U.S. Securities and Exchange Commission

Washington, D.C. 20549

Form 40-F

[Check one]

☐ **Registration statement pursuant to Section 12 of the Securities Exchange Act of 1934**

or

☒ **Annual report pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934**

For the fiscal year ended October 31, 2019 Commission File Number 001-13354

BANK OF MONTREAL

(Exact name of Registrant as specified in its charter)

Not Applicable
(Translation of Registrant's name into English (if applicable))

Canada
(Province or other jurisdiction of incorporation or organization)

6029
(Primary Standard Industrial Classification Code Number (if applicable))

Not Applicable
(I.R.S. Employer Identification Number (if applicable))

100 King Street West, 1 First Canadian Place, Toronto, Ontario, Canada M5X 1A1 (416-867-6785)
(Address and telephone number of Registrant's principal executive offices)

Colleen Hennessy, Bank of Montreal, 111 West Monroe Street, P.O. Box 755, Chicago, Illinois 60690 (312-461-7745)
(Name, address (including zip code) and telephone number (including area code) of agent for service in the United States)

Securities registered or to be registered pursuant to Section 12(b) of the Act:

Title Of Each Class	Trading Symbol	Name Of Each Exchange On Which Registered
Common Shares	**BMO**	**New York Stock Exchange**

Securities registered or to be registered pursuant to Section 12(g) of the Act:

Not Applicable

Securities for which there is a reporting obligation pursuant to Section 15(d) of the Act:

Not Applicable

For annual reports, indicate by check mark the information filed with this Form:

☒ Annual information form ☒ Audited annual financial statements

Indicate the number of outstanding shares of each of the issuer's classes of capital or common stock as of the close of the period covered by the annual report.

Common Shares	639,232,276
Class B Preferred Shares Series 25	9,425,607
Class B Preferred Shares Series 26	2,174,393
Class B Preferred Shares Series 27 (Non-Viability Contingent Capital (NVCC))	20,000,000
Class B Preferred Shares Series 29 (Non-Viability Contingent Capital (NVCC))	16,000,000
Class B Preferred Shares Series 31 (Non-Viability Contingent Capital (NVCC))	12,000,000
Class B Preferred Shares Series 33 (Non-Viability Contingent Capital (NVCC))	8,000,000
Class B Preferred Shares Series 35 (Non-Viability Contingent Capital (NVCC))	6,000,000
Class B Preferred Shares Series 36 (Non-Viability Contingent Capital (NVCC))	600,000
Class B Preferred Shares Series 38 (Non-Viability Contingent Capital (NVCC))	24,000,000
Class B Preferred Shares Series 40 (Non-Viability Contingent Capital (NVCC))	20,000,000
Class B Preferred Shares Series 42 (Non-Viability Contingent Capital (NVCC))	16,000,000
Class B Preferred Shares Series 44 (Non-Viability Contingent Capital (NVCC))	16,000,000
Class B Preferred Shares Series 46 (Non-Viability Contingent Capital (NVCC))	14,000,000

Indicate by check mark whether the Registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Exchange Act during the preceding 12 months (or for such shorter period that the Registrant was required to file such reports) and (2) has been subject to such filing requirements for the past 90 days.

Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the Registrant was required to submit such files).

Yes ☒ No ☐

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 12b-2 of the Exchange Act.

Emerging growth company ☐

If an emerging growth company that prepares its financial statements in accordance with U.S. GAAP, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards† provided pursuant to Section 13(a) of the Exchange Act. ☐

† The term “new or revised financial accounting standard” refers to any update issued by the Financial Accounting Standards Board to its Accounting Standards Codification after April 5, 2012.

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DISCLOSURE CONTROLS AND PROCEDURES

The information provided under the heading “Management’s Annual Report on Disclosure Controls and Procedures and Internal Control over Financial Reporting — Disclosure Controls and Procedures” (page 113) contained in the Bank’s Management’s Discussion and Analysis for the fiscal year ended October 31, 2019 (“2019 MD&A”), filed as Exhibit 99.2 to this annual report on Form 40-F, is incorporated by reference herein.

INTERNAL CONTROL OVER FINANCIAL REPORTING

a. Management’s annual report on internal control over financial reporting

The information provided under the heading “Management’s Annual Report on Disclosure Controls and Procedures and Internal Control over Financial Reporting — Internal Control over Financial Reporting” (page 113) contained in the 2019 MD&A, filed as Exhibit 99.2 to this annual report on Form 40-F, is incorporated by reference herein.

b. Auditor’s attestation report on internal control over financial reporting

The Bank’s shareholders’ auditors, KPMG LLP, have issued an audit report on our internal control over financial reporting. This audit report appears on page 136 of the Bank’s Consolidated Financial Statements for the fiscal year ended October 31, 2019, filed as Exhibit 99.3 to this annual report on Form 40-F and is incorporated by reference herein.

c. Changes in internal control over financial reporting

The information provided under the heading “Management’s Annual Report on Disclosure Controls and Procedures and Internal Control over Financial Reporting — Changes in Internal Control over Financial Reporting” (page 113) contained in the 2019 MD&A, filed as Exhibit 99.2 to this annual report on Form 40-F, is incorporated by reference herein.

