
Options	139,587	12,230	1,505	—	—	153,322	114,789
Total foreign exchange contracts	775,153	242,655	157,318	126,455	36,614	1,338,195	1,203,770
Commodity Contracts							
Swaps	12,320	10,426	1,661	118	—	24,525	28,892
Futures	25,521	17,094	2,193	28	—	44,836	39,448
Options	53,033	21,345	4,741	—	—	79,119	28,678
Total commodity contracts	90,874	48,865	8,595	146	—	148,480	97,018
Equity Contracts							
	192,539	59,957	13,709	967	210	267,382	205,780
Credit Contracts (3)							
	255	640	21,986	3,137	1,852	27,870	17,516
Total notional amount	3,935,879	2,038,772	1,067,792	1,028,730	310,967	8,382,140	6,207,882

(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) Under the SA-CCR, excludes loan commitment derivatives.

Note 9: Premises and Equipment

We record all owned premises and equipment at cost less accumulated depreciation, and less any accumulated impairment, except land, which is recorded at cost. Buildings, computer equipment and operating system software, other equipment and leasehold improvements are depreciated on a straight-line basis over their estimated useful lives. When the major components of a building have different useful lives, they are accounted for separately and depreciated over each component's estimated useful life. The maximum estimated useful lives we use to depreciate our assets are as follows:

Buildings	10 to 40 years
Computer equipment and operating system software	5 to 7 years
Other equipment	10 years
Leasehold improvements	Lease term to a maximum of 10 years

Depreciation methods, useful lives and the residual values of premises and equipment are reviewed annually for any change in circumstances and are adjusted if appropriate. At each reporting period, we review whether there are any indications that premises and equipment need to be tested for impairment. If there is an indication that an asset may be impaired, we test for impairment by comparing the asset's carrying value to its recoverable amount. The recoverable amount is calculated as the higher of value in use and fair value less costs to sell. Value in use is the present value of the future cash flows expected to be derived from the asset. An impairment charge is recorded when the recoverable amount is less than the carrying value. There were write-downs of premises and equipment of \$6 million due to impairment during the year ended October 31, 2022 (\$36 million in 2021). Gains and losses on disposal are included in non-interest expense, premises and equipment, in our Consolidated Statement of Income.

Leases

When we enter into a new arrangement as a lessee, a right-of-use asset is recognized equal to the lease liability, which is calculated based on the future lease payments discounted at our incremental borrowing rate over the lease term. In calculating our lease liability and corresponding right-of-use asset, we assess whether a contract is a lease by determining if we have the right to control the asset based on our ability to make decisions or direct how and for what purpose the asset is used.

The right-of-use asset is depreciated on a straight-line basis, based on the shorter of the useful life of the underlying asset or the lease term, and is adjusted for impairment losses, if any.

The lease liability accretes interest over the lease term, using the effective interest method, with the associated interest expense recognized in interest expense, other liabilities, in our Consolidated Statement of Income. We make estimates in determining the incremental borrowing rate that is used to discount lease liabilities, based on our expected costs of secured borrowing for the lease term. The lease term is based on the non-cancellable period and includes any options to extend or terminate which we are reasonably certain to exercise. The lease liability is remeasured when decisions are made to exercise options under the lease arrangement or when the likelihood of exercising an option within the lease changes. Refer to Note 14 for further information.

Amounts related to leases of low value are expensed when incurred in non-interest expense, premises and equipment, in our Consolidated Statement of Income.

The total cost and associated accumulated depreciation for premises and equipment owned and leased are set out below:

(Canadian \$ in millions)	2022										2021		
	Land	Buildings	Computer equipment	Other equipment	Leasehold improvements	Right-of-use assets	Total	Land	Buildings	Computer equipment	Other equipment	Leasehold improvements	Right-of-use assets
Cost													
Balance at beginning of year	99	1,354	2,292	685	1,941	3,201	9,572	112	1,454	2,481	904	1,769	2,580 9,300
Additions/lease modifications	18	59	319	105	281	329	1,111	-	52	193	53	192	731 1,221
Disposals (1)	(8)	(44)	(53)	(29)	(246)	(235)	(615)	(6)	(44)	(349)	(245)	(44)	(29) (717)
Foreign exchange and other	10	319	113	184	78	140	844	(7)	(108)	(33)	(27)	24	(81) (232)
Balance at end of year	119	1,688	2,671	945	2,054	3,435	10,912	99	1,354	2,292	685	1,941	3,201 9,572
Accumulated Depreciation and Impairment													
Balance at beginning of year	-	867	1,724	471	1,338	718	5,118	-	936	1,888	680	1,250	363 5,117
Disposals (1)	-	(35)	(48)	(25)	(243)	(153)	(504)	-	(46)	(345)	(245)	(41)	(29) (706)
Depreciation	-	50	225	53	116	336	780	-	52	217	51	105	366 791
Foreign exchange and other (2)	-	306	106	168	59	38	677	-	(75)	(36)	(15)	24	18 (84)
Balance at end of year	-	1,188	2,007	667	1,270	939	6,071	-	867	1,724	471	1,338	718 5,118
Net carrying value	119	500	664	278	784	2,496	4,841	99	487	568	214	603	2,483 4,454

(1) Includes fully depreciated assets written off and assets sold as part of divestitures during the year. Refer to Note 10.

(2) Includes impairment charges.

Note 10: Acquisitions and Divestitures

Acquisitions

The cost of an acquisition is measured at the fair value of the consideration transferred, including contingent consideration. Acquisition-related costs are recognized as an expense in the period in which they are incurred. The identifiable assets acquired and liabilities assumed and contingent consideration are measured at their fair values at the date of acquisition. Goodwill is measured as the excess of the aggregate of the consideration transferred over the net of the fair value of identifiable assets acquired and liabilities assumed. The results of operations of acquired businesses are included in our consolidated financial statements beginning on the date of acquisition.

Bank of the West

On December 20, 2021, we announced a definitive agreement with BNP Paribas to acquire Bank of the West and its subsidiaries for a cash purchase price of US\$16.3 billion, or US\$13.4 billion net of an estimated US\$2.9 billion of excess capital (at closing). Bank of the West provides a broad range of banking products and services primarily in the Western and Midwestern parts of the U.S. Subject to customary closing conditions, including regulatory approvals, the transaction is expected to close in the first calendar quarter of 2023 and will primarily be part of our U.S. P&C reporting segment.

When the transaction closes, the purchase price will be allocated to the identifiable assets and liabilities of Bank of the West, on the basis of their relative fair values, with the difference recorded as goodwill. The goodwill will not be tax deductible. The fair value of fixed rate loans, securities and deposits is largely dependent on interest rates. If interest rates increase, the fair value of the acquired fixed rate assets (in particular, loans and securities) will decrease, resulting in higher goodwill. If interest rates decrease, the opposite would be true. Conversely, the fair value of floating rate assets (liabilities) and non-maturity deposits approximates par, providing no natural offset to changes in fair value.

Changes in goodwill relative to our original assumptions announced on December 20, 2021 will impact capital ratios at close, because goodwill is treated as a deduction from capital under OSFI Basel III rules. In addition, since the purchase price of the acquisition is in U.S. dollars, any change in foreign exchange translation between the Canadian dollar relative to the U.S. dollar between the announcement and the close of the acquisition will result in a change to the Canadian dollar-equivalent goodwill.

To mitigate the impact of changes in interest rates between announcement and close, we entered into pay fixed/receive float interest rate swaps and purchased a portfolio of matched-duration government debt securities and other balance sheet instruments that generate interest income (the impact of which is recorded in Corporate Services). We recorded mark-to-market gains of \$7,665 million on the swaps for the year ended October 31, 2022 in our Consolidated Statement of Income in non-interest revenue, trading revenues, as the swaps do not qualify for hedge accounting. Government debt securities and other instruments, which are measured at amortized cost, generated \$48 million in our Consolidated Statement of Income in interest, dividend and fee income, securities, for the year ended October 31, 2022.

To mitigate the effects of any changes in the Canadian dollar equivalent of the purchase price on close, we entered into forward contracts, which qualify for hedge accounting. Changes in the fair value of these forward contracts of \$638 million for the year ended October 31, 2022 are recorded in Other Comprehensive Income until close of the transaction.

Radicle Group Inc.

On July 20, 2022, we announced a definitive agreement to acquire Radicle Group Inc. (Radicle), a Calgary-based leader in sustainability advisory services and solutions, and technology-driven emissions measurement and management. All regulatory approvals for the acquisition have been received and the acquisition is expected to close on December 1, 2022. Radicle will form part of our BMO Capital Markets reporting segment. The impact of this acquisition is not expected to be material to the bank.

Divestitures

Non-current non-financial assets (and disposal groups) are classified as held-for-sale if their carrying amount will be recovered principally through a sale transaction rather than through continuing use. These assets meet the criteria for classification as held-for-sale if they are available for immediate sale in their present condition and their sale is considered highly probable to occur within one year. 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. Any subsequent write-down to fair value less costs to sell is recognized in non-interest expense in our Consolidated Statement of Income. Any subsequent increase in the fair value less costs to sell, to the extent this does not exceed the cumulative write-down or impact the impairment previously allocated to goodwill, is also recognized in non-interest expense. Gains on disposals are recognized in non-interest revenue.

EMEA and U.S. Asset Management

On November 8, 2021, we completed the sale of our EMEA Asset Management business, part of our BMO Wealth Management operating segment, to Ameriprise Financial Inc. (Ameriprise) for £615 million (CAD\$1,038 million) in an all-cash transaction. On the date of sale, assets and liabilities of approximately \$1,779 million and \$527 million, respectively, were derecognized. In connection with the completion of the EMEA portion of the sale, we recognized a before and after tax loss of \$29 million relating to foreign currency translation reclassified from accumulated other comprehensive income in equity to non-interest revenue, foreign exchange gains, other than trading, in our Consolidated Statement of Income in the first quarter. The transaction also included the opportunity for certain BMO asset management clients in the U.S. to move to Ameriprise. These transfers were completed in the first quarter and resulted in tax expense of \$22 million. Further transfers of certain U.S. Asset Management clients were completed in the second quarter with no material impact to the bank.

Taplin, Canida & Habacht, LLC

On January 27, 2022, we completed the sale of Taplin, Canida & Habacht, LLC, part of our U.S. asset management business to Loop Capital. The business sold was not considered material to the bank.

Private Bank, Asia

On April 30, 2021, we completed the sale of our Private Banking business in Hong Kong and Singapore, part of our BMO Wealth Management operating segment, to J. Safra Sarasin Group. The business sold was not considered material to the bank.

Note 11: Goodwill and Intangible Assets

Goodwill

When we complete an acquisition, we allocate the purchase price paid to the assets acquired, including identifiable intangible assets, and the liabilities assumed. Any portion of the consideration transferred that is in excess of the fair value of those net assets is considered to be goodwill. Goodwill is not amortized and is instead tested for impairment annually.

In performing the impairment test, we utilize the fair value less costs to sell for each group of CGUs based on discounted cash flow projections. Cash flows were projected for the first 10 years based on actual operating results, expected future business performance and past experience. Beyond 10 years, cash flows were assumed to grow at perpetual annual rates of up to 3.0% (3.0% in 2021). The discount rates we applied in determining the recoverable amounts in 2022 ranged from 6.8% to 11.2% (6.8% to 11.0% in 2021) and were based on our estimate of the cost of capital for each CGU. The cost of capital for each CGU was estimated using the Capital Asset Pricing Model, based on the historical betas of publicly traded peer companies that are comparable to the CGU. We use significant judgment to determine inputs to the discounted cash flow model, which is most sensitive to changes in future cash flows, discount rates and terminal growth rates applied to cash flows beyond the forecast period.

The key assumptions described above may change as market and economic conditions change. However, we estimate that reasonably possible changes in these assumptions are not expected to cause the recoverable amounts of our CGUs to decline below their carrying amounts.

A continuity of our goodwill by group of CGUs for the years ended October 31, 2021 and 2022 is as follows:

(Canadian \$ in millions)	Personal and Commercial Banking			BMO Wealth Management		BMO Capital Markets	Total
	Canadian P&C	U.S. P&C	Total	Wealth and Asset Management	Insurance	Total	
Balance - October 31, 2020	97	3,841	3,938	2,168	2	2,170	427
Dispositions during the year	-	-	-	(21)	-	(21)	-
Foreign exchange and other (1)	-	(274)	(274)	(837) (7)	-	(837)	(25)
Balance - October 31, 2021	97	3,567	3,664	1,310	2	1,312	402
Dispositions during the year	-	-	-	(538)	-	(538)	-
Foreign exchange and other (1)	-	362	362	50	-	50	33
Balance - October 31, 2022	97 (2)	3,929 (3)	4,026	822 (4)	2 (5)	824	435 (6)
							5,285

(1) Other changes in goodwill included the effects of translating goodwill denominated in foreign currencies into Canadian dollars and purchase accounting adjustments related to prior-year purchases.

(2) Relates primarily to bcpbank Canada, Diners Club, Aver Media LP and GE Transportation Finance.

(3) Relates primarily to First National Bank & Trust, Ozaukee Bank, Merchants and Manufacturers Bancorporation, Inc., Diners Club, AMCORE, M&I and GE Transportation Finance.

(4) Relates primarily to BMO Nesbitt Burns Inc., Guardian Group of Funds Ltd., M&I, myCFO, Inc., Stoker Ostler Wealth Advisors, Inc. and CTC Consulting LLC. The Private Banking business in Hong Kong and Singapore was disposed in fiscal 2021. Pyrford International Limited, LGM Investments Limited and F&C Asset Management plc were disposed in fiscal 2022. Refer to Note 10 for further information.

(5) Relates to AIG Life Holdings (Canada), ULC.

(6) Relates to Gerard Klauer Mattison, BMO Nesbitt Burns Inc., Paloma Securities L.L.C., M&I, Greene Holcomb Fisher, KGS-Alpha Capital Markets and Clearpool.

(7) Includes a write-down of \$779 million of goodwill attributable to the sale of our EMEA Asset Management business in fiscal 2021. Refer to Note 10 for further information.

Intangible Assets

Intangible assets related to our acquisitions are initially recorded at their fair value at the acquisition date and subsequently at cost less accumulated amortization. Software is recorded at cost less accumulated amortization. Amortization expense is recorded in amortization of intangible assets in our Consolidated Statement of Income. The following table presents the changes in the balance of these intangible assets:

(Canadian \$ in millions)	Customer relationships	Core deposits	Software – amortizing	Software under development	Other	Total
Cost as at October 31, 2020	767	962	5,416	280	621	8,046
Additions	–	–	65	430	30	525
Transfers	–	–	498	(498)	–	–
Disposals (2)	(9)	–	(313)	(4)	(28)	(354)
Foreign exchange and other	(39)	(68)	(118)	(4)	(22)	(251)
Cost as at October 31, 2021	719	894	5,548 (1)	204	601	7,966
Additions	–	–	11	662	20	693
Transfers	–	–	611	(611)	–	–
Disposals (2)	(247)	–	(53)	(1)	(319)	(620)
Foreign exchange and other	49	84	120	5	20	278
Cost as at October 31, 2022	521	978	6,237 (1)	259	322	8,317

(1) Includes \$5,486 million of internally generated software as at October 31, 2022 (\$4,798 million as at October 31, 2021).

(2) Includes fully depreciated assets written off and assets sold as part of divestitures during the year. Refer to Note 10 for further information.

The following table presents the accumulated amortization of our intangible assets:

(Canadian \$ in millions)	Customer relationships	Core deposits	Software – amortizing	Software under development	Other	Total
Accumulated amortization at October 31, 2020	616	933	3,681	–	374	5,604
Amortization	35	27	530	–	42	634
Disposals (2)(3)	(5)	–	(308)	–	(28)	(341)
Foreign exchange and other	(30)	(66)	(82)	–	(19)	(197)
Accumulated amortization at October 31, 2021	616	894	3,821 (1)	–	369	5,700
Amortization	22	–	556	–	26	604
Disposals (2)(3)	(247)	–	(49)	–	(123)	(419)
Foreign exchange and other	44	84	94	–	17	239
Accumulated amortization at October 31, 2022	435	978	4,422 (1)	–	289	6,124
Carrying value at October 31, 2022	86	–	1,815	259	33	2,193
Carrying value at October 31, 2021	103	–	1,727	204	232	2,266

(1) Includes \$3,819 million of internally generated software as at October 31, 2022 (\$3,231 million as at October 31, 2021).

(2) Includes fully depreciated assets written off and assets sold as part of divestitures during the year. Refer to Note 10 for further information.

(3) Includes impairment charges.

Intangible assets are amortized to income over the period during which we believe the assets will benefit us, on either a straight-line or an accelerated basis, over a period not to exceed 15 years. We have \$nil million as at October 31, 2022 (\$166 million as at October 31, 2021) in intangible assets with indefinite lives that relate primarily to fund management contracts.

The useful lives of intangible assets are reviewed annually for any changes in circumstances. We test definite-life intangible assets for impairment when events or changes in circumstances indicate that their 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.

There were write-downs of software-related intangible assets of \$5 million during the year ended October 31, 2022 (\$9 million in 2021).