AUDIT AND CONDUCT REVIEW COMMITTEE FINANCIAL EXPERT

The information provided under the heading “Audit and Conduct Review Committee Information — Composition of the Audit and Conduct Review Committee” (pages 14 and 15) identifying the Bank’s Audit and Conduct Review Committee Financial Experts, and confirming the independence of the Audit and Conduct Review Committee Financial Experts, as set forth in the Bank’s Annual Information Form (dated December 3, 2019), filed as Exhibit 99.1 to this annual report on Form 40-F, is incorporated by reference herein.

CODE OF ETHICS

BMO’s Code of Conduct is its code of business conduct and ethics, which is applicable to every director and employee of the Bank. BMO’s Code of Conduct is available on the Bank’s website www.bmo.com and is available in print without charge to any shareholder upon request.

PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information provided under the heading “Shareholders’ Auditors’ Services and Fees — Shareholders’ Auditors’ Fees” and “— Pre-Approval Policies and Procedures” (page 112) contained in the 2019 MD&A, filed as Exhibit 99.2 to this annual report on Form 40-F, is incorporated by reference herein.

OFF-BALANCE SHEET ARRANGEMENTS

The information provided under the heading “Select Financial Instruments and Off-Balance Sheet Arrangements” (pages 66 and 67) contained in the 2019 MD&A, filed as Exhibit 99.2 to this annual report on Form 40-F, is incorporated by reference herein.

TABULAR DISCLOSURE OF CONTRACTUAL OBLIGATIONS

The information provided under the heading “Contractual Maturities of Assets and Liabilities and Off-Balance Sheet Commitments” (pages 98 and 99) contained in the 2019 MD&A, filed as Exhibit 99.2 to this annual report on Form 40-F, is incorporated by reference herein.

IDENTIFICATION OF THE AUDIT AND CONDUCT REVIEW COMMITTEE

The information provided under the heading “Audit and Conduct Review Committee Information — Composition of the Audit and Conduct Review Committee” (pages 14 and 15) identifying the Bank’s Audit and Conduct Review Committee and confirming the independence of the Audit and Conduct Review Committee as set forth in the Bank’s Annual Information Form (dated December 3, 2019), filed as Exhibit 99.1 to this annual report on Form 40-F, is incorporated by reference herein.

SUMMARY OF SIGNIFICANT CORPORATE GOVERNANCE DIFFERENCES

A summary of significant ways corporate governance practices followed by the Bank differ from corporate governance practices required to be followed by U.S. domestic companies under The New York Stock Exchange’s listing standards (disclosure required by Section 303A.11 of the NYSE Listed Company Manual) and under The Nasdaq Stock Market’s listing standards (disclosure required by Section 5615(a)(3) of the Nasdaq Listing Rules) is available on the Bank’s website at www.bmo.com.

NOTE ON CERTAIN ACTIVITIES

During the year ended October 31, 2019, the Bank maintained a Canadian dollar personal chequing account and personal savings account with a Canadian resident citizen that appears on the Specially Designated Nationals (“SDN”) list of the U.S. Treasury Department’s Office of Foreign Assets Control (“OFAC”) under Executive Order 13224 (the “Executive Order”). The Bank had maintained these accounts and monitored their use, prohibiting access to U.S. currency and the U.S. financial system. The accounts will be closed by the Bank in December 2019.

Pursuant to Section 13(r) of the Exchange Act, the Bank is required to disclose whether it or any of its affiliates knowingly engaged in certain activities, transactions or dealings with certain individuals or entities, including those listed on OFAC’s SDN list under the Executive Order. Disclosure is generally required even where the activities, transactions or dealings were conducted outside the U.S. in compliance with applicable law. The Bank was not prohibited from doing business with this customer under applicable law or regulation. Revenues and profits from this relationship was not calculated but would be considered negligible.

UNDERTAKING

Registrant undertakes to make available, in person or by telephone, representatives to respond to inquiries made by the Commission staff, and to furnish promptly, when requested to do so by the Commission staff, information relating to the securities in relation to which the obligation to file an annual report on Form 40-F arises or transactions in said securities.

SIGNATURES

Pursuant to the requirements of the Exchange Act, the Registrant certifies that it meets all of the requirements for filing on Form 40-F and has duly caused this annual report to be signed on its behalf by the undersigned, thereto duly authorized.