Note 12: Other Assets

Customers' Liability Under Acceptances

Acceptances represent a form of negotiable short-term debt issued by our customers, which we guarantee for a fee. The fees earned are recorded in non-interest revenue, lending fees, in our Consolidated Statement of Income over the term of the acceptance. The amount potentially due under acceptances is recorded in other liabilities in our Consolidated Balance Sheet. We record the bank's equivalent claim against our customers in the event of a call on these commitments in other assets in our Consolidated Balance Sheet.

Other

The components of other within other assets are as follows:

(Canadian \$ in millions)	2022	2021
Accounts receivable, prepaid expenses and other items	3,634	3,302
Accrued interest receivable	2,726	1,452
Bank owned life insurance policies	4,509	4,096
Leased vehicles, net of accumulated amortization	263	415
Cash collateral	13,586	6,436
Due from clients, dealers and brokers	313	353
Insurance-related assets (1)	2,575	2,080
Other employee future benefits assets (Note 21)	51	40
Pension asset (Note 21)	1,267	947
Precious metals (2)	2,970	3,290
Total	31,894	22,411

(1) Includes \$1,001 million of investment properties (\$881 million as at October 31, 2021) carried at cost less accumulated amortization. These investment properties support our insurance contract liabilities. The fair value, determined by external independent property valuers for disclosure purposes, is \$1,195 million and categorized as Level 3 using models with unobservable market inputs (\$1,033 million as at October 31, 2021).

(2) Precious metals are recorded at fair value based on quoted prices in active markets.

Note 13: Deposits

(Canadian \$ in millions)	Payable on demand				2022	2021
	Interest bearing	Non-interest bearing	Payable after notice	Payable on a fixed date (2)		
Deposits by:						
Banks (1)	4,938	2,096	1,417	22,450	30,901	26,611
Business and government	49,074	52,355	151,298	243,104	495,831	442,248
Individuals	4,435	36,822	119,129	82,360	242,746	216,772
Total (3)	58,447	91,273	271,844	347,914	769,478	685,631
Booked in:						
Canada	48,260	81,726	126,204	259,100	515,290	427,316
United States	9,851	9,478	143,819	54,572	217,720	232,830
Other countries	336	69	1,821	34,242	36,468	25,485
Total	58,447	91,273	271,844	347,914	769,478	685,631

(1) Includes regulated and central banks.

(2) Includes \$51,746 million of senior unsecured debt as at October 31, 2022 subject to the Bank Recapitalization (Bail-In) regime (\$35,959 million as at October 31, 2021). The Bail-In regime provides certain statutory powers to the Canada Deposit Insurance Corporation, including the ability to convert specified eligible shares and liabilities into common shares if the bank becomes non-viable.

(3) Included in deposits as at October 31, 2022 and 2021 are \$384,080 million and \$342,967 million, respectively, of deposits denominated in U.S. dollars, and \$46,830 million and \$29,937 million, respectively, of deposits denominated in other foreign currencies.

Deposits are measured at amortized cost, except for structured notes, structured deposits and metal deposits, which are measured at FVTPL. Deposits payable on demand are comprised primarily of our customers' chequing accounts, on some of which we pay interest. Our customers need not notify us prior to withdrawing money from their chequing accounts. Deposits payable after notice are comprised primarily of our customers' savings accounts, on which we pay interest. Deposits payable on a fixed date are comprised of:

- Various investment instruments purchased by our customers to earn interest over a fixed period, such as retail and small business term deposits, wholesale funding and guaranteed investment certificates. Deposits totalling \$29,966 million as at October 31, 2022 (\$20,991 million as at October 31, 2021) can be early redeemed, either fully or partially, by customers without penalty. These are classified as payable on a fixed date, based on their remaining contractual maturities.
- Commercial paper, which totalled \$42,138 million as at October 31, 2022 (\$13,834 million as at October 31, 2021).
- Covered bonds, which totalled \$29,076 million as at October 31, 2022 (\$23,495 million as at October 31, 2021).

The following table presents the maturity schedule for deposits payable on a fixed date:

(Canadian \$ in millions)	Within 1 year	1 to 2 years	2 to 3 years	3 to 4 years	4 to 5 years	Over 5 years	Total
As at October 31, 2022	228,679	39,992	23,445	16,665	22,868	16,265	347,914
As at October 31, 2021	163,370	33,778	24,826	8,908	11,995	19,925	262,802

We have unencumbered liquid assets of \$335,299 million to support these and other deposit liabilities (\$317,251 million as at October 31, 2021).

The following table presents deposits payable on a fixed date and greater than one hundred thousand dollars:

(Canadian \$ in millions)	Canada	United States	Other	Total
As at October 31, 2022	230,475	50,542	34,241	315,258
As at October 31, 2021	140,002	72,399	23,921	236,322

The following table presents the maturity schedule for deposits payable on a fixed date and greater than one hundred thousand dollars, that are booked in Canada:

(Canadian \$ in millions)	Less than 3 months	3 to 6 months	6 to 12 months	Over 12 months	Total
As at October 31, 2022	46,792	28,826	55,288	99,569	230,475
As at October 31, 2021	20,626	12,761	20,933	85,682	140,002

Structured Note Liabilities

Most of our structured note liabilities included in deposits have been designated at fair value through profit or loss, which aligns the accounting result with the way the portfolio is managed. The change in fair value of these structured notes is recorded in non-interest revenue, trading revenues, with the changes in fair value due to own credit risk recognized in other comprehensive income. The impact of changes in our own credit risk is measured based on movements in our own credit spread year over year.

The following table presents fair value and changes in fair value of structured note liabilities:

(Canadian \$ in millions)	Fair value	Notional amount due at contractual maturity	Change in fair value recorded in the Consolidated Statement of Income (1)	Change in fair value due to own credit risk recorded in OCI (before tax)	Cumulative change in fair value due to own credit risk recorded in AOCI (before tax)
As at October 31, 2022	26,305	32,507	4,617	1,653	1,245
As at October 31, 2021	22,665	22,448	(1,310)	(240)	(408)

(1) Change in fair value may be offset by related change in fair value on hedge contracts.

Note 14: Other Liabilities

Acceptances

Acceptances represent a form of negotiable short-term debt that is issued by our customers, which we guarantee for a fee. The fees earned are recorded in non-interest revenue, lending fees, in our Consolidated Statement of Income over the term of the acceptance. The amount potentially due under acceptances is recorded in other liabilities in our Consolidated Balance Sheet. We record the bank's equivalent claim against our customers in the event of a call on these commitments in other assets in our Consolidated Balance Sheet.

Securities Lending and Borrowing

Securities lending and borrowing transactions are generally collateralized by securities or cash. Cash advanced or received as collateral is recorded in securities borrowed or purchased under resale agreements, or other liabilities, securities lent or sold under repurchase agreements, respectively. Interest earned on cash collateral is recorded in interest, dividend and fee income in our Consolidated Statement of Income, and interest expense on cash collateral is recorded in interest expense, other liabilities, in our Consolidated Statement of Income. The transfer of the securities to counterparties is only reflected in our Consolidated Balance Sheet if the risks and rewards of ownership have also been transferred. Securities borrowed are not recognized in our Consolidated Balance Sheet unless they are then sold to third parties, in which case the obligation to return the securities is recorded at fair value in securities sold but not yet purchased, with any gains or losses recorded in non-interest revenue, trading revenues.

Securities Sold But Not Yet Purchased

Securities sold but not yet purchased represent our obligations to deliver securities that we did not own at the time of sale. These obligations are recorded at their fair value. Adjustments to fair value as at the balance sheet date and gains and losses on the settlement of these obligations are recorded in trading revenues in our Consolidated Statement of Income.

Securitization and Structured Entities' Liabilities

Securitization and structured entities' liabilities include notes issued by our consolidated bank securitization vehicles and liabilities associated with the securitization of our Canadian mortgage loans as part of the Canada Mortgage Bond program, the National Housing Act Mortgage-Backed Securities program and our own programs. Additional information on our securitization programs and associated liabilities is provided in Notes 6 and 7. These liabilities are initially measured at fair value plus any directly attributable costs and are subsequently measured at amortized cost. The interest expense related to these liabilities is recorded in interest expense, other liabilities, in our Consolidated Statement of Income.

Other

The components of other within other liabilities are as follows:

(Canadian \$ in millions)	2022	2021
Accounts payable, accrued expenses and other items	11,647	9,444
Accrued interest payable	2,319	960
Allowance for credit losses on off-balance sheet items	381	394
Cash collateral	5,042	6,733
Insurance-related liabilities	11,201	12,845
Lease liabilities	2,835	2,743
Liabilities of subsidiaries	7,494	-
Other employee future benefits liability (Note 21)	832	1,094
Payable to brokers, dealers and clients	2,966	3,413
Pension liability (Note 21)	88	138
Total	44,805	37,764

Insurance-Related Liabilities

We are engaged in insurance businesses related to life insurance, annuities, which includes pension risk, accident and sickness, creditor insurance, and reinsurance. We designate the obligations related to certain investment contracts in our insurance business at fair value through profit or loss, which eliminates a measurement inconsistency that would otherwise arise from measuring the investment contract liabilities and offsetting changes in the fair value of the investments supporting them on a different basis. The change in fair value of these investment contract liabilities is recorded in insurance claims, commissions and changes in policy benefit liabilities, with the exception of changes in our own credit risk recognized in other comprehensive income. The impact of changes in our own credit risk is measured based on movements in our own credit spread year over year. Changes in the fair value of investments backing these investment contract liabilities are recorded in non-interest revenue, insurance revenue.

The following table presents the fair value and changes in fair value in our investment contract liabilities:

(Canadian \$ in millions)	Fair value	Notional amount due at contractual maturity	Change in fair value recorded in the Consolidated Statement of Income	Change in fair value due to own credit risk recorded in OCI (before tax)	Cumulative change in fair value due to own credit risk recognized in AOCI (before tax)
As at October 31, 2022	770	1,459	(114)	94	22
As at October 31, 2021	1,046	1,526	(81)	(26)	(72)

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.

A reconciliation of the change in insurance-related liabilities is as follows:

(Canadian \$ in millions)	2022	2021
Insurance-related liabilities, beginning of year	12,845	12,441
Increase (decrease) in life insurance policy benefit liabilities from:		
New business	354	765
In-force policies	(1,938)	(306)
Changes in actuarial assumptions and methodology	201	(72)
Foreign currency	3	(2)
Net increase (decrease) in life insurance policy benefit liabilities	(1,380)	385
Change in other insurance-related liabilities	(264)	19
Insurance-related liabilities, end of year	11,201	12,845

Reinsurance

In the ordinary course of business, our insurance subsidiaries reinsure risks to other insurance and reinsurance companies in order to provide greater diversification, limit loss exposure to large risks, and provide additional capacity for future growth. These ceding reinsurance arrangements do not relieve our insurance subsidiaries of their direct obligation to the insured parties. We evaluate the financial condition of the reinsurers and monitor their credit ratings to minimize our exposure to losses from reinsurer insolvency.

Reinsurance premiums ceded are recorded net against direct premium income and are included in non-interest revenue, insurance revenue, in our Consolidated Statement of Income for the years ended October 31, 2022 and 2021, as shown in the table below:

(Canadian \$ in millions)	2022	2021
Direct premium income	1,623	2,050
Ceded premiums	(399)	(408)
	1,224	1,642

Lease Liabilities

When we enter into leases we record lease liabilities representing the present value of future lease payments over the lease term. Interest expense recorded on lease liabilities for the year ended October 31, 2022 was \$59 million (\$56 million in 2021). Total cash outflow for lease liabilities for the year ended October 31, 2022 was \$342 million (\$383 million in 2021). Variable lease payments (for example maintenance, utilities and property taxes) not included in the measurement of lease liabilities for the year ended October 31, 2022 were \$206 million (\$236 million in 2021).

The maturity profile of our undiscounted lease liabilities is \$350 million for 2023, \$342 million for 2024, \$323 million for 2025, \$298 million for 2026, \$275 million for 2027 and \$1,643 million for 2028 and thereafter.

Note 15: Subordinated Debt

Subordinated debt represents our direct unsecured obligations to our debt holders, in the form of notes and debentures, and forms part of our regulatory capital. Subordinated debt is recorded at amortized cost using the effective interest rate method. Where appropriate, we enter into fair value hedges to hedge the risks caused by changes in interest rates (see Note 8). The rights of the holders of our notes and debentures are subordinate to the claims of depositors and certain other creditors. We require approval from OSFI before we can redeem any part of our subordinated debt.

The face values, terms to maturity and carrying values of our subordinated debt are as follows:

(Canadian \$ in millions, except as noted)	Face value	Maturity date	Interest rate (%)	Redeemable at our option	2022 Total	2021 Total
Debentures Series 20	150	December 2025 to 2040	8.25	Not redeemable	146	146
Series I Medium-Term Notes, Second Tranche (1)	850	June 2027	2.57	June 2022 (2)	-	843
3.803% Subordinated Notes due 2032 (1)	US 1,250	December 2032	3.80	December 2027 (3)	1,497	1,567
4.338% Subordinated Notes due 2028 (1)	US 850	October 2028	4.34	October 2023 (4)	1,135	1,096
Series J Medium-Term Notes, First Tranche (1)	1,000	September 2029	2.88	September 2024 (5)	998	998
Series J Medium-Term Notes, Second Tranche (1)	1,250	June 2030	2.08	June 2025 (6)	1,248	1,248
Series K Medium-Term Notes, First Tranche (1)	1,000	July 2031	1.93	July 2026 (7)	984	995
3.088% Subordinated Notes due 2037 (1)	US 1,250	January 2037	3.09	January 2032 (8)	1,393	-
Series L Medium-Term Notes, First Tranche (1)	750	October 2032	6.53	October 2027 (9)	749	-
Total (10)					8,150	6,893

- (1) These notes include a non-viability contingent capital provision, which is necessary for notes issued after a certain date to qualify as regulatory capital under Basel III. As such, they are convertible into a variable number of our common shares if OSFI announces that the bank is, or is about to become, non-viable or if a federal or provincial government in Canada publicly announces that the bank has accepted or agreed to accept a capital injection, or equivalent support, to avoid non-viability. In such an event, each note is convertible into common shares pursuant to an automatic conversion formula with a multiplier and a conversion price based on the greater of: (i) a floor price of \$5.00 and (ii) the current market price of our common shares based on the volume weighted-average trading price of our common shares on the TSX. The number of common shares issued is determined by dividing the par value of the note (including accrued and unpaid interest on such note) by the conversion price and then applying the multiplier.
- (2) All \$850 million Series I Medium-Term Notes Second Tranche were redeemed on June 1, 2022 for 100% of the principal amount, plus accrued and unpaid interest to, but excluding, the redemption date.
- (3) Redeemable at par on December 15, 2027 together with accrued and unpaid interest to, but excluding, the redemption date.
- (4) Redeemable at par on October 5, 2023 together with accrued and unpaid interest to, but excluding, the redemption date.
- (5) Redeemable at par on September 17, 2024 together with accrued and unpaid interest to, but excluding, the redemption date.
- (6) Redeemable at par on June 17, 2025 together with accrued and unpaid interest to, but excluding, the redemption date.
- (7) Redeemable at par on July 22, 2026 together with accrued and unpaid interest to, but excluding, the redemption date.
- (8) On January 10, 2022, we issued US\$1,250 million of unsecured subordinated debt through our U.S. Medium-Term Note Program. These notes are redeemable at par on January 10, 2032 together with accrued and unpaid interest to, but excluding, the redemption date.
- (9) On October 27, 2022, we issued \$750 million of unsecured subordinated debt through our Canadian Medium-Term Note Program. These notes are redeemable at par on October 27, 2027 together with accrued and unpaid interest to, but excluding, the redemption date.
- (10) Certain amounts of subordinated debt were issued at a premium or discount and include fair value hedge adjustments, which together decreased their carrying value as at October 31, 2022 by \$56 million (increased by \$44 million in 2021); see Note 8 for further details on hedge adjustments. The carrying value is also adjusted for our subordinated debt holdings, held for market-making purposes.

The aggregate remaining maturities of our subordinated debt, based on the maturity dates under the terms of issue, can be found in the blue-tinted font in the Contractual Maturities of Assets and Liabilities and Off-Balance Sheet Commitments section of Management's Discussion and Analysis within this report.

Note 16: Equity

Preferred and Common Shares Outstanding and Other Equity Instruments

(Canadian \$ in millions, except as noted)

	Number of shares	Amount	Dividends declared per share	Number of shares	Amount	Dividends declared per share
Preferred Shares – Classified as Equity						
Class B – Series 27	20,000,000	500	0.96	20,000,000	500	0.96
Class B – Series 29	16,000,000	400	0.91	16,000,000	400	0.91
Class B – Series 31	12,000,000	300	0.96	12,000,000	300	0.96
Class B – Series 33	8,000,000	200	0.76	8,000,000	200	0.76
Class B – Series 38 (1)	–	–	0.30	24,000,000	600	1.21
Class B – Series 40 (2)	–	–	0.56	20,000,000	500	1.13
Class B – Series 42 (3)	–	–	0.83	16,000,000	400	1.10
Class B – Series 44	16,000,000	400	1.21	16,000,000	400	1.21
Class B – Series 46	14,000,000	350	1.28	14,000,000	350	1.28
Class B – Series 50 (4)	500,000	500	24.64	–	–	–
Preferred Shares – Classified as Equity	2,650				3,650	
Other Equity Instruments						
4.800% Additional Tier 1 Capital Notes (AT1 Notes)		658			658	
4.300% Limited Recourse Capital Notes, Series 1 (Series 1 LRCNs)		1,250			1,250	
5.625% Limited Recourse Capital Notes, Series 2 (Series 2 LRCNs) (5)		750			–	
7.325% Limited Recourse Capital Notes, Series 3 (Series 3 LRCNs) (6)		1,000			–	
Preferred Shares and Other Equity Instruments	6,308				5,558	
Common Shares						
Balance at beginning of year	648,136,472	13,599		645,889,396	13,430	
Issued to finance a portion of the announced acquisition (Note 10)	20,843,750	3,106		–	–	
Issued under the Shareholder Dividend Reinvestment and Share Purchase Plan	7,531,233	999		–	–	
Issued/cancelled under the Stock Option Plan and other stock-based compensation plans (Note 20)	733,591	57		1,630,867	122	
Treasury shares sold/(purchased)	(138,168)	(17)		616,209	47	
Balance at End of Year (7)	677,106,878	17,744	5.44	648,136,472	13,599	4.24

(1) Series 38 was redeemed and final dividends were paid on February 25, 2022.

(2) Series 40 was redeemed and final dividends were paid on May 25, 2022.

(3) Series 42 was redeemed and final dividends were paid on August 25, 2022.

(4) On July 27, 2022, we issued Class B Series 50 Preferred Shares for \$500 million.

(5) On March 15, 2022, we issued Series 2 LRCNs for \$750 million.

(6) On September 13, 2022, we issued Series 3 LRCNs for \$1,000 million.

(7) Common shares are net of 174,689 treasury shares as at October 31, 2022 (36,521 treasury shares as at October 31, 2021).

Preferred Share Rights and Privileges

(Canadian \$, except as noted)

	Redemption amount	Non-cumulative dividend (1)	Reset premium	Date redeemable / convertible	Convertible to
Class B – Series 27	25.00	\$ 0.24075 (2)	2.33%	May 25, 2024 (3)(4)	Class B – Series 28 (5)(6)
Class B – Series 29	25.00	\$ 0.2265 (2)	2.24%	August 25, 2024 (3)(4)	Class B – Series 30 (5)(6)
Class B – Series 31	25.00	\$0.240688 (2)	2.22%	November 25, 2024 (3)(4)	Class B – Series 32 (5)(6)
Class B – Series 33	25.00	\$0.190875 (2)	2.71%	August 25, 2025 (3)(4)	Class B – Series 34 (5)(6)
Class B – Series 44	25.00	\$0.303125 (2)	2.68%	November 25, 2023 (3)(4)	Class B – Series 45 (5)(6)
Class B – Series 46	25.00	\$ 0.31875 (2)	3.51%	May 25, 2024 (3)(4)	Class B – Series 47 (5)(6)
Class B – Series 50	1,000.00	\$24.64400 (2)	4.25%	November 26, 2027 (3)	Not convertible (6)

(1) Non-cumulative dividends are payable quarterly as and when declared by the Board of Directors, except for Class B – Series 50 preferred shares which are payable semi-annually.

(2) The dividend rate will reset on the date redeemable and every five years thereafter at a rate equal to the 5-year Government of Canada bond yield plus the reset premium noted. If converted to a floating rate series, the rate will be set as, and when declared, at the 3-month Government of Canada treasury bill yield plus the reset premium noted.

(3) Redeemable on the date noted and every five years thereafter.

(4) Convertible on the date noted and every five years thereafter if not redeemed. If converted, the shares will become floating rate preferred shares.

(5) If converted, the holders have the option to convert back to the original preferred shares on subsequent redemption dates.

(6) The shares issued include a non-viability contingent capital provision, which is necessary for the shares to qualify as regulatory capital under Basel III. Refer to the Non-Viability Contingent Capital paragraph below for details.

On August 25, 2022, we redeemed all of our outstanding 16 million Non-Cumulative 5-Year Rate Reset Class B Preferred Shares, Series 42 (Non-Viability Contingent Capital (NVCC)) for an aggregate total of \$400 million.

On July 27, 2022, we issued 500,000 Non-Cumulative 5-Year Rate Reset Class B Preferred Shares Series 50 (NVCC) at a price of \$1,000 per share, for gross proceeds of \$500 million. For the initial five-year period to the earliest redemption date of November 26, 2027, the shares pay quarterly cash dividends, if declared, at a rate of 7.373% per annum. The dividend rate will reset on the earliest redemption date and every fifth year thereafter at a rate equal to the 5-year Government of Canada bond yield plus a premium of 4.250%.

On May 25, 2022, we redeemed all of our outstanding 20 million Non-Cumulative 5-Year Rate Reset Class B Preferred Shares, Series 40 (NVCC) for an aggregate total of \$500 million.

On February 25, 2022, we redeemed all of our outstanding 24 million Non-Cumulative 5-Year Rate Reset Class B Preferred Shares, Series 38 (NVCC) for an aggregate total of \$600 million.

Other Equity Instruments

On March 15, 2022 and September 13, 2022, we issued \$750 million 5.625% Limited Recourse Capital Notes, Series 2 (Series 2 LRCNs) (NVCC) and \$1,000 million 7.325% Limited Recourse Capital Notes, Series 3 (Series 3 LRCNs) (NVCC), respectively. Together with the \$1,250 million 4.300% Limited Recourse Capital Notes, Series 1 (Series 1 LRCNs) (NVCC), these LRCNs are classified as equity and form part of our Additional Tier 1 capital. Upon the occurrence of a recourse event, the noteholders will have recourse to assets held in a consolidated trust managed by a third-party trustee. The trust assets are currently comprised of \$1,250 million of BMO issued Non-Cumulative 5-Year Rate Reset Class B Preferred Shares, Series 48 (NVCC) (Preferred Shares Series 48), \$750 million of BMO issued Non-Cumulative 5-Year Rate Reset Class B Preferred Shares, Series 49 (NVCC) (Preferred Shares Series 49) and \$1,000 million of BMO issued Non-Cumulative 5-Year Rate Reset Class B Preferred Shares, Series 51 (NVCC) (Preferred Shares Series 51) issued concurrently with Series 1, Series 2 and Series 3 LRCNs, respectively. As the Preferred Shares Series 48, Series 49 and Series 51 eliminate on consolidation, they do not currently form part of our Additional Tier 1 capital.

The US\$500 million 4.800% Additional Tier 1 Capital Notes (AT1 Notes) (NVCC), are also classified as equity and form part of our Additional Tier 1 capital.

The LRCNs and AT1 Notes are compound financial instruments that have both equity and liability features. On the date of issuance, we assigned an insignificant value to the liability components of both types of instrument and, as a result, the full amount of proceeds has been classified as equity. Semi-annual distributions on the LRCNs and AT1 Notes will be recorded when payable. The LRCNs and AT1 Notes are subordinate to the claims of the depositors and certain other creditors in right of payment. The following table shows the details of our AT1 Notes and LRCNs as at October 31, 2022 and 2021.

(Canadian \$ in millions, except as noted)					2022	2021
					Total	Total
4.800% Additional Tier 1 Capital Notes	US\$ 500	4.800 (1)	August 2024 (2)	Variable number of common shares (3)	658	658
4.300% Limited Recourse Capital Notes, Series 1	\$1,250	4.300 (4)	November 2025 (2)	Variable number of common shares (4)	1,250	1,250
5.625% Limited Recourse Capital Notes, Series 2	\$ 750	5.625 (4)	May 2027 (2)	Variable number of common shares (4)	750	-
7.325% Limited Recourse Capital Notes, Series 3	\$1,000	7.325 (4)	November 2027 (2)	Variable number of common shares (4)	1,000	-
Total					3,658	1,908

(1) Non-cumulative interest is payable semi-annually in arrears, at the bank's discretion.

(2) The notes are redeemable at a redemption price equal to 100% of the principal amount plus any accrued and unpaid interest, in whole or in part, at our option on any interest payment date or after the first interest reset date or following certain regulatory or tax events. The bank may, at any time, purchase the notes at any price in the open market.

(3) The notes issued include a non-viability contingent capital provision, which is necessary for the notes to qualify as regulatory capital under Basel III. Refer to the Non-Viability Contingent Capital paragraph below for details.

(4) Non-deferrable interest is payable semi-annually on these notes, at the bank's discretion. Non-payment of interest will result in a recourse event, with the noteholders' sole remedy being the holders' proportionate share of trust assets comprised of our NVCC Preferred Shares Series 48 for Series 1 LRCNs, Preferred Shares Series 49 for Series 2 LRCNs and Preferred Shares Series 51 for Series 3 LRCNs. In such an event, the delivery of the trust assets will represent the full and complete extinguishment of our obligations under the LRCNs. In circumstances under which NVCC, including the Preferred Shares Series 48, Preferred Shares Series 49 and Preferred Shares Series 51 for Series 1, Series 2 and Series 3 LRCNs, respectively, would be converted into common shares of the bank (described below), the LRCNs would be redeemed, and the noteholders' sole remedy would be their proportionate share of trust assets, then comprised of common shares of the bank received by the trust on conversion.

Common Shares

On March 29, 2022, we issued 20,843,750 common shares for \$3,106 million to finance a portion of the purchase price for the announced acquisition of Bank of the West. Refer to Note 10 for further information.

Authorized Share Capital

We classify financial instruments that we issue as financial liabilities, equity instruments or compound instruments. Financial instruments that will be settled by a variable number of our common shares upon conversion by the holders are classified as liabilities in our Consolidated Balance Sheet. Dividends and interest payments on financial liabilities are classified as interest expense in our Consolidated Statement of Income. Financial instruments are classified as equity instruments when there is no contractual obligation to transfer cash or other financial assets. Issued instruments that are not mandatorily redeemable, or that are not convertible into a variable number of our common shares at the holder's option, are classified as equity and presented in share capital. Dividend payments on equity instruments are recognized as a reduction in equity.

Common Shares

We are authorized by our shareholders to issue an unlimited number of our common shares, without par value, for unlimited consideration. Our common shares are not redeemable or convertible. Dividends are declared by our Board of Directors at their discretion. Historically, the Board of Directors has declared dividends on a quarterly basis and the amount can vary from quarter to quarter.

Preferred Shares

We are authorized by our shareholders to issue an unlimited number of Class A Preferred Shares and Class B Preferred Shares, without par value, in series, for unlimited consideration. Class B Preferred Shares may be issued in a foreign currency.

Treasury Shares

When we purchase our common shares as part of our trading business, we record the cost of those shares as a reduction in shareholders' equity. If those shares are resold at a price higher than their cost, the premium is recorded as an increase in contributed surplus. If those shares are resold at a price below their cost, the discount is recorded as a reduction first to contributed surplus and then to retained earnings for any amount in excess of the total contributed surplus related to treasury shares.

Non-Viability Contingent Capital

Class B – Series 27, Class B – Series 29, Class B – Series 31, Class B – Series 33, Class B – Series 44, Class B – Series 46 and Class B – Series 50 preferred share issues, the AT1 Notes and, by virtue of the recourse to the Preferred Shares Series 48, Preferred Shares Series 49 and Preferred Shares Series 51 for Series 1, Series 2 and Series 3 LRCNs, respectively, the LRCNs include a non-viability contingent capital provision which is necessary for them to qualify as regulatory capital under Basel III. As such, they are convertible into a variable number of our common shares if OSFI announces that the bank is, or is about to become, non-viable or if a federal or provincial government in Canada publicly announces that the bank has accepted, or agreed to accept, a capital injection, or equivalent support, to avoid non-viability. In such an event, each preferred share or other equity instrument is convertible into common shares pursuant to an automatic conversion formula and a conversion price based on the greater of: (i) a floor price of \$5.00 and (ii) the current market price of our common shares based on the volume weighted-average trading price of our common shares on the TSX. The number of common shares issued is determined by dividing the value of the preferred share or other equity instrument issuance, including declared and unpaid dividends on such preferred share or other equity instrument issuance, by the conversion price and then applying the multiplier.

Normal Course Issuer Bid

On December 3, 2021, we announced our intention, subject to the approval of OSFI and the TSX, to purchase for cancellation up to 22.5 million of our common shares under a normal course issuer bid (NCIB). Together with the announcement of the Bank of the West acquisition, we noted that we would not proceed with establishing a NCIB and did not expect to repurchase shares prior to the closing of the acquisition.

Share Redemption and Dividend Restrictions

OSFI must approve any plan to redeem any of our preferred share issues or other equity instruments for cash.

We are prohibited from declaring dividends on our preferred or common shares when we would be, as a result of paying such a dividend, in contravention of the capital adequacy, liquidity or any other regulatory directive issued under the *Bank Act (Canada)*. In addition, common share dividends cannot be paid unless all dividends declared and payable on our preferred shares have been paid or sufficient funds have been set aside to do so and, in certain circumstances, Class B Preferred Share dividends cannot be paid unless dividends on our Preferred Shares Series 48, Preferred Shares Series 49 and Preferred Shares Series 51 have been paid.

In addition, if the bank does not pay the interest in full on the AT1 Notes, the bank will not declare dividends on its common shares or preferred shares, or redeem, purchase or otherwise retire such shares, until the month commencing after the bank resumes full interest payments on the AT1 Notes.

Currently, these limitations do not restrict the payment of dividends on common or preferred shares.

Shareholder Dividend Reinvestment and Share Purchase Plan

We offer a Dividend Reinvestment and Share Purchase Plan (the Plan) for our shareholders. Participation in the Plan is optional. Under the terms of the Plan, cash dividends on common shares are reinvested to purchase additional common shares. Shareholders also have the opportunity to make optional cash payments to acquire additional common shares.

On January 10, 2022, we announced the offering of a 2% discount on the common shares issued from treasury under the dividend reinvestment feature of the Plan. Commencing with the common share dividend declared for the first quarter of fiscal 2022, and subsequently until further notice, common shares under the Plan will be issued by the bank from treasury with a 2% discount, calculated in accordance with the terms of the Plan. The discount will not apply to common shares purchased under the Optional Cash Payment feature of the Plan.

We issued 7,531,233 common shares under the Plan for the year ended October 31, 2022 (nil for the year ended October 31, 2021).

Potential Share Issuances

As at October 31, 2022, we had reserved 25,669,677 common shares (33,200,910 as at October 31, 2021) for potential issuance in respect of the Plan. We have also reserved 5,976,870 common shares (5,682,206 as at October 31, 2021) for the potential exercise of stock options, as further described in Note 20.

Note 17: Fair Value of Financial Instruments and Trading-Related Revenue

We record assets and liabilities 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, and other non-trading assets and liabilities at amortized cost less allowances or write-downs for impairment. The fair values presented in this note are based upon the amounts estimated for individual assets and liabilities and do not include an estimate of the fair value of any of the legal entities or underlying operations that comprise our business. For certain portfolios of financial instruments where we manage exposures to similar and offsetting risks, fair value is determined on the basis of our net exposure to that risk.

Fair value represents an estimate of the amount that we would receive, or would be payable in the case of a liability, in an orderly transaction between willing parties at the measurement date. The fair value amounts disclosed represent point-in-time estimates that may change in subsequent reporting periods due to changes in market conditions or other factors. Some financial instruments are not typically exchangeable or exchanged and therefore it is difficult to determine their fair value. Where there is no quoted market price, we determine fair value using management's best estimates based on a range of valuation techniques and assumptions; since these involve uncertainties, the fair values may not be realized in an actual sale or immediate settlement of the asset or liability.

Governance Over the Determination of Fair Value

Senior executive oversight of our valuation processes is provided through various valuation and risk committees. In order to ensure that all financial instruments carried at fair value are reasonably measured for risk management and financial reporting purposes, we have established governance structures and controls, such as model validation and approval, independent price verification (IPV) and profit or loss attribution analysis (PAA), consistent with industry practice. These controls are applied independently of the relevant operating groups.

We establish valuation methodologies for each financial instrument that is required to be measured at fair value. The application of valuation models for products or portfolios is subject to independent approval to ensure only validated models are used. The impact of known limitations of models and data inputs is also monitored on an ongoing basis. IPV is a process that regularly and independently verifies the accuracy and appropriateness of market prices or model inputs used in the valuation of financial instruments. This process assesses fair values using a variety of different approaches to verify and validate the valuations. PAA is a daily process carried out by management to identify and explain changes in fair value positions across all operating lines of business within BMO Capital Markets. This process works in concert with other processes to ensure that the fair values being reported are reasonable and appropriate.

Securities

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. Securities for which no active market exists are valued using all reasonably available market information. Our fair value methodologies are described below.

Government Securities

The fair value of debt securities issued or guaranteed by governments in active markets is determined by reference to recent transaction prices, broker quotes or third-party vendor prices. The fair value of securities that are not traded in an active market is modelled using implied yields derived from the prices of similar actively traded government securities and observable spreads.