Registrant: BANK OF MONTREAL

By: /s/ Thomas E. Flynn
Thomas E. Flynn
Chief Financial Officer

Date: December 3, 2019

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99.3	Consolidated Financial Statements for the Fiscal Year Ended October 31, 2019
99.4	Consent of Independent Registered Public Accounting Firm dated December 3, 2019
99.5	Certifications of Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
99.6	Certifications of Chief Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
99.7	Certifications pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101	Interactive Data File

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BANK OF MONTREAL



ANNUAL INFORMATION FORM

FOR THE YEAR ENDED OCTOBER 31, 2019

Dated December 3, 2019

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[1] As indicated, parts of the Bank's Consolidated Financial Statements (2019 Financial Statements) and Management's Discussion and Analysis (2019 MD&A) for the fiscal year ended October 31, 2019 are incorporated by reference into this Annual Information Form. The 2019 Financial Statements and the 2019 MD&A are available on SEDAR (www.sedar.com).

EXPLANATORY NOTES AND CAUTIONS

Unless specifically stated otherwise in this Annual Information Form:

- all amounts are in Canadian dollars
- BMO Financial Group, the Bank, BMO, we, or our means Bank of Montreal and, as applicable, its subsidiaries
- information is as at October 31, 2019

Caution Regarding Forward-Looking Statements

Bank of Montreal's public communications often include written or oral forward-looking statements. Statements of this type are included in this document, and may be included in other filings with Canadian securities regulators or the U.S. Securities and Exchange Commission, or in other communications. All such statements are made pursuant to the "safe harbor" provisions of, and are intended to be forward-looking statements under, the United States Private Securities Litigation Reform Act of 1995 and any applicable Canadian securities legislation. Forward-looking statements in this document may include, but are not limited to, statements with respect to our objectives and priorities for fiscal 2020 and beyond, our strategies or future actions, our targets, expectations for our financial condition or share price, the regulatory environment in which we operate and the results of or outlook for our operations or for the Canadian, U.S. and international economies, and include statements of our management. Forward-looking statements are typically identified by words such as "will", "would", "should", "believe", "expect", "anticipate", "project", "intend", "estimate", "plan", "goal", "target", "may" and "could".

By their nature, forward-looking statements require us to make assumptions and are subject to inherent risks and uncertainties, both general and specific in nature. There is significant risk that predictions, forecasts, conclusions or projections will not prove to be accurate, that our assumptions may not be correct, and that actual results may differ materially from such predictions, forecasts, conclusions or projections. We caution readers of this document not to place undue reliance on our forward-looking statements, as a number of factors – many of which are beyond our control and the effects of which can be difficult to predict – could cause actual future results, conditions, actions or events to differ materially from the targets, expectations, estimates or intentions expressed in the forward-looking statements.

The future outcomes that relate to forward-looking statements may be influenced by many factors, including but not limited to: general economic and market conditions in the countries in which we operate; the Canadian housing market; weak, volatile or illiquid capital and/or credit markets; interest rate and currency value fluctuations; changes in monetary, fiscal, or economic policy and tax legislation and interpretation; the level of competition in the geographic and business areas in which we operate; changes in laws or in supervisory expectations or requirements, including capital, interest rate and liquidity requirements and guidance, and the effect of such changes on funding costs; judicial or regulatory proceedings; the accuracy and completeness of the information we obtain with respect to our customers and counterparties; failure of third parties to comply with their obligations to us; our ability to execute our strategic plans and to complete and integrate acquisitions, including obtaining regulatory approvals; critical accounting estimates and the effect of changes to accounting standards, rules and interpretations on these estimates; operational and infrastructure risks, including with respect to reliance on third parties; changes to our credit ratings; political conditions, including changes relating to or affecting economic or trade matters; global capital markets activities; the possible effects on our business of war or terrorist activities; outbreaks of disease or illness that affect local, national or international economies; natural disasters and disruptions to public infrastructure, such as transportation, communications, power or water supply; technological changes; information, privacy and cyber security, including the threat of data breaches, hacking, identity theft and corporate espionage, as well as the possibility of denial of service resulting from efforts targeted at causing system failure and service disruption; and our ability to anticipate and effectively manage risks arising from all of the foregoing factors.

We caution that the foregoing list is not exhaustive of all possible factors. Other factors and risks could adversely affect our results. For more information, please refer to the discussion in the Risks That May Affect Future Results section, and the sections related to credit and counterparty, market, insurance, liquidity and funding, operational, legal and regulatory, business, strategic, environmental and social, and reputation risk, in the Enterprise-Wide Risk Management section that begins on page 68 of the 2019 MD&A, all of which outline certain key factors and risks that may affect our future results. Investors and others should carefully consider these factors and risks, as well as other uncertainties and potential events, and the inherent uncertainty of forward-looking statements. We do not undertake to update any forward-looking statements, whether written or oral, that may be made from time to time by the organization or on its behalf, except as required by law. The forward-looking information contained or incorporated by reference in this document is presented for the purpose of assisting our shareholders in understanding our financial position as at and for the periods ended on the dates presented, as well as our strategic priorities and objectives, and may not be appropriate for other purposes.