Mortgage-Backed Securities and Collateralized Mortgage Obligations

The fair value of mortgage-backed securities (MBS) and collateralized mortgage obligations (CMOs) is determined using prices obtained from independent third-party vendors, broker quotes and relevant market indices, as applicable. If such prices are not available, fair value is determined using cash flow models that make maximum use of observable market inputs or benchmark prices for similar instruments. Valuation assumptions for mortgage-backed securities and collateralized mortgage obligations include discount rates, default rates, expected prepayments, credit spreads and recoveries.

Corporate Debt Securities

The fair value of corporate debt securities is determined using prices observed in the most recent transactions. When observable quoted prices are not available, fair value is determined based on discounted cash flow models using discounting curves and spreads obtained from independent dealers, brokers and third-party vendors.

Trading Loans

The fair value of trading loans is determined by referring to current market prices for the same or similar instruments.

Corporate Equity Securities

The fair value of corporate equity securities is based on quoted prices in active markets, where available. Where quoted prices in active markets are not readily available, fair value is determined using either quoted market prices for similar securities or using valuation techniques, which include discounted cash flow analysis and earnings multiples.

Privately Issued Securities

Privately issued debt and equity securities are valued using prices observed in recent market transactions, where available. Otherwise, fair value is derived from valuation models using a market or income approach. These models consider various factors, including projected cash flows, earnings, revenue and other third-party evidence, as available. The fair value of our privately issued securities includes net asset values published by third-party fund managers as applicable.

Prices from dealers, brokers and third-party vendors are corroborated as part of our independent review process, which may include using valuation techniques or obtaining consensus or composite prices from other pricing services. We validate the estimates of fair value by independently obtaining multiple quotes for external market prices and input values. We review the approach taken by third-party vendors to ensure that vendors employ a valuation model that maximizes the use of observable inputs such as benchmark yields, bid-ask spreads, underlying collateral, weighted-average terms to maturity and prepayment rate assumptions. Fair value estimates from internal valuation techniques are verified, where possible, by reference to prices obtained from third-party vendors.

Loans

In determining the fair value of our fixed rate performing loans, other than credit card loans, we discount the remaining contractual cash flows, adjusted for estimated prepayment, at market interest rates currently offered for loans with similar terms and credit risks. For credit card performing loans, fair value is considered to be equal to carrying value, due to their short-term nature.

For floating rate performing loans, changes in interest rates have minimal impact on fair value since interest rates are repriced or reset frequently. On that basis, fair value is assumed to be equal to carrying value.

The fair value of loans is not adjusted for the value of any credit protection purchased to mitigate credit risk.

Derivative Instruments

A number of valuation techniques are employed to estimate fair value, including discounted cash flow analysis, the Black-Scholes model, Monte Carlo simulation and other accepted market models. These independently validated models incorporate current market data for interest rates, foreign currency exchange rates, equity and commodity prices and indices, credit spreads, recovery rates, corresponding market volatility levels, spot prices, correlation levels and other market-based pricing factors. Option implied volatilities, an input into many valuation models, are either obtained directly from market sources or calculated from market prices. Multi-contributor pricing sources are used wherever possible.

In determining the fair value of complex and customized derivatives, we consider all reasonably available information, including dealer and broker quotes, multi-contributor pricing sources and any relevant observable market inputs. Our models calculate fair value based on inputs specific to the type of contract, which may include stock prices, correlation for multiple assets, interest rates, foreign currency exchange rates, yield curves and volatilities.

We calculate a credit valuation adjustment (CVA) to recognize the credit risk that the bank's counterparty may not ultimately be able to fulfill its derivative obligations. The CVA is derived from market-observed credit spreads or proxy credit spreads and our assessment of the net counterparty credit risk exposure, taking into account credit mitigants such as collateral, master netting agreements and novation to central counterparties. We also calculate a funding valuation adjustment (FVA) to recognize the implicit funding costs associated with over-the-counter derivative positions. The FVA is determined by reference to our own funding spreads.

Deposits

In determining the fair value of our deposits, we incorporate the following assumptions:

- For fixed rate, fixed maturity deposits, we discount the remaining contractual cash flows related to these deposits, adjusted for expected redemptions, at market interest rates currently offered for deposits with similar terms and risks. The fair value of our senior note liabilities and covered bonds is determined by referring to current market prices for similar instruments or using valuation techniques, such as discounted cash flow models that use market interest rate yield curves and funding spreads.
- For fixed rate deposits with no defined maturities, we consider fair value to equal carrying value, since carrying value is equivalent to the amount payable on the reporting date.
- For floating rate deposits, changes in interest rates have minimal impact on fair value, since deposits reprice to market frequently. On that basis, fair value is considered to equal carrying value.

Certain of our structured note liabilities that have coupons or repayment terms linked to the performance of interest rates, foreign currencies, commodities or equity securities have been designated at fair value through profit or loss. The fair value of these structured notes is estimated using internally validated valuation models and incorporates observable market prices for identical or comparable securities, as well as other inputs, such as interest rate yield curves, option volatilities and foreign exchange rates, where appropriate. Where observable prices or inputs are not available, management judgment is required to determine the fair value by assessing other relevant sources of information, such as historical data and proxy information from similar transactions.

Securities Sold But Not Yet Purchased

The fair value of these obligations is based on the fair value of the underlying securities, which can be equity or debt securities. As these obligations are fully collateralized, the method used to determine fair value would be the same as that used for the relevant underlying equity or debt securities.

Securitization and Structured Entities' Liabilities

The determination of the fair value of our securitization and structured entities' liabilities is based on quoted market prices or quoted market prices for similar financial instruments, where available. Where quoted prices are not available, fair value is determined using valuation techniques, such as discounted cash flow models, that maximize the use of observable inputs.

Subordinated Debt

The fair value of our subordinated debt is determined by referring to current market prices for the same or similar instruments.

Financial Instruments with a Carrying Value Approximating Fair Value

Carrying value is considered to be a reasonable estimate of fair value for our cash and cash equivalents.

The carrying value of certain financial assets and liabilities, such as interest bearing deposits with banks, securities borrowed or purchased under resale agreements, customers' liability under acceptances, certain other assets, acceptances, securities lent or sold under repurchase agreements and certain other liabilities, is a reasonable estimate of fair value due to their short-term nature or because they are frequently repriced to current market rates. These items are therefore excluded from the table below.

Fair Value Hierarchy

We use a fair value hierarchy to categorize financial instruments according to the inputs we use in valuation techniques to measure fair value.

Fair Value of Financial Instruments Not Carried at Fair Value on the Balance Sheet

Set out in the following table are the fair values of financial instruments not carried at fair value in our Consolidated Balance Sheet.

(Canadian \$ in millions)		2022		2021
		Carrying value	Fair value (6)	Carrying value
Securities (1)				
Amortized cost	106,590	94,832	49,970	49,810
Loans (1)(2)				
Residential mortgages	148,569	142,526	135,653	135,461
Consumer instalment and other personal	85,612	83,948	76,627	76,791
Credit cards	9,387	9,387	7,827	7,827
Business and government	302,079	300,173	233,066	233,670
	545,647	536,034	453,173	453,749
Deposits (3)	742,419	739,339	662,050	662,781
Securitization and structured entities' liabilities (4)	25,816	24,989	24,631	24,809
Other liabilities (5)	4,088	3,181	—	—
Subordinated debt	8,150	7,743	6,893	7,087

(1) Carrying value is net of allowances for credit losses.

(2) Excludes \$176 million of residential mortgages classified as FVTPL, \$5,496 million of business and government loans classified as FVTPL and \$60 million of business and government loans classified as FVOCI (\$nil million, \$5,022 million and \$134 million, respectively, as at October 31, 2021).

(3) Excludes \$26,305 million of structured note liabilities (\$22,665 million as at October 31, 2021), \$536 million of structured deposits (\$777 million as at October 31, 2021) and \$218 million of metal deposits (\$139 million as at October 31, 2021) measured at fair value.

(4) Excludes \$1,252 million of securitization and structured entities' liabilities classified as FVTPL (\$855 million as at October 31, 2021).

(5) Other liabilities include certain other liabilities of subsidiaries.

(6) If financial instruments not carried at fair value were categorized based on the fair value hierarchy, all of these financial instruments would be categorized as Level 2, except for amortized cost securities, which would have \$39,622 million categorized as Level 1 (\$14,117 million as at October 31, 2021), and \$55,210 million categorized as Level 2 (\$35,693 million as at October 31, 2021).

Valuation Techniques and Significant Inputs

We determine the fair value of publicly traded fixed maturity debt and equity securities using quoted prices in active markets (Level 1) when these are available. When quoted prices in active markets are not available, we determine the fair value of financial instruments using models such as discounted cash flows, with observable market data for inputs, such as yields or broker quotes and other third-party vendor quotes (Level 2). Fair value may also be determined using models where significant market inputs are not observable due to inactive markets or minimal market activity (Level 3). We maximize the use of observable market inputs to the extent possible.

Our Level 2 trading securities are primarily valued using discounted cash flow models with observable spreads or broker quotes. The fair value of Level 2 FVOCI securities is determined using discounted cash flow models with observable spreads or third-party vendor quotes. Level 2 structured note liabilities are valued using models with observable market information. Level 2 derivative assets and liabilities are valued using industry-standard models and observable market information.

The extent of our use of actively quoted market prices (Level 1), internal models using observable market information as inputs (Level 2) and models without observable market information as inputs (Level 3) in the valuation of securities, residential mortgages, business and government loans classified as FVTPL and FVOCI, other assets, fair value liabilities, derivative assets and derivative liabilities is presented in the following table:

(Canadian \$ in millions)	2022						2021	
	Valued using quoted market prices	Valued using models (with observable inputs)	Valued using models (without observable inputs)	Total	Valued using quoted market prices	Valued using models (with observable inputs)	Valued using models (without observable inputs)	Total
Trading Securities								
Issued or guaranteed by:								
Canadian federal government	6,981	3,955	-	10,936	3,123	4,473	-	7,596
Canadian provincial and municipal governments	1,120	4,990	-	6,110	2,183	3,655	-	5,838
U.S. federal government	7,326	9,373	-	16,699	6,050	3,532	-	9,582
U.S. states, municipalities and agencies	56	83	-	139	-	458	-	458
Other governments	1,085	2,885	-	3,970	1,307	591	-	1,898
NHA MBS, and U.S. agency MBS and CMO	-	13,327	985	14,312	-	13,379	675	14,054
Corporate debt	1,445	8,144	3	9,592	2,231	7,656	7	9,894
Trading loans	-	346	-	346	-	160	-	160
Corporate equity	46,073	-	-	46,073	54,931	-	-	54,931
	64,086	43,103	988	108,177	69,825	33,904	682	104,411
FVTPL Securities								
Issued or guaranteed by:								
Canadian federal government	319	174	-	493	704	159	-	863
Canadian provincial and municipal governments	36	1,044	-	1,080	137	1,243	-	1,380
U.S. federal government	-	4	-	4	-	38	-	38
Other governments	-	87	-	87	-	92	-	92
NHA MBS, and U.S. agency MBS and CMO	-	8	-	8	-	9	-	9
Corporate debt	62	6,409	8	6,479	160	7,544	-	7,704
Corporate equity	1,440	6	4,044	5,490	1,670	12	2,442	4,124
	1,857	7,732	4,052	13,641	2,671	9,097	2,442	14,210
FVOCI Securities								
Issued or guaranteed by:								
Canadian federal government	3,544	8,757	-	12,301	9,138	3,927	-	13,065
Canadian provincial and municipal governments	972	3,599	-	4,571	1,438	1,549	-	2,987
U.S. federal government	1,443	1,667	-	3,110	18,873	2,153	-	21,026
U.S. states, municipalities and agencies	-	3,713	1	3,714	-	4,113	1	4,114
Other governments	1,795	4,616	-	6,411	2,803	3,699	-	6,502
NHA MBS, and U.S. agency MBS and CMO	-	9,268	-	9,268	-	12,136	-	12,136
Corporate debt	355	3,678	-	4,033	812	2,349	-	3,161
Corporate equity	-	-	153	153	-	-	132	132
	8,109	35,298	154	43,561	33,064	29,926	133	63,123
Loans								
Residential mortgages	-	176	-	176	-	-	-	-
Business and government loans	-	5,536	20	5,556	-	5,150	6	5,156
	-	5,712	20	5,732	-	5,150	6	5,156
Other Assets (1)	4,148	60	49	4,257	4,392	85	-	4,477
Fair Value Liabilities								
Securities sold but not yet purchased	18,465	22,514	-	40,979	17,424	14,649	-	32,073
Structured note liabilities (2)	-	26,305	-	26,305	-	22,665	-	22,665
Structured deposits (3)	-	536	-	536	-	777	-	777
Other liabilities (4)	1,179	2,298	2	3,479	1,106	2,125	-	3,231
	19,644	51,653	2	71,299	18,530	40,216	-	58,746
Derivative Assets								
Interest rate contracts	80	12,682	-	12,762	6	8,066	-	8,072
Foreign exchange contracts	21	22,475	26	22,522	3	14,982	-	14,985
Commodity contracts	1,514	4,810	-	6,324	642	6,976	-	7,618
Equity contracts	939	5,552	-	6,491	1,381	4,657	-	6,038
Credit default swaps	-	61	-	61	-	-	-	-
	2,554	45,580	26	48,160	2,032	34,681	-	36,713
Derivative Liabilities								
Interest rate contracts	58	16,540	-	16,598	6	6,773	-	6,779
Foreign exchange contracts	2	25,108	-	25,110	4	12,451	-	12,455
Commodity contracts	1,523	2,066	-	3,589	746	1,445	-	2,191
Equity contracts	1,203	13,381	-	14,584	1,581	7,802	-	9,383
Credit default swaps	-	73	2	75	-	5	2	7
	2,786	57,168	2	59,956	2,337	28,476	2	30,815

(1) Other assets include precious metals, segregated fund assets in our insurance business, certain receivables and other items measured at fair value.

(2) These structured note liabilities included in deposits have been designated at FVTPL.

(3) This represents certain embedded options related to structured deposits carried at amortized cost.

(4) Other liabilities include investment contract liabilities and segregated fund liabilities in our insurance business, certain payables and metals deposits that have been designated at FVTPL as well as certain securitization and structured entities' liabilities measured at FVTPL.

Quantitative Information about Level 3 Fair Value Measurements

The table below presents the fair values of our significant Level 3 financial instruments, the valuation techniques used to determine their fair values and the value ranges of significant unobservable inputs used in the valuations. We have not applied any other reasonably possible alternative assumptions to the significant Level 3 categories of private equity investments, as the net asset values are provided by the investment or fund managers.

(Canadian \$ in millions except as noted)

					2022
	Reporting line in fair value hierarchy table	Fair value of assets	Valuation techniques	Significant unobservable inputs	Range of input values (1)
					Low High
Private equity (2)	Corporate equity	4,044	Net asset value EV/EBITDA	Net asset value Multiple	na 5x 19x
NHA MBS, U.S. agency MBS and CMO	NHA MBS, U.S. agency MBS and CMO	985	Discounted cash flows Market Comparable	Prepayment rate Comparability Adjustment (3)	3% (3.83) 47% 6.82

				2021	
	Reporting line in fair value hierarchy table	Fair value of assets	Valuation techniques	Significant unobservable inputs	
				Low High	
Private equity (2)	Corporate equity	2,442	Net asset value EV/EBITDA	Net asset value Multiple	na 6x 19x
NHA MBS, U.S. agency MBS and CMO	NHA MBS, U.S. agency MBS and CMO	675	Discounted cash flows Market Comparable	Prepayment rate Comparability Adjustment (3)	4% (5.56) 47% 5.85

(1) The low and high input values represent the lowest and highest actual level of inputs used to value a group of financial instruments in a particular product category. These input ranges do not reflect the level of input uncertainty but are affected by the specific underlying instruments within each product category. The input ranges will therefore vary from period to period based on the characteristics of the underlying instruments held at each balance sheet date.

(2) Included in private equity is \$832 million of U.S. Federal Reserve Bank and U.S. Federal Home Loan Bank shares that we carry at cost (\$453 million as at October 31, 2021), which approximates fair value, and are held to meet regulatory requirements.

(3) Range of input values represents price per security adjustment (Canadian \$).

na – not applicable

Significant Unobservable Inputs in Level 3 Instrument Valuations

Net Asset Value

Net asset value represents the estimated value of a security based on valuations received from the investment or fund manager. The valuation of certain private equity securities is based on the economic benefit we derive from our investment.

EV/EBITDA Multiple

The fair value of private equity and merchant banking investments is derived by calculating an enterprise value (EV) using the EV/EBITDA multiple and then proceeding through a waterfall of the company's capital structure to determine the value of the assets or securities we hold. The EV/EBITDA multiple is determined using judgment in considering factors such as multiples for comparable listed companies, recent transactions and company-specific factors, as well as liquidity discounts that account for the lack of active trading in these assets and securities.

Prepayment Rates

Discounted cash flow models are used to fair value our NHA MBS and U.S. agency MBS and CMOS. The cash flow model includes assumptions related to conditional prepayment rates, constant default rates and percentage loss on default. Prepayment rates impact our estimate of future cash flows. Changes in the prepayment rate tend to be negatively correlated with interest rates. In other words, an increase in the prepayment rate will result in a higher fair value when the asset interest rate is lower than the current reinvestment rate. A decrease in the prepayment rate will result in a lower fair value when the asset interest rate is higher than the current reinvestment rate.

Comparability Adjustment

Market comparable pricing is used to evaluate the fair value of NHA MBS and U.S. agency MBS and CMOS. This technique involves sourcing prices from third parties for similar instruments and applying adjustments to reflect recent transaction prices and instrument specific characteristics.

Significant Transfers

Our policy is to record transfers of assets and liabilities between fair value hierarchy levels at their fair values as at the end of each reporting period, consistent with the date of the determination of fair value. Transfers between the various fair value hierarchy levels reflect changes in the availability of quoted market prices or observable market inputs that result from changes in market conditions. Transfers from Level 1 to Level 2 were due to reduced observability of the inputs used to value the securities. Transfers from Level 2 to Level 1 were due to increased availability of quoted prices in active markets.

The following table presents significant transfers between Level 1 and Level 2 for the years ended October 31, 2022 and October 31, 2021.

(Canadian \$ in millions)	2022	2021		
	Level 1 to Level 2	Level 2 to Level 1	Level 1 to Level 2	Level 2 to Level 1
Trading securities	10,983	13,062	7,863	11,421
FVTPL securities	607	522	871	902
FVOCI securities	16,452	11,895	11,028	13,542
Securities sold but not yet purchased	9,499	14,623	7,764	5,950

Changes in Level 3 Fair Value Measurements

The tables below present a reconciliation of all changes in Level 3 financial instruments for the years ended October 31, 2022 and 2021, including realized and unrealized gains (losses) included in earnings and other comprehensive income as well as transfers into and out of Level 3. Transfers from Level 2 to Level 3 were due to an increase in unobservable market inputs used in pricing the securities. Transfers out of Level 3 to Level 2 were due to an increase in observable market inputs used in pricing the securities.

	Balance October 31, 2022 For the year ended October 31, 2022 (Canadian \$ in millions)	Change in fair value			Movements		Transfers		Fair value as at October 31, 2022	Change in unrealized gains (losses) recorded in income for instruments still held (2)
		Included in earnings	Included in other comprehensive income (1)	Purchases/ Issuances	Sales	Maturities/ Settlement	Transfers into Level 3	Transfers out of Level 3		
Trading Securities										
NHA MBS and U.S. agency MBS and CMO Corporate debt	675 7	(237) (2)	76 (1)	1,045 11	(657) (5)	-	444 2	(361) (9)	985 3	(45) (1)
Total trading securities	682	(239)	75	1,056	(662)	-	446	(370)	988	(46)
FVTPL Securities										
Corporate debt	-	-	-	8	-	-	-	-	8	-
Corporate equity	2,442	231	176	1,450	(321)	-	66	-	4,044	274
Total FVTPL securities	2,442	231	176	1,458	(321)	-	66	-	4,052	274
FVOCI Securities										
Issued or guaranteed by: U.S. states, municipalities and agencies	1	-	-	-	-	-	-	-	1	na
Corporate equity	132	-	1	15	(1)	-	6	-	153	na
Total FVOCI securities	133	-	1	15	(1)	-	6	-	154	na
Business and Government Loans										
6	-	-	-	15	-	(1)	-	-	20	-
Other Assets										
-	-	-	-	49	-	-	-	-	49	-
Derivative Assets										
Foreign exchange contracts	-	-	-	26	-	-	-	-	26	-
Total derivative assets	-	-	-	26	-	-	-	-	26	-
Other Liabilities										
-	-	-	-	2	-	-	-	-	2	-
Derivative Liabilities										
Credit default swaps	2	-	-	-	-	-	3	(3)	2	-
Total derivative liabilities	2	-	-	-	-	-	3	(3)	2	-

	Balance October 31, 2020 For the year ended October 31, 2021 (Canadian \$ in millions)	Change in fair value			Movements		Transfers		Fair value as at October 31, 2021	Change in unrealized gains (losses) recorded in income for instruments still held (2)
		Included in earnings	Included in other comprehensive income (1)	Purchases/ Issuances	Sales	Maturities/ Settlement	Transfers into Level 3	Transfers out of Level 3		
Trading Securities										
NHA MBS and U.S. agency MBS and CMO Corporate debt	803 -	(222) -	(56) -	1,465 10	(1,253) (3)	-	169 -	(231) -	675 7	38 -
Total trading securities	803	(222)	(56)	1,475	(1,256)	-	169	(231)	682	38
FVTPL Securities										
Corporate debt	-	-	-	-	-	-	-	-	-	-
Corporate equity	1,903	315	(92)	628	(276)	(4)	-	(32)	2,442	374
Total FVTPL securities	1,903	315	(92)	628	(276)	(4)	-	(32)	2,442	374
FVOCI Securities										
Issued or guaranteed by: U.S. states, municipalities and agencies	1	-	-	-	-	-	-	-	1	na
Corporate equity	93	-	26	13	-	-	-	-	132	na
Total FVOCI securities	94	-	26	13	-	-	-	-	133	na
Business and Government Loans										
1,945	-	(150)	1,812	-	(1,302)	-	(2,299)	-	6	-
Other Assets										
Derivative Assets										
Foreign exchange contracts	-	-	-	-	-	-	-	-	-	-
Total derivative assets	-	-	-	-	-	-	-	-	-	-
Other Liabilities										
Derivative Liabilities										
Credit default swaps	4	-	-	-	-	-	-	(2)	2	-
Total derivative liabilities	4	-	-	-	-	-	-	(2)	2	-

(1) Foreign exchange translation on assets and liabilities held by foreign operations is included in other comprehensive income, net foreign operations.

(2) Changes in unrealized gains (losses) on trading and FVTPL securities still held on October 31, 2022 and 2021 are included in earnings for the year.

Unrealized gains (losses) recognized on Level 3 financial instruments may be offset by (losses) gains on economic hedge contracts.

na - not applicable

Trading-Related Revenue

Trading assets and liabilities, including derivatives, securities and financial instruments designated at FVTPL, are measured at fair value, with gains and losses recognized in trading revenues, non-interest revenue, in our Consolidated Statement of Income. Trading-related revenue includes net interest income and non-interest revenue and excludes underwriting fees and commissions on securities transactions, which are shown separately in our Consolidated Statement of Income. Net interest income arises from interest and dividends related to trading assets and liabilities and is reported net of interest expense associated with funding these assets and liabilities in the following table.

(Canadian \$ in millions)	2022	2021
Interest rates	893	1,017
Foreign exchange	571	416
Equities	713	567
Commodities	189	147
Other (1)	7,556	2
Total trading-related revenue	9,922	2,149
Reported as:		
Net interest income	1,672	1,853
Non-interest revenue – trading revenues (1)	8,250	296
Total trading-related revenue	9,922	2,149

(1) Includes management of fair value changes on the purchase of Bank of the West. Refer to Note 10 for further information.

Note 18: Offsetting of Financial Assets and Financial Liabilities

Financial assets and financial liabilities are offset and the net amount is reported in our Consolidated Balance Sheet when there is a legally enforceable right to offset the recognized amounts and there is an intention to settle on a net basis or realize the asset and settle the liability simultaneously. The following table presents the amounts that have been offset in our Consolidated Balance Sheet, including securities purchased under resale agreements, securities sold under repurchase agreements and derivative instruments, generally under a market settlement mechanism (e.g. an exchange or clearing house) where simultaneous net settlement can be achieved to eliminate credit and liquidity risk between counterparties. Also presented are amounts not offset in the Consolidated Balance Sheet related to transactions where a master netting agreement or similar arrangement is in place with a right to offset the amounts only in the event of default, insolvency or bankruptcy, or where the offset criteria are otherwise not met.

(Canadian \$ in millions)	2022						
	Amounts not offset in the balance sheet						
	Gross amounts	Amounts offset in the balance sheet	Net amounts presented in the balance sheet	Impact of master netting agreements	Securities received/pledged as collateral (1)(2)	Cash collateral	Net amount (3)
Financial Assets							
Securities borrowed or purchased under resale agreements	116,309	3,115	113,194	11,757	99,736	4	1,697
Derivative instruments	48,494	334	48,160	31,878	3,282	3,201	9,799
	164,803	3,449	161,354	43,635	103,018	3,205	11,496
Financial Liabilities							
Derivative instruments	60,290	334	59,956	31,878	7,212	8,843	12,023
Securities lent or sold under repurchase agreements	107,078	3,115	103,963	11,757	91,494	176	536
	167,368	3,449	163,919	43,635	98,706	9,019	12,559
							2021
Financial Assets							
Securities borrowed or purchased under resale agreements	108,799	1,417	107,382	15,779	90,389	9	1,205
Derivative instruments	37,054	341	36,713	20,952	2,377	4,823	8,561
	145,853	1,758	144,095	36,731	92,766	4,832	9,766
Financial Liabilities							
Derivative instruments	31,156	341	30,815	20,952	1,865	1,906	6,092
Securities lent or sold under repurchase agreements	98,973	1,417	97,556	15,779	81,411	108	258
	130,129	1,758	128,371	36,731	83,276	2,014	6,350

(1) Financial assets received/pledged as collateral are disclosed at fair value and are limited to the net balance sheet exposure (i.e. any over-collateralization is excluded from the table).

(2) Certain amounts of collateral are restricted from being sold or repledged except in the event of default or the occurrence of other predetermined events.

(3) Not intended to represent our actual exposure to credit risk.

Note 19: Capital Management

Our objective is to maintain a strong capital position in a cost-effective structure that: is appropriate given our target regulatory capital ratios and internal assessment of required economic capital; underpins our operating groups' business strategies; supports depositor, investor and regulator confidence while building long-term shareholder value; and is consistent with our target credit ratings.

Our approach includes establishing limits, targets and performance measures that are used to manage balance sheet positions, risk levels and capital requirements, as well as issuing and redeeming capital instruments to achieve a cost-effective capital structure.

Regulatory capital requirements for the bank are determined in accordance with guidelines issued by OSFI, which are based on the Basel III framework developed by the Basel Committee on Banking Supervision. To address the market disruption posed by the pandemic, OSFI announced a suite of modifications to regulatory capital requirements in fiscal 2020, with those that were temporary in nature being unwound during the course of fiscal 2021, except for the temporary exclusion of certain exposures from the Leverage Ratio exposure measures which expired on December 31, 2021. Refer to the Enterprise-Wide Capital Management section of Management's Discussion and Analysis within this report for more details.

Common Equity Tier 1 (CET1) capital is the most permanent form of capital. It is comprised of common shareholders' equity and may include a portion of expected credit loss provisions, less deductions for goodwill, intangible assets and certain other items. Tier 1 capital is primarily comprised of CET1 capital, preferred shares and other equity instruments, less regulatory deductions.

Tier 2 capital is primarily comprised of subordinated debentures and may include a portion of expected credit loss provisions, less regulatory deductions. Total capital includes Tier 1 and Tier 2 capital.

Total Loss-Absorbing Capacity (TLAC) is comprised of Total capital and other TLAC instruments including eligible bail-in debt, less regulatory deductions. Details of the components of our capital position are presented in Notes 11, 12, 15 and 16.

The primary regulatory capital measures are the CET1 Ratio, Tier 1 Capital Ratio, Total Capital Ratio, TLAC Ratio, Leverage Ratio and TLAC Leverage Ratio.

- Regulatory capital ratios are calculated by dividing CET1, Tier 1, Total capital and TLAC by their respective risk-weighted assets.
- The Leverage Ratio is defined as Tier 1 capital divided by leverage exposures, which consist of on-balance sheet items and specified off-balance sheet items, net of specified adjustments. The TLAC Leverage Ratio is defined as TLAC divided by leverage exposures.

As at October 31, 2022, we met OSFI's required target regulatory capital ratios, which include a 2.5% Capital Conservation Buffer, a 1.0% Common Equity Tier 1 Surcharge for domestic systemically important banks, a Countercyclical Buffer and a 2.5% Domestic Stability Buffer.

Regulatory Capital and Total Loss-Absorbing Capacity Measures, Risk-Weighted Assets and Leverage Exposures ⁽¹⁾

(Canadian \$ in millions, except as noted)	2022	2021
CET1 Capital	60,891	44,491
Tier 1 Capital	67,121	49,966
Total Capital	75,309	57,201
Total Loss-Absorbing Capacity (TLAC)	120,663	90,353
Risk-Weighted Assets	363,997	325,433
Leverage Exposures	1,189,990	976,690
CET1 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 Capital Adequacy Requirements Guideline, Leverage Requirements Guideline and Total Loss-Absorbing Capacity Guideline, as applicable.

Note 20: Employee Compensation – Share-Based Compensation

Stock Option Plan

We maintain a Stock Option Plan for designated officers and employees. Options are granted at an exercise price equal to the closing price of our common shares on the day before the grant date. Stock options granted vest in equal tranches of 50% on the third and fourth anniversaries of their grant date. Each tranche is treated as a separate award with a different vesting period. In general, options expire 10 years from their grant date.

We determine the fair value of stock options on their grant date and record this amount as compensation expense over the period that the stock options vest, with a corresponding increase to contributed surplus. When these stock options are exercised, we issue shares and record the amount of proceeds, together with the amount recorded in contributed surplus, in share capital. The estimated grant date fair value of stock options granted to employees who are eligible to retire is expensed at the date of grant.

The following table summarizes information about our Stock Option Plan:

(Canadian \$, except as noted)		2022	2021		
		Number of stock options	Weighted-average exercise price	Number of stock options	Weighted-average exercise price
Outstanding at beginning of year		5,682,206	87.79	6,446,110	81.50
Granted		1,028,255	135.58	984,943	97.14
Exercised		733,591	70.64	1,630,867	67.88
Forfeited/cancelled		–	–	117,980	97.03
Expired		–	–	–	–
Outstanding at end of year		5,976,870	98.12	5,682,206	87.79
Exercisable at end of year		2,648,426	84.14	2,616,750	77.34
Available for grant		11,680,041		12,708,296	

Employee compensation expense related to this plan for the years ended October 31, 2022 and 2021 was \$12 million and \$10 million, respectively.

Options outstanding and exercisable at October 31, 2022 by range of exercise price were as follows:

(Canadian \$, except as noted)		Options outstanding			Options exercisable		2022
Range of exercise prices		Number of stock options	Weighted-average remaining contractual life (years)	Weighted-average exercise price	Number of stock options	Weighted-average exercise price	2022
\$60.01 to \$70.00		674,235	0.9	66.34	674,235	66.34	
\$70.01 to \$80.00		647,910	2.7	77.58	647,910	77.58	
\$80.01 to \$90.00		809,181	6.1	89.90	369,978	89.90	
\$90.01 to \$100.00		1,389,356	6.9	97.06	439,034	96.90	
\$100.01 and over		2,456,188	7.6	115.57	517,269	100.63	

The following table summarizes additional information about our Stock Option Plan:

(Canadian \$ in millions, except as noted)	2022	2021
Unrecognized compensation cost for non-vested stock option awards	9	7
Cash proceeds from stock options exercised	52	111
Weighted-average share price for stock options exercised (in dollars)	141.50	115.42

The fair value of options granted was estimated using a binomial option pricing model. The weighted-average fair value of options granted during the years ended October 31, 2022 and 2021 was \$14.17 and \$10.75, respectively. To determine the fair value of the stock option tranches on the grant date, the following ranges of values were used as inputs for each option pricing assumption:

	2022	2021
Expected dividend yield	4.2%	4.9%
Expected share price volatility	16.8%	20.6% – 20.7%
Risk-free rate of return	1.8% – 1.9%	1%
Expected period until exercise (in years)	6.5 – 7.0	6.5 – 7.0

Changes to the input assumptions can result in different fair value estimates.

Expected dividend yield is based on market expectations of future dividends on our common shares. Expected share price volatility is determined based on the market consensus implied volatility for traded options on our common shares. The risk-free rate is based on the yields of a Canadian swap curve with maturities similar to the expected period until exercise of the options. The weighted-average exercise price on the grant date for the years ended October 31, 2022 and 2021 was \$135.58 and \$97.14, respectively.

Other Share-Based Compensation

Share Purchase Plans

We offer various employee share purchase plans. The largest of these plans provides employees with the option of directing a portion of their gross salary toward the purchase of our common shares. We match 50% of employee contributions up to 6% of their individual gross salary to a maximum of \$75,000 (\$100,000 prior to December 31, 2020). Our contributions during the first two years vest after two years of participation in the plan, with subsequent contributions vesting immediately. The shares held in the employee share purchase plan are purchased on the open market and are considered outstanding for purposes of computing earnings per share. The dividends earned on our common shares held by the plan are used to purchase additional common shares on the open market.

We account for our contributions as employee compensation expense when they are contributed to the plan.

Employee compensation expense related to these plans for the years ended October 31, 2022 and 2021 was \$45 million and \$46 million, respectively. There were 17.8 million and 18.0 million common shares held in these plans for the years ended October 31, 2022 and 2021, respectively.