Material economic assumptions underlying the forward-looking statements contained or incorporated by reference in this document are set out in the Economic Developments and Outlook section on page 18 of the 2019 MD&A. Assumptions about the performance of the Canadian and U.S. economies, as well as overall market conditions and their combined effect on our business, are material factors we consider when determining our strategic priorities, objectives and expectations for our business. In determining our expectations for economic growth, both broadly and in the financial services sector, we primarily consider historical economic data provided by governments, historical relationships between economic and financial variables, and the risks to the domestic and global economy.

CORPORATE STRUCTURE

Bank of Montreal started business in Montreal in 1817 and was incorporated in 1821 by an Act of Lower Canada as the first Canadian chartered bank. Since 1871, the Bank has been a chartered bank under the *Bank Act* (Canada) (the Bank Act), and is named in Schedule I of the Bank Act. The Bank Act is the charter of the Bank and governs its operations.

The Bank's head office is 129 rue Saint Jacques, Montreal, Quebec, H2Y 1L6. Its executive offices are 100 King Street West, 1 First Canadian Place, Toronto, Ontario, M5X 1A1.

Bank of Montreal brands the organization's member companies as BMO Financial Group. Note 26 to the 2019 Financial Statements lists the intercorporate relationships among Bank of Montreal and its significant subsidiaries. We incorporate this Note by reference. These subsidiaries are incorporated or organized under the laws of the state or country of their principal office, except for: BMO Financial Corp.; BMO Asset Management Corp.; BMO Capital Markets Corp.; BMO Harris Financial Advisors, Inc.; BMO Harris Financing, Inc. and BMO Family Office, LLC, which are incorporated under the laws of the State of Delaware, and BMO Asset Management (Holdings) plc which is incorporated under the laws of Scotland.

GENERAL DEVELOPMENT OF THE BUSINESS

Three-Year History

As at October 31, 2019, BMO was the eighth largest bank in North America by assets.

On October 28, 2016, BMO announced the appointments of Franklin J. Techar as Vice-Chair, BMO Financial Group, Darryl White as Chief Operating Officer, BMO Financial Group, Patrick Cronin as Group Head, BMO Capital Markets, Gilles Ouellette as Group Head, BMO Asset Management and Joanna Rotenberg as Group Head, BMO Wealth Management. Each of these appointments was effective November 1, 2016.

On April 7, 2017, BMO announced its intention to appoint Darryl White, Chief Operating Officer, BMO Financial Group, to the office of Chief Executive Officer, BMO Financial Group effective November 1, 2017, as successor to William Downe, who had announced his intention to retire effective October 31, 2017. Mr. White was appointed to the Bank's board of directors on May 24, 2017. On October 31, 2017, Mr. Downe retired as Chief Executive Officer of the Bank and, on November 1, 2017, Mr. White became Chief Executive Officer.

On October 10, 2018, BMO announced the appointments of Patrick Cronin as Chief Risk Officer, BMO Financial Group and Dan Barclay as Group Head, BMO Capital Markets. Each of these appointments was effective November 1, 2018.

On November 1, 2019, BMO announced its intention to appoint George A. Cope as Chair of the Board of Bank of Montreal effective upon hisre-election as an independent Director of the Bank at the Bank's March 31, 2020 Annual Meeting of Shareholders.

BMO has had common share buyback programs in place for several years. The 2019-2020 program expires on June 2, 2020. During the year ended October 31, 2019, the Bank repurchased and cancelled 1 million common shares.

For additional information on the general development of BMO's business and our strategies for the upcoming year, see pages 15, 20, and32 to 51 of the 2019 MD&A, which we incorporate herein by reference.

This Three-Year History section contains forward-looking statements. Please see the Caution Regarding Forward-Looking Statements on page 2.

DESCRIPTION OF THE BUSINESS

Business

BMO Financial Group is a highly diversified financial services provider based in North America. BMO offers a broad range of products and services directly and through Canadian and non-Canadian subsidiaries, offices, and branches. As at October 31, 2019, BMO had more than 12 million customers and more than 45,000 full-time equivalent employees. The Bank has approximately 1,500 bank branches in Canada and the United States and operates internationally in major financial markets and trading areas through its offices in a number of jurisdictions around the world. BMO Financial Corp. (BFC) is based in Chicago and wholly-owned by Bank of Montreal. BFC operates primarily through its subsidiary BMO Harris Bank N.A. (BHB), which provides banking, financing, investing, and cash management services in select markets in the United States. BMO provides a full range of investment dealer services through entities, including BMO Nesbitt Burns Inc., a major fully integrated Canadian investment dealer, and BMO Capital Markets Corp., Bank of Montreal's wholly-owned registered securities dealer in the United States.

BMO conducts business through three operating groups: Personal and Commercial Banking (P&C), made up of Canadian P&C and U.S. P&C; BMO Wealth Management; and BMO Capital Markets. Canadian P&C operates across Canada, providing customers with a wide range of products and services, including banking, lending, treasury management and everyday financial and investment advice to our personal and commercial clients. Operating predominately in the U.S. Midwest under the BMO Harris brand, U.S. P&C offers personal and commercial clients banking, lending, and treasury management products and services. BMO Wealth Management offers client-focused investment, wealth management and financial services and solutions from mainstream to ultra-high net worth and institutional, with a broad offering of wealth management products and services, including insurance. BMO Wealth Management is a global business with an active presence in markets across Canada, the United States, Europe, the Middle East and Africa (EMEA) and Asia. BMO Capital Markets is a North American-based financial services provider offering a complete range of products and services to corporate, institutional and government clients. These include equity and debt underwriting, institutional sales and trading, corporate lending and project financing, mergers and acquisitions advisory services, securitization, treasury management, risk management and equity and fixed income research. 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, procurement, data and analytics, and innovation. T&O develops, monitors, manages and maintains governance of information technology, and also provides cyber security and operations services.

For additional information regarding BMO's businesses, see pages 15, 20, and 32 to51 of the 2019 MD&A and Note 25 to the 2019 Financial Statements. We incorporate these pages and Note by reference.

This Business section contains forward-looking statements. Please see the Caution Regarding Forward-Looking Statements on page 2.

Supervision and Regulation in Canada

Bank of Montreal's activities in Canada are governed by the Bank Act.

Under the Bank Act, a bank can operate its regular banking business as well as some additional activities, such as dealing with real property and various financial technology and information services. A bank is restricted when it undertakes certain activities, including fiduciary activities, dealing in securities, insurance activities, and personal property leasing. For example, other than for authorized types of insurance, a bank may not offer insurance products through its branch system or bank website.

The Bank Act grants a bank broad power to invest in the securities of other corporations and entities, but limits substantial investments. Under the Bank Act, a bank generally has a substantial investment in a body corporate when (1) the bank and entities controlled by the bank beneficially own more than 10% of the voting shares of the body corporate or (2) the bank and entities controlled by the bank beneficially own shares representing more than 25% of the total shareholders' equity of the body corporate. A bank can have a substantial investment in entities that meet the substantial investment requirements as set out in Part IX of the Bank Act. In certain cases, the Minister of Finance or the Superintendent of Financial Institutions (Canada) (the Superintendent) must approve before making an investment.

The Superintendent is responsible to the Minister of Finance for administering the Bank Act. The Superintendent provides guidelines for disclosing a bank's financial information. The Superintendent must also examine each bank annually to ensure compliance with the Bank Act and that each bank is in sound financial condition. The Superintendent's examination report is submitted to the Minister of Finance.

The Bank's Canadian trust, loan and insurance subsidiaries are federally regulated financial institutions governed by the *Trust and Loan Companies Act* (Canada) and the *Insurance Companies Act* (Canada), respectively, and under provincial laws in respect of their activities in the provinces. The Bank and its Canadian trust, loan and insurance subsidiaries are also subject to regulation by the Financial Consumer Agency of Canada (the FCAC). The FCAC enforces consumer-related provisions of the federal statutes which govern these financial institutions. Certain activities of the Bank and its subsidiaries acting as securities brokers, dealers, underwriters, advisors and investment fund managers are regulated in Canada under provincial securities legislation and, in some cases, by a self-regulatory organization (the Investment Industry Regulatory Organization of Canada or the Mutual Fund Dealers Association of Canada).

Under Canadian bank resolution powers, the Canada Deposit Insurance Corporation (CDIC) may, in circumstances where the Bank has ceased, or is about to cease, to be viable, assume temporary control or ownership of the Bank and may be granted broad powers by one or more orders of the Governor in Council (Canada), including the power to sell or dispose of all or a part of the assets of the Bank, and the power to carry out or cause the Bank to carry out a transaction or a series of transactions the purpose of which is to restructure the business of the Bank. As part of the Canadian bank resolution powers, certain provisions of, and regulations under the Bank Act, the Canada Deposit Insurance Corporation Act (CDIC Act) and certain other Canadian federal statutes pertaining to banks (collectively, the "Bail-in Regime") provide for a bank recapitalization regime for banks designated by the Superintendent as domestic systemically important banks. Effective September 23, 2018, under the Bail-in Regime, subject to an order of the Governor in Council (Canada) having been issued, CDIC may, having assumed temporary control or ownership of the Bank, amongst other actions, carry out a conversion, by converting or causing the Bank to convert, in whole or in part – by means of a transaction or series of transactions and in one or more steps – the shares and liabilities of the Bank that are subject to the Bail-in Regime into common shares of the Bank or any of its affiliates. For a more detailed description of Canadian bank resolution powers and the consequent risk factors attaching to certain liabilities of the Bank, reference is made to https://www.bmo.com/ir/files/F18%20Files/Bail_In_TLAC_Disclosure.pdf. The information on our website does not form a part of this Annual Information Form.