Compensation Trusts

We sponsor various share ownership arrangements, certain of which are administered through trusts into which our matching contributions are paid. We are not required to consolidate our compensation trusts.

Total assets held under our share ownership arrangements amounted to \$2,239 million as at October 31, 2022 (\$2,425 million as at October 31, 2021).

Mid-Term Incentive Plans

We offer mid-term incentive plans for executives and certain senior employees. Payment amounts are adjusted to reflect reinvested dividends and changes in the market value of our common shares and the bank's performance relative to certain goals, when applicable. Depending on the plan, the recipient receives either a single cash payment at the end of the three-year period of the plan, or cash payments over the three years of the plan. As the awards are cash-settled, they are recorded as liabilities. Amounts payable under such awards are recorded as compensation expense over the vesting period. Amounts related to units granted to employees who are eligible to retire are expensed at the time of grant. Subsequent changes in the fair value of the liability are recorded in compensation expense in the period in which they arise.

Mid-term incentive plan units granted during the years ended October 31, 2022 and 2021 totalled 5.8 million and 6.4 million, respectively.

The weighted-average fair value of these units granted during the years ended October 31, 2022 and 2021 was \$139.04 and \$91.62, respectively, and we recorded employee compensation expense of \$719 million and \$1,234 million, respectively. We hedge the impact of the change in market value of our common shares by entering into total return swaps. We also enter into foreign currency swaps to manage the foreign exchange translation from our U.S. businesses. Gains (losses) on total return swaps and foreign currency swaps recognized for the years ended October 31, 2022 and 2021 were \$3 million and \$719 million, respectively, resulting in net employee compensation expense of \$716 million and \$515 million, respectively.

A total of 16.6 million and 17.6 million mid-term incentive plan units were outstanding as at October 31, 2022 and 2021, respectively, and the intrinsic value of those awards which had vested was \$1,501 million and \$1,679 million, respectively.

Deferred Incentive Plans

We offer deferred incentive plans for members of our Board of Directors, executives and key employees in BMO Capital Markets and BMO Wealth Management. Under these plans, fees, annual incentive payments and/or commissions can be deferred as share units of our common shares. These share units are typically either fully vested on the grant date or vest at the end of three years. The value of these share units is adjusted to reflect reinvested dividends and changes in the market value of our common shares.

Deferred incentive plan payments are paid in cash upon the participant's departure from the bank.

Employee compensation expense for these plans is recorded in the year the fees, incentive payments and/or commissions are earned. Changes in the amount of the incentive plan payments as a result of dividends and share price movements are recorded as increases or decreases in employee compensation expense in the period of the change.

Deferred incentive plan units granted during the years ended October 31, 2022 and 2021 totalled 0.2 million and 0.4 million, respectively, and the weighted-average fair value of these units granted during the years ended October 31, 2022 and 2021 was \$136.74 and \$113.08, respectively.

Liabilities related to these plans are recorded in other liabilities in our Consolidated Balance Sheet and totalled \$585 million and \$609 million as at October 31, 2022 and 2021, respectively.

Employee compensation expense related to these plans for the years ended October 31, 2022 and 2021 was \$(16) million and \$279 million, respectively. We have entered into derivative instruments to hedge our exposure related to these plans. Changes in the fair value of these derivatives are recorded as employee compensation expense in the period in which they arise. Gains (losses) on these derivatives recognized for the years ended October 31, 2022 and 2021 were \$(30) million and \$271 million, respectively. These gains (losses) resulted in net employee compensation expense for the years ended October 31, 2022 and 2021 of \$14 million and \$8 million, respectively.

A total of 4.7 million and 4.6 million deferred incentive plan units were outstanding as at October 31, 2022 and 2021, respectively.

Note 21: Employee Compensation – Pension and Other Employee Future Benefits

Pension and Other Employee Future Benefit Plans

We sponsor a number of arrangements globally that provide pension and other employee future benefits to our retired and current employees. The largest of these arrangements, by defined benefit obligation, are the primary defined benefit pension plans for employees in Canada and the United States and the primary other employee future benefit plan for employees in Canada.

Pension arrangements include defined benefit pension plans, as well as supplementary arrangements that provide pension benefits in excess of statutory limits. Generally, under these plans we provide retirement benefits based on an employee's years of service and average annual earnings over a period of time prior to retirement. Our pension and other employee future benefit expenses, recorded in employee compensation expense, mainly comprise the current service cost plus or minus the interest on net defined benefit assets or liabilities. In addition, we provide defined contribution pension plans to our employees. The costs of these plans, recorded in employee compensation expense, are equal to our contributions to the plans.

Effective December 31, 2020, the primary defined benefit pension plan for employees in Canada was closed to new employees hired after that date. Employees hired or transferred to BMO Canada on or after January 1, 2021 are eligible to participate in a defined contribution pension plan once they have completed the waiting period of six months of continuous service.

We also provide other employee future benefits, including health and dental care benefits and life insurance, for eligible current and retired employees.

Short-term employee benefits, such as salaries, paid absences, bonuses and other benefits, are accounted for on an accrual basis over the period in which the employees provide the related services.

Investment Policy

The defined benefit pension plans are administered under a defined governance structure, with oversight resting with the Board of Directors.

The plans are managed under a framework that considers both assets and liabilities in the development of an investment policy and in managing risk. Over the past several years, we have implemented a liability-driven investment strategy for the primary Canadian plan to enhance risk-adjusted returns while reducing the impact of the plan on our regulatory capital.

The plans invest in asset classes that include equities, fixed income and alternative strategies, under established investment guidelines. Plan assets are diversified across asset classes and by geographic exposure. They are managed by asset management firms that are responsible for the selection of investment securities. Derivative instruments are permitted under policy guidelines and are generally used to hedge foreign currency exposures, manage interest rate exposures or replicate the return of an asset.

Asset Allocations

The asset allocation ranges and weighted-average actual asset allocations of our primary pension plans, based on fair market values at October 31, are as follows:

	Pension benefit plans		
	Target range 2022	Actual 2022	Actual 2021
Equities	20% – 40%	25%	30%
Fixed income investments	40% – 55%	43%	47%
Alternative strategies	15% – 40%	32%	23%

Our pension and other employee future benefit plan assets are measured at fair value on a recurring basis.

Risk Management

The defined benefit pension plans are exposed to various risks, including market risk (interest rate, equity and foreign currency risks), credit risk, operational risk, surplus risk and longevity risk. We follow a number of approaches to monitor and actively manage these risks, including:

- monitoring surplus-at-risk, which measures a plan's risk in an asset-liability framework;
- stress testing and scenario analyses to evaluate the volatility of the plans' financial positions and any potential impact on the bank;
- hedging of currency exposures and interest rate risk within policy limits;
- controls related to asset mix allocations, geographic allocations, portfolio duration, credit quality of debt securities, sector guidelines, issuer/counterparty limits and others; and
- ongoing monitoring of exposures, performance and risk levels.

Pension and Other Employee Future Benefit Liabilities

Our actuaries perform valuations of our defined benefit obligations for pension and other employee future benefits as at October 31 of each year using the projected unit credit method based on management's assumptions about discount rates, rates of compensation increase, retirement age, mortality and health care cost trend rates.

The discount rates for the primary Canadian and U.S. pension and other employee future benefit plans were selected based on the yields of high-quality AA rated corporate bonds with terms matching the plans' cash flows.

The fair value of plan assets is deducted from the defined benefit obligation to determine the net defined benefit asset or liability. For defined benefit pension plans that are in a net defined benefit asset position, the recognized asset is limited to the present value of economic benefits available in the form of future refunds from the plan or reductions in future contributions to the plan (the asset ceiling). Changes in the asset ceiling are recognized in other comprehensive income. Components of the change in our net defined benefit assets or liabilities and our pension and other employee future benefit expenses are as follows:

Current service cost represents benefits earned in the current year. The cost is determined with reference to the current workforce and the amount of benefits to which employees will be entitled upon retirement, based on the provisions of our benefit plans.

Interest on net defined benefit asset or liability represents the increase in the net defined benefit asset or liability that results from the passage of time and is determined by applying the discount rate to the net defined benefit asset or liability.

Actuarial gains and losses may arise in two ways. First, each year our actuaries recalculate the defined benefit obligations and compare them to those estimated as at the previous year end. Any differences that result from changes in demographic and economic assumptions or from plan member experience being different from management's expectations at the previous year end are considered actuarial gains or losses. Second, actuarial gains and losses arise when there are differences between the discount rate and actual returns on plan assets. Actuarial gains and losses are recognized immediately in other comprehensive income as they occur and are not subsequently reclassified to income in future periods.

Plan amendments are changes in our defined benefit obligations that result from changes to provisions of the plans. The effects of plan amendments are recognized immediately in income when a plan is amended.

Settlements occur when defined benefit obligations for plan participants are settled, usually through lump sum cash payments, and as a result we no longer have any obligation to provide such participants with benefit payments in the future.

Funding of Pension and Other Employee Future Benefit Plans

We fund our defined benefit pension plans in Canada and the United States in accordance with statutory requirements, and the assets in these plans are used to pay benefits to retirees and other employees. Some groups of employees are also eligible to make voluntary contributions in order to receive enhanced benefits. Our supplementary pension plan in Canada is funded, while the supplementary pension plan in the U.S. is unfunded.

Our other employee future benefit plans in Canada and the United States are either funded or unfunded. Benefit payments related to these plans are paid either through the respective plan or directly by us.

We measure the fair value of plan assets for our plans in Canada and the United States as at October 31. In addition to actuarial valuations for accounting purposes, we are required to prepare valuations for determining our minimum funding requirements for our pension arrangements in accordance with the relevant statutory framework (our funding valuation). An annual funding valuation is performed for our plans in Canada and the United States. The most recent funding valuation for our primary Canadian pension plan was performed as at October 31, 2022 and the most recent funding valuation for our primary U.S. pension plan was performed as at January 1, 2021.

A summary of plan information for the past two years is as follows:

(Canadian \$ in millions)	Pension benefit plans		Other employee future benefit plans	
	2022	2021	2022	2021
Defined benefit obligation	7,082	9,716	928	1,220
Fair value of plan assets	8,261	10,525	147	166
Surplus (deficit) and net defined benefit asset (liability)	1,179	809	(781)	(1,054)
Surplus (deficit) is comprised of:				
Funded or partially funded plans	1,267	939	51	40
Unfunded plans	(88)	(130)	(832)	(1,094)
Surplus (deficit) and net defined benefit asset (liability)	1,179	809	(781)	(1,054)

Pension and Other Employee Future Benefit Expenses

Pension and other employee future benefit expenses are determined as follows:

(Canadian \$ in millions)	Pension benefit plans		Other employee future benefit plans	
	2022	2021	2022	2021
Annual benefits expense				
Current service cost	237	268	8	9
Net interest (income) expense on net defined benefit (asset) liability	(27)	7	35	30
Past service cost (income)	(2)	-	-	-
Gain on settlement	(1)	-	-	-
Administrative expenses	4	5	-	-
Remeasurement of other long-term benefits	-	-	(18)	(11)
Benefits expense	211	280	25	28
Government pension plans expense (1)	252	216	-	-
Defined contribution expense	176	160	-	-
Total annual pension and other employee future benefit expenses recognized in the Consolidated Statement of Income	639	656	25	28

1) Includes Canada Pension Plan, Quebec Pension Plan and U.S. Federal Insurance Contribution Act.

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

Weighted-Average Assumptions

	Pension benefit plans	Other employee future benefit plans	
	2022	2021	2022
Defined Benefit Expenses			
Discount rate at beginning of year (1)(2)	3.2%	2.7%	3.3%
Rate of compensation increase	2.2%	2.1%	na
Assumed overall health care cost trend rate	na	na	4.8% (3)
Defined Benefit Obligation			
Discount rate at end of year	5.5%	3.2%	5.5%
Rate of compensation increase	2.3%	2.2%	na
Assumed overall health care cost trend rate	na	na	4.7% (3)

(1) The pension benefit current service cost was calculated using a separate discount rate of 3.7% and 3.0% for 2022 and 2021, respectively.

(2) The other employee future benefit plans current service cost was calculated using a separate discount rate of 3.6% and 3.0% for 2022 and 2021, respectively.

(3) Trending to 4.0% in 2041 and remaining at that level thereafter.

(4) Rate of compensation increase is not applicable, since the new flat dollar retiree plan benefit is no longer dependent on compensation.

na - not applicable

Assumptions regarding future mortality are based on published statistics and mortality tables calibrated to plan experience, when applicable. The current life expectancies underlying the amounts of the defined benefit obligations for our primary plans are as follows:

(Years)	Canada		United States	
	2022	2021	2022	2021
Life expectancy for those currently age 65				
Males	23.9	23.8	21.8	21.8
Females	24.2	24.2	23.2	23.2
Life expectancy at age 65 for those currently age 45				
Males	24.8	24.8	23.0	23.0
Females	25.1	25.1	24.4	24.4

Changes in the estimated financial positions of our defined benefit pension plans and other employee future benefit plans are as follows:

(Canadian \$ in millions, except as noted)	Pension benefit plans	Other employee future benefit plans	
	2022	2021	2022
			2021
Defined benefit obligation			
Defined benefit obligation at beginning of year	9,716	10,493	1,220
Divestiture of defined benefit obligation (1)	(532)	-	-
Current service cost	237	268	8
Interest cost	290	269	39
Past service (income)	(2)	-	-
(Gain) on settlements	(1)	-	-
Benefits paid	(578)	(525)	(49)
Employee contributions	18	17	6
Actuarial (gains) losses due to:			
Changes in demographic assumptions	-	11	(60)
Changes in financial assumptions	(2,386)	(700)	(244)
Plan member experience	207	29	(9)
Foreign exchange and other	113	(146)	17
Defined benefit obligation at end of year	7,082	9,716	928
Wholly or partially funded defined benefit obligation	6,994	9,586	96
Unfunded defined benefit obligation	88	130	832
Total defined benefit obligation	7,082	9,716	928
Fair value of plan assets			
Fair value of plan assets at beginning of year	10,525	10,064	166
Divestiture of plan assets (1)	(647)	-	-
Interest income	317	262	4
Return on plan assets (excluding interest income)	(1,524)	542	(37)
Employer contributions	58	298	40
Employee contributions	18	17	6
Benefits paid	(578)	(525)	(49)
Administrative expenses	(4)	(5)	-
Foreign exchange and other	96	(128)	17
Fair value of plan assets at end of year	8,261	10,525	147
Surplus (Deficit) and net defined benefit asset (liability) at end of year	1,179	809	(781)
Recorded in:			
Other assets	1,267	947	51
Other liabilities	(88)	(138)	(832)
Surplus (Deficit) and net defined benefit asset (liability) at end of year	1,179	809	(781)
Actuarial gains (losses) recognized in other comprehensive income			
Net actuarial gains (losses) on plan assets	(1,524)	542	(37)
Actuarial gains (losses) on defined benefit obligation due to:			
Changes in demographic assumptions	-	(11)	56
Changes in financial assumptions	2,386	700	228
Plan member experience	(207)	(29)	10
Foreign exchange and other	(14)	20	-
Actuarial gains recognized in other comprehensive income for the year	641	1,222	257

(1) Relates to the defined benefit plan included in the sale of our EMEA Asset Management business in fiscal 2022. Refer to Note 10 for further information.

Our pension and other employee future benefit plan assets are measured at fair value on a recurring basis. The fair values of plan assets held by our primary plans as at October 31, 2022 and 2021 are as follows:

(Canadian \$ in millions)	2022			2021		
	Quoted	Unquoted	Total	Quoted	Unquoted	Total
Cash and money market funds	185	-	185	144	1	145
Securities issued or guaranteed by:						
Canadian federal government	11	41	52	26	41	67
Canadian provincial and municipal governments	156	303	459	191	364	555
U.S. federal government	108	-	108	297	4	301
Pooled funds	704	4,034	4,738	1,071	4,014	5,085
Derivative instruments	-	(53)	(53)	-	43	43
Corporate debt	-	1,157	1,157	3	1,391	1,394
Corporate equity	1,187	-	1,187	1,655	-	1,655
	2,351	5,482	7,833	3,387	5,858	9,245

No plan assets are directly invested in the bank's or related parties' securities as at October 31, 2022 and 2021. As at October 31, 2022 our primary Canadian plan indirectly held, through pooled funds, less than \$1 million (\$11 million as at October 31, 2021) of our common shares and fixed income securities. The plans do not hold any property we occupy or other assets we use.

Sensitivity of Assumptions

Key weighted-average assumptions for 2022 used in measuring the defined benefit obligations for our primary plans are outlined in the following table. The sensitivity analysis provided in the table should be used with caution, as it is hypothetical and the impact of changes in each key assumption may not be linear. The sensitivities to changes in each key variable have been calculated independently of the impact of changes in other key variables. Actual experience may result in simultaneous changes in a number of key assumptions, which would amplify or reduce certain sensitivities.

(Canadian \$ in millions, except as noted)	Defined benefit obligation	
	Pension benefit plans	Other employee future benefit plans
Discount rate (%)	5.5	5.5
Impact of: 1% increase (\$)	(681)	(69)
1% decrease (\$)	836	85
Rate of compensation increase (%)	2.3	na
Impact of: 0.25% increase (\$)	30	na
0.25% decrease (\$)	(29)	na
Mortality		
Impact of: 1 year shorter life expectancy (\$)	(119)	(17)
1 year longer life expectancy (\$)	116	17
Assumed overall health care cost trend rate (%)		na
Impact of: 1% increase (\$)	na	4.7 (1)
1% decrease (\$)	na	35
	na	(31)

(1) Trending to 4.00% in 2041 and remaining at that level thereafter.

na - not applicable

Maturity Profile

The duration of the defined benefit obligation for our primary plans is as follows:

(Years)	2022	2021
Canadian pension plans	12.1	14.5
U.S. pension plans	7.5	9.5
Canadian other employee future benefit plans	12.5	13.7

Cash Flows

Cash payments we made during the year in connection with our employee future benefit plans are as follows:

(Canadian \$ in millions)	Pension benefit plans	Other employee future benefit plans	2022	2021
	2022	2021	2022	2021
Contributions to defined benefit plans	24	254	-	-
Contributions to defined contribution plans	176	160	-	-
Benefits paid directly to pensioners	34	44	40	40
	234	458	40	40

Our best estimate of the contributions and benefits paid directly to pensioners we expect to make for the year ending October 31, 2023 is approximately \$69 million for our defined benefit pension plans and \$46 million for our other employee future benefit plans. Benefit payments from our defined benefit plans to retirees for the year ending October 31, 2023 are estimated to be \$520 million.

Note 22: Income Taxes

We report our provision for income taxes in our Consolidated Statement of Income based upon transactions recorded in our consolidated financial statements regardless of when they are recognized for income tax purposes, with the exception of repatriation of retained earnings from our subsidiaries, as noted below.

In addition, we record an income tax expense or benefit in other comprehensive income or directly in equity when the taxes relate to amounts recorded in other comprehensive income or equity. For example, income tax expense (recovery) on hedging gains (losses) related to our net investment in foreign operations is recorded in our Consolidated Statement of Comprehensive Income as part of net gains (losses) on translation of net foreign operations.

Current tax is the amount of income tax recoverable (payable) in respect of the taxable loss (profit) for a period. Deferred tax is recognized on temporary differences between the carrying amounts of assets and liabilities for accounting and tax purposes. Deferred tax assets and liabilities are measured at the tax rates expected to apply when temporary differences reverse. Changes in deferred tax assets and liabilities related to a change in tax rates are recorded in income in the period the tax rate is substantively enacted, except to the extent that the tax arises from a transaction or event which is recognized either in other comprehensive income or directly in equity. Current and deferred taxes are offset only when they are levied by the same tax authority, on the same entity or group of entities, and when there is a legal right to offset.

Included in deferred tax assets is \$10 million (\$9 million as at October 31, 2021) related to both U.S. tax loss carryforwards and tax credits that will expire in various amounts in U.S. taxation years from 2022 through 2040. On the evidence available, including management projections of income, we believe it is probable that there will be sufficient taxable income generated by our business operations to support these deferred tax assets. The amount of tax on temporary differences, unused tax losses and unused tax credits for which no deferred tax asset is recognized in our Consolidated Balance Sheet as at October 31, 2022 is \$922 million (\$118 million in 2021), of which \$36 million (\$7 million in 2021) is scheduled to expire within five years. Deferred tax assets have not been recognized in respect of these items because it is not probable that these assets will be realized.

Income that we earn through our foreign subsidiaries is generally taxed in the foreign country in which they operate. Income that we earn through our foreign branches is also generally taxed in the foreign country in which they operate. Canada also taxes the income we earn through foreign branches and a credit is allowed for certain foreign taxes paid on such income. Repatriation of earnings from certain foreign subsidiaries would require us to pay tax on certain of these earnings. As repatriation of such earnings is not planned in the foreseeable future, we have not recorded a related deferred tax liability. The taxable temporary differences associated with the repatriation of earnings from investments in certain subsidiaries, branches, associates and interests in joint ventures for which deferred tax liabilities have not been recognized totalled \$24 billion as at October 31, 2022 (\$17 billion in 2021).

Provision for Income Taxes

(Canadian \$ in millions)	2022	2021
Consolidated Statement of Income		
Current		
Provision for income taxes for the current period	3,889	2,334
Adjustments for prior periods	(15)	(14)
Deferred		
Origination and reversal of temporary differences	475	173
Effect of changes in tax rates	-	11
	4,349	2,504
Other Comprehensive Income and Equity		
Income tax expense (recovery) related to:		
Unrealized (losses) on FVOCI debt securities	(182)	(58)
Reclassification to earnings of (gains) on FVOCI debt securities	(5)	(14)
(Losses) on derivatives designated as cash flow hedges	(1,794)	(504)
Reclassification to earnings of (gains) on derivatives designated as cash flow hedges	(114)	(149)
Unrealized gains (losses) on hedges of net foreign operations	(124)	180
Gains on remeasurement of pension and other employee future benefit plans	239	341
Gains (losses) on remeasurement of own credit risk on financial liabilities designated at fair value	465	(70)
Unrealized gains on FVOCI equity securities	1	6
Share-based compensation	5	(10)
	(1,509)	(278)
Total provision for income taxes	2,840	2,226

Components of Total Provision for Income Taxes (Canadian \$ in millions)	2022	2021
Canada: Current taxes		
Federal	1,178	650
Provincial	672	373
	1,850	1,023
Canada: Deferred taxes		
Federal	148	233
Provincial	85	134
	233	367
Total Canadian	2,083	1,390
Foreign: Current taxes	953	940
Deferred taxes	(196)	(104)
Total foreign	757	836
Total provision for income taxes	2,840	2,226

Reconciliation to Statutory Tax Rate

Set out below is a reconciliation of our statutory tax rates and income taxes that would be payable at these rates to the effective tax rates and provision for income taxes that we have recorded in our Consolidated Statement of Income:

(Canadian \$ in millions, except as noted)	2022	2021
Combined Canadian federal and provincial income taxes at the statutory tax rate	4,757	2,729
Increase (decrease) resulting from:		
Tax-exempt income from securities	(200)	(1.1)
Foreign operations subject to different tax rates	(160)	(0.9)
Write-down of goodwill	-	-
Change in tax rate for deferred taxes	-	-
Income attributable to investments in associates and joint ventures	(57)	(0.3)
Other	9	-
Provision for income taxes in the Consolidated Statement of Income and effective tax rate	4,349	2,504
	24.3%	24.4%

Components of Deferred Tax Balances

(Canadian \$ in millions)	Net asset, October 31, 2021	Benefit (expense) to income statement	Benefit (expense) to equity	Translation and other	Net asset, October 31, 2022
Deferred Tax Asset (Liability)					
Allowance for credit losses	651	(52)	-	6	605
Employee future benefits	330	(10)	(65)	1	256
Deferred compensation benefits	685	18	-	5	708
Other comprehensive income	(108)	(1)	682	-	573
Tax loss carryforwards	34	(23)	-	-	11
Tax credits	-	-	-	-	-
Premises and equipment	(400)	(59)	-	(1)	(460)
Pension benefits	(148)	(47)	(174)	(1)	(370)
Goodwill and intangible assets	(241)	1	-	(4)	(244)
Securities	(51)	193	-	-	142
Other (1)	343	(495)	(5)	9	(148)
Net deferred tax assets (liabilities)	1,095	(475)	438	15	1,073
Comprising					
Deferred tax assets	1,287				1,175
Deferred tax liabilities	(192)				(102)
Net deferred tax assets (liabilities)	1,095	-	-	-	1,073

(Canadian \$ in millions)	Net asset, November 1, 2020	Benefit (expense) to income statement	Benefit (expense) to equity	Translation and other	Net asset, October 31, 2021
Deferred Tax Asset (Liability)					
Allowance for credit losses	849	(194)	-	(4)	651
Employee future benefits	337	2	(9)	-	330
Deferred compensation benefits	416	270	-	(1)	685
Other comprehensive income	(358)	-	250	-	(108)
Tax loss carryforwards	87	(53)	-	-	34
Tax credits	31	(31)	-	-	-
Premises and equipment	(361)	(39)	-	-	(400)
Pension benefits	78	104	(330)	-	(148)
Goodwill and intangible assets	(237)	(6)	-	2	(241)
Securities	11	(62)	-	-	(51)
Other	512	(175)	10	(4)	343
Net deferred tax assets (liabilities)	1,365	(184)	(79)	(7)	1,095
Comprising					
Deferred tax assets	1,473				1,287
Deferred tax liabilities	(108)				(192)
Net deferred tax assets (liabilities)	1,365	-	-	-	1,095

(1) Includes the tax impact of the interest rate swaps and securities we purchased to mitigate the impact of changes in interest rates on our announced acquisition of Bank of the West (refer to Note 10 for additional details) and the tax impact of the legal provision recorded in relation to the lawsuit described in Note 24.

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 our net income.

Note 23: Earnings Per Share

Basic earnings per share is calculated by dividing net income, after deducting dividends payable on preferred shares and distributions payable on other equity instruments, by the daily average number of fully paid common shares outstanding throughout the year.

Diluted earnings per share is calculated in the same manner, with further adjustments made to reflect the dilutive impact of instruments convertible into our common shares.

The following table presents our basic and diluted earnings per share:

Basic Earnings Per Common Share	2022	2021
(Canadian \$ in millions, except as noted)		
Net income	13,537	7,754
Dividends on preferred shares and distributions on other equity instruments	(231)	(244)
Net income available to common shareholders	13,306	7,510
Weighted-average number of common shares outstanding (in thousands)	663,990	647,163
Basic earnings per common share (Canadian \$)	20.04	11.60
 Diluted Earnings Per Common Share		
Net income available to common shareholders adjusted for impact of dilutive instruments	13,306	7,510
Weighted-average number of common shares outstanding (in thousands)	663,990	647,163
Effect of dilutive instruments		
Stock options potentially exercisable (1)	5,178	6,403
Common shares potentially repurchased	(3,461)	(4,890)
Weighted-average number of diluted common shares outstanding (in thousands)	665,707	648,676
Diluted earnings per common share (Canadian \$)	19.99	11.58

(1) In computing diluted earnings per share, we excluded average stock options outstanding of 943,741 with a weighted-average exercise price of \$143.52 for the year ended October 31, 2022. For the year ended October 31, 2021, we did not exclude any stock options outstanding as the average share price for the year exceeded the exercise price.

Note 24: Commitments, Guarantees, Pledged Assets, Provisions and Contingent Liabilities

In the normal course of business, we enter into a variety of contracts under which we may be required to make payments to reimburse a counterparty for a loss if a third party does not perform according to the terms of a contract or does not make payments when due under the terms of a debt instrument, and contracts under which we provide indirect guarantees of the indebtedness of another party, all of which are considered guarantees.

Guarantees that qualify as derivatives are accounted for in accordance with the policy for derivative instruments (refer to Note 8). For guarantees that do not qualify as derivatives, the liability is initially recorded at fair value, which is generally the fee received. Subsequently, guarantees are recorded at the higher of the initial fair value, less amortization to recognize any fee income earned over the period, and our best estimate of the amount required to settle the obligation. Any change in the liability is reported in our Consolidated Statement of Income.

We enter into a variety of commitments, including off-balance sheet credit instruments, such as backstop liquidity facilities, letters of credit, credit default swaps and commitments to extend credit, as a method of meeting the financial needs of our customers. These commitments include contracts where 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, due to changes in an underlying interest rate, foreign exchange rate or other variable. The contractual amount of our commitments represents our maximum undiscounted potential exposure, before possible recoveries under recourse and collateral provisions. Collateral requirements for these instruments are consistent with our collateral requirements for loans.

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.

We strive to limit credit risk by dealing only with counterparties that we believe are creditworthy, and we manage our credit risk for these instruments using the same credit risk process that is applied to loans and other credit assets.

We also previously facilitated securities lending transactions for our customers but we divested this business in fiscal 2022.

The maximum amount payable related to our various commitments is as follows:

(Canadian \$ in millions)	2022	2021
Financial Guarantees		
Standby letters of credit	26,019	22,165
Credit default swaps (1)	11,099	5,158
Other Credit Instruments		
Backstop liquidity facilities	17,330	12,895
Securities lending (2)	–	3,909
Documentary and commercial letters of credit	1,351	1,481
Commitments to extend credit (3)	200,814	174,327
Other commitments (4)	7,075	8,070
Total	263,688	228,005

(1) The fair value of the related derivatives included in our Consolidated Balance Sheet was \$(38) million as at October 31, 2022 (\$4 million as at October 31, 2021).

(2) In fiscal 2022, we divested the securities lending agency business.

(3) Commitments to extend credit exclude personal lines of credit and credit cards that are unconditionally cancellable at our discretion.

(4) Other commitments include \$783 million as at October 31, 2022 (\$1,649 million as at October 31, 2021) of underwriting commitments that are extended but not yet accepted by the borrower.

Financial Guarantees

Standby letters of credit represent our obligation to make payments to third parties on behalf of customers if they are unable to make the required payments or meet other contractual requirements. The majority have a term of one year or less. Collateral requirements for standby letters of credit and guarantees are consistent with our collateral requirements for loans. Standby letters of credit and guarantees include our guarantee of a subsidiary's debt provided directly to a third party.

Written credit default swaps require us to compensate a counterparty following the occurrence of a credit event in relation to a specified reference obligation, such as a bond or a loan. The terms of these contracts range from less than 1 year to over 10 years. Refer to Note 8 for details.

Other Credit Instruments

Backstop liquidity facilities are provided to ABCP programs administered by us as an alternative source of financing when ABCP markets cannot be accessed. The terms of the backstop liquidity facilities do not require us to advance money to these programs in the event of insolvency of the borrower. The average term of these liquidity facilities is approximately 1 to 5 years.

We lend eligible customers' securities to third-party borrowers who have been evaluated for credit risk using the same credit risk process that is applied to loans and other credit assets. In connection with these activities, we may provide indemnification to clients against losses resulting from the failure of the borrower to return loaned securities when due. All borrowings are fully collateralized with cash or marketable securities. As securities are loaned, we require borrowers to maintain collateral that is equal to or in excess of 100% of the fair value of the securities borrowed. The collateral is revalued on a daily basis. In fiscal 2022, we divested the securities lending agency business.

Documentary and commercial letters of credit represent our agreement to honour drafts presented by a third party upon completion of specific activities.

Commitments to extend credit represent our commitment to customers to grant them credit in the form of loans or other financings for specific amounts and maturities, subject to their meeting certain conditions.

Other commitments include commitments to fund external private equity funds and investments in equity and debt securities at market value at the time the commitments are drawn. In addition, we act as underwriter for certain new issuances under which we, alone or together with a syndicate of financial institutions, purchase the new issue for resale to investors.

Indemnification Agreements

In the normal course of operations, we enter into various agreements that provide general indemnifications. These indemnifications typically occur in connection with sales of assets, securities offerings, service contracts, director contracts, membership agreements, clearing arrangements, derivative contracts and leasing transactions. Based on historical experience, we expect the risk of loss to be remote.

Exchange and Clearinghouse Guarantees

We are a member of several securities and futures exchanges and central counterparties. Membership in certain of these organizations may require us to pay a pro rata share of the losses incurred by the organization in the event of default of another member. It is difficult to estimate our maximum exposure under these membership agreements, since this would require an assessment of future claims that may be made against us that have not yet occurred. Based on historical experience, we expect the risk of material loss to be remote.

Pledged Assets and Collateral

In the ordinary course of business, we enter into trading, lending and borrowing activities that require us to pledge assets or provide collateral. Pledging and collateral transactions are typically conducted under terms and conditions that are usual and customary to these activities. If there is no default, the securities or their equivalents must be returned by the pledgee upon satisfaction of the obligation.

The following tables summarize our pledged assets and collateral, and the activities to which they relate:

(Canadian \$ in millions)	2022	2021
Bank Assets		
Cash and due from banks	87	110
Securities (1)	95,194	82,975
Loans	71,795	54,656
Other assets	13,991	6,436
	181,067	144,177
Third-party Assets (2)		
Collateral received and available for sale or repledging	177,300	180,705
Less: Collateral not sold or re-pledged	(42,237)	(46,278)
	135,063	134,427
	316,130	278,604
(Canadian \$ in millions)	2022	2021
Uses of pledged assets and collateral		
Clearing systems, payment systems and depositories	19,082	9,464
Foreign governments and central banks	87	110
Obligations related to securities sold short	40,979	32,073
Obligations related to securities sold under repurchase agreements	90,490	87,894
Securities borrowing and lending (3)	69,525	77,456
Derivatives transactions	16,341	11,439
Securitization	27,499	26,075
Covered bonds	33,175	26,340
Other	18,952	7,753
Total pledged assets and collateral	316,130	278,604

(1) Includes NHA mortgage-backed securities of \$5,277 million, which are included in loans in our Consolidated Balance Sheet (\$4,519 million as at October 31, 2021).

(2) Includes on-balance sheet securities borrowed or purchased under resale agreements and off-balance sheet collateral received.

(3) Includes off-balance sheet securities borrowing and lending.