Additional information about supervision and regulation in Canada is found under the headings "Regulatory Capital Requirements" and "Capital Regulatory Developments" in the Enterprise-Wide Capital Management section on pages 59 to 61, "Regulatory Requirements" in the Risks That May Affect Future Results section on page 70, "Regulatory Developments" in the Liquidity and Funding Risk section on page 97, and "Legal and Regulatory Risk" on pages 103 to 104 of the 2019 MD&A, which we incorporate herein by reference.

Supervision and Regulation in the United States

In the United States, the operations of Bank of Montreal and its subsidiaries are supervised, regulated, and examined by regulatory and government agencies at the federal and state level. As a foreign bank, Bank of Montreal is subject to various U.S. laws and regulations, including the United States International Banking Act of 1978, the United States Bank Holding Company Act of 1956, and related regulations. The Board of Governors of the Federal Reserve System, including the Federal Reserve Banks (the Federal Reserve), and state banking regulators oversee the Bank of Montreal's branch and office operations in the United States. The U.S. Securities and Exchange Commission (the SEC), the Financial Industry Regulatory Authority, and state securities regulators regulate broker-dealer subsidiaries. The SEC and state securities regulators regulate registered investment advisor subsidiaries.

Bank of Montreal and its subsidiaries own two Federal Deposit Insurance Corporation (FDIC) insured depository institutions in the United States, BHB and BMO Harris Central N.A. (BHC). BHB provides banking, financing, investing, and cash management services in select markets in the U.S. Midwest. BHC provides limited cash management services. They are subject to examination by the Office of the Comptroller of the Currency (OCC). The Federal Reserve generally needs to approve acquiring (a) more than 5% of voting shares, (b) control, or (c) all (or substantially all) of the assets of a bank holding company, bank, or savings association.

The Bank is also subject to the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank). Dodd-Frank reforms include heightened consumer protection, revised regulation of over-the-counter derivatives markets, restrictions on proprietary trading and the ownership and sponsorship of private investment funds by banks and their affiliates (referred to as the Volcker Rule), imposition of heightened prudential standards, and broader application of leverage and risk-based capital requirements.

The Federal Reserve Board's rule for strengthening supervision and regulation of foreign banking organizations (FBO Rule) implemented Dodd Frank's enhanced prudential standards for the U.S. operations of non-U.S. banks, such as BMO. The rule established new requirements relating to an intermediate holding company structure, risk based capital and leverage requirements, capital stress testing requirements, U.S. risk management and risk governance, liquidity risk management and liquidity stress testing frameworks. We have certified our compliance with this rule. In May 2018, the U.S. Congress passed the Economic Growth, Regulatory Relief, and Consumer Protection Act (EGRRCP), which made reforms to Dodd-Frank, including raising the threshold for heightened prudential standards from US$50 billion to US$250 billion in total consolidated assets. The Federal Reserve in October 2019 issued final rules that modify capital and liquidity requirements, single counterparty credit limits, and enhanced prudential standards for bank holding companies and foreign banking organizations. EGRRCP rulemaking will continue for at least the next year and may impact our U.S. operations.

The OCC has issued guidelines that establish heightened standards for large national banks with average total consolidated assets of US$50 billion or more, including BHB. The guidelines set out minimum standards for the design and implementation of a bank's risk governance framework and minimum standards for oversight of that framework by a bank's board of directors. The framework must ensure the bank's risk profile is easily distinguished and separate from that of its parent

for risk management purposes. A bank's board of directors is responsible for informed oversight of, and providing credible challenge to, management's risk management recommendations and decisions. We comply with these guidelines.

Additional information about supervision and regulation in the United States is found under the headings "Regulatory Capital Requirements" and "Capital Regulatory Developments" in the Enterprise-Wide Capital Management section on pages 59 to 61, "Regulatory Requirements" in the Risks That May Affect Future Results section on page 70, and "Legal and Regulatory Risk" on pages 103 to 104 of the 2019 MD&A, which we incorporate herein by reference.

This Supervision and Regulation in the United States section contains forward-looking statements. Please see the Caution Regarding Forward-Looking Statements on page 2.