Lease Commitments

We have entered into a number of non-cancellable leases for premises and equipment. Our computer and software leases are typically fixed for one term. Leases that we have signed but have not yet taken possession of, were \$303 million as at October 31, 2022 (\$248 million as at October 31, 2021).

Provisions and Contingent Liabilities

Provisions are recognized when we have a legal or constructive obligation as a result of past events, such as contractual commitments, legal or other obligations for which we can reliably estimate the obligation, and it is probable we will be required to settle the obligation. We recognize as a provision our best estimate of the amount required to settle the obligations as of the balance sheet date, taking into account the risks and uncertainties surrounding the obligations. Provisions are recorded in other liabilities on the Consolidated Balance Sheet. Contingent liabilities are potential obligations arising from past events, the existence of which will only be confirmed by the occurrence or non-occurrence of one or more future events not wholly within our control, and are not included in the table below.

Legal Proceedings

The bank and its subsidiaries are party to legal proceedings, including regulatory investigations, in the ordinary course of business. We review the status of these proceedings regularly and establish provisions when in our judgment it becomes probable that we will incur a loss and the amount can be reliably estimated. The bank's provisions represent our best estimates based upon currently available information for proceedings for which estimates can be made. However, the bank's provisions may differ significantly from actual losses as a result of, for example, the inherent uncertainty of the various potential outcomes of such proceedings; the varying stages of the proceedings; the existence of multiple defendants whose share of liability may not yet be determined; unresolved issues in such proceedings, some of which involve novel legal theories and interpretations; the fact that the underlying matters will change from time to time; and such proceedings may involve very large or indeterminate damages. While it is inherently difficult to predict the ultimate outcome of these proceedings, based on our current knowledge, we do not expect the outcome of any of these proceedings, individually or in the aggregate, to have a material adverse effect on the consolidated financial position or the results of operations of the bank. However, because of the factors listed above, as well as other uncertainties inherent in litigation and regulatory matters, there is a possibility that the ultimate resolution of legal proceedings or regulatory investigations may be material to the bank's consolidated financial position or its results of operations for any particular reporting period.

BMO Harris Bank N.A. (BMO Harris), as successor to M&I Marshall and Ilsley Bank (M&I), was named as the defendant in a lawsuit filed in the U.S. Bankruptcy Court for the District of Minnesota (Bankruptcy Court) in connection with a Ponzi scheme carried out by Thomas J. Petters and certain affiliated individuals and entities (collectively, Petters). The lawsuit, brought by a Trustee in bankruptcy proceedings for certain Petters entities, alleged that between 1999 and 2008, M&I (and a predecessor bank) helped facilitate the Ponzi scheme operated by Petters. The trial took place from October 12 to November 8, 2022 and on November 8, 2022, the jury awarded damages of approximately US\$564 million against BMO Harris. This amount does not include prejudgment interest which could be as much as US\$484 million. BMO Harris strongly denies the plaintiff's allegations and will continue to defend itself vigorously, including by bringing an appeal to the United States Court of Appeals for the Eighth Circuit, to contest the jury verdict and award. Following the jury's verdict, we recorded a provision of \$1,120 million (\$830 million after-tax), comprising \$605 million in non-interest expense, other and \$515 million in interest expense, other liabilities, representing damages awarded by the jury and an estimate of maximum possible pre-judgment interest, net of estimated recoveries. Recoveries relate to a settlement arrangement made in 2015 in connection with another Petters matter.

Restructuring Charges

Provisions for restructuring charges as at October 31, 2022 are \$94 million (\$136 million as at October 31, 2021), primarily severance-related costs. This represents our best estimate of the amount that will ultimately be paid out.

Changes in the provision balance during the year were as follows:

(Canadian \$ in millions)	2022	2021
Balance at beginning of year	248	472
Additional provisions/increase in provisions	1,201	166
Provisions utilized	(155)	(340)
Amounts reversed	(20)	(44)
Foreign exchange and other	3	(6)
Balance at end of year (1)	1,277	248

(1) Balance includes severance obligations, restructuring charges and legal provisions.

Note 25: Operating and Geographic Segmentation

Operating Groups

We conduct our business through three operating groups, each of which has a distinct mandate. We determine our operating groups based on our management structure and therefore these groups, and the results attributed to them, may not be comparable with those of other financial services companies. We evaluate the performance of our operating groups using reported and adjusted measures, such as net income, revenue growth, return on equity, and non-interest expense-to-revenue (efficiency) ratio, as well as operating leverage.

Personal and Commercial Banking

Personal and Commercial Banking (P&C) is comprised of two operating segments: Canadian Personal and Commercial Banking and U.S. Personal and Commercial Banking.

Canadian Personal and Commercial Banking

Canadian Personal and Commercial Banking (Canadian P&C) provides a full range of financial products and services to eight million customers. Personal Banking provides financial solutions through a network of almost 900 branches, contact centres, digital banking platforms and over 3,200 automated teller machines. Commercial Banking serves clients across Canada and delivers sector and industry expertise, as well as a local presence.

U.S. Personal and Commercial Banking

U.S. Personal and Commercial Banking (U.S. P&C) offers a broad range of products and services. Our retail and small and mid-sized business banking customers are served through our branches, contact centres, online and mobile banking platforms, and automated banking machines across eight states. Commercial Banking serves clients across the United States and delivers sector and industry expertise and local presence.

BMO Wealth Management

BMO's group of wealth management businesses (BMO WM) serves a full range of client segments, from mainstream to ultra high net worth and institutional, with a broad offering of wealth management products and services, including insurance products.

BMO Capital Markets

BMO Capital Markets (BMO CM) is a North American-based financial services provider offering a complete range of products and services to corporate, institutional and government clients. Through our Investment and Corporate Banking and Global Markets lines of business, we operate in 32 locations around the world, including 18 offices in North America.

Corporate Services

Corporate Services consists of Corporate Units and Technology and Operations (T&O). Corporate Units provide enterprise-wide expertise, governance and support in a variety of areas, including strategic planning, risk management, finance, legal and regulatory compliance, human resources, communications, marketing, real estate and procurement. T&O develops, monitors, manages and maintains governance of information technology including data and analytics, and also provides cybersecurity and operations services.

The costs of these Corporate Units and T&O services are largely transferred to the three operating groups (P&C, BMO WM and BMO CM), with any remaining amounts retained in Corporate Services results. As such, Corporate Services results largely reflect the impact of residual treasury-related activities, the elimination of taxable equivalent adjustments and residual unallocated expenses.

Basis of Presentation

The results of these operating groups are based on our internal financial reporting systems. The accounting policies used in these segments are generally consistent with those followed in the preparation of our consolidated financial statements, as disclosed in Note 1 and throughout the consolidated financial statements. Income taxes presented below may not be reflective of taxes paid in each jurisdiction in which we operate. Income taxes are generally applied to each segment based on a statutory tax rate and may be adjusted for items and activities specific to each segment. A notable accounting measurement difference is the taxable equivalent basis adjustment, as described below.

Periodically, certain business lines and units within the business lines are transferred between client and corporate support groups to more closely align our organizational structure with our strategic priorities. In addition, revenue and expense allocations are updated to more accurately align with current experience. Results for prior periods are restated to conform with the current year's presentation.

Taxable Equivalent Basis

We analyze revenue on a taxable equivalent basis (teb) at the operating group level. Revenue and the provision for income taxes are increased on tax-exempt securities to an equivalent before-tax basis to facilitate comparisons of income between taxable and tax-exempt sources. The offset to the operating segments' teb adjustments is reflected in Corporate Services revenue and provision for income taxes. The teb adjustment for the year ended October 31, 2022 was \$270 million (\$315 million in 2021).

Inter-Group Allocations

Various estimates and allocation methodologies are used in the preparation of the operating groups' financial information. Overhead expenses are allocated to operating groups using allocation formulas applied on a consistent basis. Operating group net interest income reflects internal funding charges and credits on the groups' assets, liabilities and capital at market rates, taking into account relevant terms and currency considerations. The offset of the net impact of these charges and credits is reflected in Corporate Services. These inter-group allocations are also applied to the geographic segmentation.

Our results and average assets, grouped by operating segment, are as follows:

(Canadian \$ in millions)	Canadian P&C	U.S. P&C	BMO WM	BMO CM	Corporate Services (1)	2022 Total
Net interest income (2)	7,449	5,037	1,188	3,197	(986)	15,885
Non-interest revenue	2,419	1,265	3,336	2,975	7,830	17,825
Total Revenue	9,868	6,302	4,524	6,172	6,844	33,710
Provision for (recovery of) credit losses on impaired loans	432	107	2	(32)	(7)	502
Provision for (recovery of) credit losses on performing loans	(91)	(90)	(4)	(11)	7	(189)
Total provision for (recovery of) credit losses	341	17	(2)	(43)	-	313
Insurance claims, commissions and changes in policy benefit liabilities	-	-	(683)	-	-	(683)
Depreciation and amortization	516	424	258	282	-	1,480
Non-interest expense	3,833	2,619	3,306	3,573	1,383	14,714
Income before taxes	5,178	3,242	1,645	2,360	5,461	17,886
Provision for income taxes	1,352	745	394	588	1,270	4,349
Reported net income	3,826	2,497	1,251	1,772	4,191	13,537
Average assets (3)	292,087	145,187	50,488	404,728	180,007	1,072,497
	Canadian P&C	U.S. P&C	BMO WM	BMO CM	Corporate Services (1)	2021 Total
Net interest income (2)	6,561	4,268	982	3,115	(616)	14,310
Non-interest revenue	2,225	1,243	6,071	3,011	326	12,876
Total Revenue	8,786	5,511	7,053	6,126	(290)	27,186
Provision for (recovery of) credit losses on impaired loans	493	22	4	11	(5)	525
(Recovery of) credit losses on performing loans	(116)	(166)	(16)	(205)	(2)	(505)
Total provision for (recovery of) credit losses	377	(144)	(12)	(194)	(7)	20
Insurance claims, commissions and changes in policy benefit liabilities	-	-	1,399	-	-	1,399
Depreciation and amortization	486	475	323	281	-	1,565
Non-interest expense	3,482	2,338	3,520	3,181	1,423	13,944
Income (loss) before taxes	4,441	2,842	1,823	2,858	(1,706)	10,258
Provision for (recovery of) income taxes	1,153	666	441	738	(494)	2,504
Reported net income (loss)	3,288	2,176	1,382	2,120	(1,212)	7,754
Average assets (3)	263,004	129,009	48,232	372,475	168,420	981,140

(1) Corporate Services includes Technology and Operations.

(2) Operating groups report on a taxable equivalent basis - see Basis of Presentation section.

(3) Included within average assets are average earning assets, which are comprised of deposits with other banks, deposits at central banks, reverse repos, loans and securities. Total average earning assets for 2022 are \$979,341 million, including \$278,022 million for Canadian P&C, \$138,094 million for U.S. P&C, and \$563,225 million for all other operating segments including Corporate Services (2021 - Total: \$897,302 million, Canadian P&C: \$248,215 million, U.S. P&C: \$122,166 million and all other operating segments: \$526,921 million).

Effective the first quarter of fiscal 2022, certain expense allocations were updated within our operating segments to better align with current experience, with no impact to total bank results. Certain comparative figures have been reclassified to conform with the current year's presentation.

Geographic Information

We operate primarily in Canada and the United States, but we also have operations in the United Kingdom, Europe, the Caribbean and Asia, which are grouped in other countries in the table below. We allocate our results by geographic region based on the location of the unit responsible for managing the related assets, liabilities, revenues and expenses.

Our results and average assets, grouped by geographic region, are as follows:

(Canadian \$ in millions)	Canada	United States	Other countries	2022 Total
Total Revenue	15,977	16,980	753	33,710
Income before taxes	7,335	10,526	25	17,886
Reported net income	5,557	7,894	86	13,537
Average Assets	600,607	416,885	55,005	1,072,497

(Canadian \$ in millions)	Canada	United States	Other countries	2021 Total
Total Revenue	15,983	9,242	1,961	27,186
Income (loss) before taxes	6,242	4,224	(208)	10,258
Reported net income (loss)	4,809	3,254	(309)	7,754
Average Assets	544,652	376,102	60,386	981,140

Note 26: Significant Subsidiaries

As at October 31, 2022, the bank, either directly or indirectly through its subsidiaries, controls the following significant operating subsidiaries.

Significant Subsidiaries (1)(2)	Head or principal office	Book value of shares owned by the bank (Canadian \$ in millions)
Bank of Montreal (China) Co. Ltd.	Beijing, China	463
Bank of Montreal Europe plc	Dublin, Ireland	1,130
Bank of Montreal Holding Inc. and subsidiaries, including:	Toronto, Canada	36,913
Bank of Montreal Mortgage Corporation	Calgary, Canada	
BMO Mortgage Corp.	Vancouver, Canada	
BMO Investments Limited	Hamilton, Bermuda	
BMO Reinsurance Limited	St. Michael, Barbados	
BMO Nesbitt Burns Inc.	Toronto, Canada	
BMO Investments Inc.	Toronto, Canada	
BMO InvestorLine Inc.	Toronto, Canada	
BMO Capital Markets Limited	London, England	289
BMO Financial Corp. and subsidiaries, including:	Chicago, United States	32,490
BMO Asset Management Corp. and subsidiaries	Chicago, United States	
BMO Capital Markets Corp.	New York, United States	
BMO Harris Bank National Association and subsidiaries, including:	Chicago, United States	
BMO Harris Investment Company LLC	Chicago, United States	
BMO Life Insurance Company and subsidiaries, including:	Toronto, Canada	1,610
BMO Life Holdings (Canada), ULC	Halifax, Canada	
BMO Life Assurance Company	Toronto, Canada	
BMO Trust Company	Toronto, Canada	597
BMO Japan Securities Ltd.	Tokyo, Japan	6

(1) Each subsidiary is incorporated or organized under the laws of the state or country in which the principal office is situated, except for BMO Financial Corp., BMO Asset Management Corp. and BMO Capital Markets Corp., which are incorporated under the laws of the state of Delaware, United States. BMO Harris Investment Company LLC is organized under the laws of the state of Nevada, United States.

(2) Unless otherwise noted, the bank, either directly or indirectly through its subsidiaries, owns 100% of the outstanding voting shares of each subsidiary.

Significant Restrictions

Our ability to transfer funds between our subsidiaries may be restricted by statutory, contractual, capital and regulatory requirements. Restrictions include:

- Assets pledged as security for various liabilities we incur. Refer to Note 24 for details
- Assets of our consolidated structured entities that are held for the benefit of the note holders. Refer to Note 7 for details.
- Assets held by our insurance subsidiaries. Refer to Note 12 for details.
- Regulatory and statutory requirements that reflect capital and liquidity requirements.
- Funds required to be held with central banks. Refer to Note 2 for details.

Note 27: Related Party Transactions

Related parties include subsidiaries, joint ventures, associates, employee future benefit plans and key management personnel and their close family members. Close family members include spouses, common-law partners and dependent minors. Transactions with our subsidiaries are eliminated on consolidation, and are not disclosed as related party transactions.

Key Management Personnel and Their Close Family Members

Key management personnel is defined as those persons having authority and responsibility for planning, directing and/or controlling the activities of an entity, being the members of our Board of Directors (directors) and certain senior executives.

The following table presents the compensation of our key management personnel:

(Canadian \$ in millions)	2022	2021
Base salary and incentives	25	22
Post-employment benefits	3	3
Share-based payments (1)	45	32
Total key management personnel compensation	73	57

(1) Amounts included in share-based payments are the fair values of awards granted in the year.

We offer senior executives market interest rates on credit card balances, a fee-based subsidy on annual credit card fees, and a select suite of customer loan and mortgage products at rates normally accorded to preferred customers. At October 31, 2022, loans to key management personnel and their close family members totalled \$20 million (\$22 million as at October 31, 2021). We had no provision for credit losses related to these amounts as at October 31, 2022 and 2021.

Directors receive a specified amount of their annual retainer in deferred stock units. Until a director's shareholdings (including deferred stock units) are eleven times greater than their annual retainer, they are required to take 100% of their annual retainer and other fees in the form of either our common shares or deferred stock units. Once the shareholding requirements have been met, directors may elect to receive the remainder of such retainer fees and other remuneration in cash, common shares or deferred stock units.

Directors of our wholly owned subsidiary, BMO Financial Corp., are required to take a specified minimum amount of their annual retainer and other fees in the form of deferred stock units.

Joint Ventures and Associates

We provide banking services to our joint ventures and associates on the same terms offered to our customers for these services.

The following table presents the carrying amount of our interests in joint ventures and associates accounted for under the equity method, as well as our share of the income of those entities:

(Canadian \$ in millions)	Joint ventures		Associates	
	2022	2021	2022	2021
Carrying amount	585	474	708	661
Share of net income	126	107	148	141

We do not have any joint ventures or associates that are individually material to our consolidated financial statements.

The following table presents transactions with our joint ventures and associates:

(Canadian \$ in millions)	2022	2021
Loans (1)	1,190	791
Deposits	202	117
Fees paid for services received	61	59
Guarantees and commitments	93	73

(1) Includes customers' liability under acceptances.