International Supervision and Regulation

Outside Canada and the U.S., each of Bank of Montreal's branches, agencies and subsidiaries must comply with the regulatory requirements of the country or jurisdiction where it conducts business. These include the Basel Committee on Banking Supervision capital, liquidity and prudential rules (Basel III), or local variations on Basel III, which are intended to strengthen the banking sector's capital and liquidity frameworks. Since the first quarter of 2013, regulatory capital requirements for Bank of Montreal have been determined on a Basel III basis. Additional information about international supervision and regulation is found under the headings "Regulatory Capital Requirements", "Regulatory Capital Ratios", "Regulatory Capital Elements" and "Capital Regulatory Developments" in the Enterprise-Wide Capital Management section on pages 59 to 61, "Regulatory Requirements" in the Risks That May Affect Future Results section on page 70, and "Legal and Regulatory Risk" on pages 103 to 104 of the 2019 MD&A, which we incorporate herein by reference.

Competition

Canada's financial services industry is highly competitive. It includes 37 domestic banks and 50 foreign bank subsidiaries, branches, and lending branches, as well as a multitude of trust companies, credit unions, online and full-service brokerages, investment dealers, life and property and casualty insurance companies, mutual fund dealers, and large monoline financial institutions, among others. Bank of Montreal competes with most of these companies in some form in our different businesses. However, our range of services compares to those of the other five major Canadian banks, and they are our direct competitors in almost all our businesses and markets in Canada. Bank of Montreal was the fourth largest chartered bank in Canada as measured by assets, equity, and market capitalization as at October 31, 2019. In North America, we are the eighth largest bank by assets, and tenth largest by equity and by market capitalization as at October 31, 2019. BMO is the second largest Canadian bank as measured by retail branches in Canada and the United States.

The financial services industry continues to operate in a highly competitive and rapidly changing environment. Non-traditional entrants and competitors have continued to gain momentum in certain segments of banking, in some cases with reduced regulatory requirements and oversight, and are deepening their connections with banks, in order to enhance their products and build customer relationships New entrants may leverage new technologies, advanced data and analytical tools, lower costs to serve and/or faster processes to challenge traditional banks, including new business models in retail payments, consumer and commercial lending, foreign exchange and low-cost investment advisory services. Failure to keep pace with these new technologies and competition may potentially impact our overall revenues and earnings if customers choose the services of these new market entrants. Traditional competitors therefore continue to invest in innovative technologies that allow them to focus on differentiating the customer experience by leveraging new technologies, products and services to meet their clients' evolving needs and goals, and technology will continue to play a leading role in delivering exceptional experiences for all our customers, while enhancing the efficiency of our operations. This includes improving our mobile and internet banking capabilities, building new branch formats, and refining our credit decisioning, analytic and modelling data and tools and, where appropriate, bringing new and enhanced customer solutions to market. We further mitigate this risk by providing our customers with access to banking services across different channels, focusing on improving customer loyalty and trust, enhancing our advanced data and analytical tools, and leveraging current and future partnerships in order to deliver an exceptional customer experience with reduced costs and simplified processes. However, matching the pace of innovation exhibited by new and differently-situated competitors may require us and policy-makers to adapt at a faster pace. The competitive environment and changing client preferences will also continue to exert pressure on fees for products and services.

The six major banks play a prominent role in the Canadian banking system, each maintaining an extensive and evolving branch network, augmented by automated banking machines, as well as telephone, internet, and mobile banking systems. The industry is considered mature with moderate growth, supported by an overall focus on productivity, investments in infrastructure and technology integration. Although the major banks offer similar products and services, they compete on offerings, pricing, service models and technology, as well as entering into partnerships and alliances, with a goal of gaining a strategic advantage and serving customers better. Increased competition is also evident in the drive for scale and operating efficiencies.

BMO's Canadian P&C banking business is one of the top five in Canada in all core product areas, providing a full range of lending, deposit and treasury management products and services to eight million customers. Canadian P&C continues to focus on strengthening customer loyalty in order to generate growth in a competitive environment, as well as increasing digital capabilities to augment the customer experience. Personal Banking provides customers with a wide range of products and services, including chequing and savings accounts, credit cards, mortgages and everyday financial and investment advice. Our employees are focused on providing exceptional service to all of our customers every time they interact with us.

Canadian P&C's award winning[1] commercial bank possesses a strong competitive position in commercial lending, with a number two market share for business loans of up to $25 million. Commercial Banking provides small business and commercial banking customers with a broad suite of commercial products and services, including business deposit accounts, commercial credit cards, business loans and commercial mortgages, cash management solutions, foreign exchange and specialized banking programs. Our Commercial bankers partner with our customers to help them grow and manage their business.

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[1] In 2019, the Bank was named the Best Commercial Bank in Canada by World Finance Magazine for the fifth consecutive year.

In Canada, BMO Wealth Management competes with domestic banks, insurance companies, trust companies, global private banks, investment counselling firms, and mutual fund companies. BMO Wealth Management's Canadian businesses have strong brand recognition and market position. BMO Private Wealth offers a comprehensive range of client-focused investment, wealth advisory and financial services and solutions through BMO Nesbitt Burns direct brokerage and the award winning BMO Private Bank[1]. BMO InvestorLine provides a range of digital investment services that compete effectively with online brokerages and digital advice providers. In the United States, BMO Wealth Management competes primarily in U.S. personal wealth and asset management, with our strategic presence in the

Chicago and Milwaukee area and in select high-growth wealth markets across the country. In EMEA and Asia, BMO Wealth Management competes primarily in asset management through BMO Global Asset Management. BMO Mutual Funds and BMO Exchange Traded Funds offer clients innovative investment solutions across a range of channels.

[1] BMO Private Banking was named Best Private Bank in Canada by World Finance for the ninth consecutive year.

BMO Capital Markets operates in a highly competitive environment and our businesses face a diverse range of competitors. With approximately 2,800 professionals in 33 locations around the world, including 19 offices in North America, BMO Capital Markets works proactively with clients to provide innovative ideas and tailored financial solutions. Our success is based on a highly integrated, client-focused North American capital markets business with a well-diversified platform and business mix – by sector, geography, product and currency. This includes a strong, scalable and relevant U.S. business, and strong risk management and regulatory compliance practices.

Competition in the United States is more complex than in Canada, given the market's size and activity, as well as personal and commercial banking competitors at the community, regional, and national level, plus other financial service providers. The U.S. P&C business operates in a rapidly changing environment and is primarily based in eight states (Illinois, Wisconsin, Missouri, Indiana, Minnesota, Kansas, Arizona and Florida). In addition, our commercial business provides targeted nationwide coverage for key specialty sectors and has offices in select regional markets. The environment for growing our personal and commercial banking customer base remains highly competitive, and the declining interest rate environment will result in added pressure on both margins and customer acquisition. After weakening in 2019, the U.S. economy is expected to grow at a steadier rate in 2020 in response to recent declines in interest rates and a modest expansion of fiscal policy. The major risks affecting the U.S. economic outlook relate to an escalation in trade disputes, domestic political uncertainty and geopolitical tensions. Personal and commercial deposits are expected to grow modestly as interest rates trend lower. We continue to monitor the competitive landscape in order to effectively price our products and services and invest in building a seamless human-digital interface in banking, enabling our customers to bank whenever and however they want. Peer-leading performance in our commercial lending business has allowed us to build a strong presence in our diversified and specialized sectors and establish a position of strength in our core footprint and chosen markets. In our personal lending business, we are focused on improving efficiency, in order to create a better experience for our customers and bankers. The personal and commercial businesses are well equipped and remain committed to pursuing a customer-focused growth strategy with an emphasis on high-growth sectors, increasing share in new markets and deepening our relationships with existing customers.

Consolidation has been underway in the financial services industry in Canada and the United States in recent years. This affects trust companies, mutual fund managers, life insurers, and credit unions. Canadian federal government policy discourages large banks from merging. It is uncertain whether this will change in the near future but further consolidation and increased competition in the financial services industry overall is likely.

This Competition section contains forward-looking statements. Please see the Caution Regarding Forward-Looking Statements on page 2.

Environmental, Social and Governance Issues

The Bank publishes a *Sustainability Report and Public Accountability Statement*,[1] outlining how the Bank is addressing environmental, social, and governance issues. This report and other related information is available on the Bank's website, www.bmo.com. Additional information about our environmental and social risks is under the heading "Risks that May Affect Future Results – Other Factors that May Affect Future Results – Environmental Risks" and "Environmental and Social Risk" in the Enterprise-Wide Risk Management section on page 70 and pages 105-106 of the 2019 MD&A, which we incorporate herein by reference.

[1] In previous years, the title of the Sustainability Report was the BMO Environmental, Social and Governance Report.

DIVIDENDS

You can find information about the Bank's dividends paid or payable per share on the common shares and each outstanding series of preferred shares in each of the three most recently completed years under the heading "Outstanding Shares and NVCC Capital Instruments" on page 65 of the 2019 MD&A, which page we incorporate herein by reference.

We cannot (a) declare dividends on our preferred or common shares if paying those dividends would contravene the capital adequacy, liquidity, or other regulations under the Bank Act; (b) pay common share dividends unless we have paid all dividends declared and payable on the Bank's preferred shares or set aside sufficient funds to do so; and (c) pay common share dividends or preferred share dividends unless we have paid all interest due and payable on the Bank's Subordinated Capital Notes (as defined below). The Board of Directors determines the amount and payment of future dividends. The determination by the Board of Directors depends on the Bank's operations, financial condition, cash requirements, future regulatory restrictions on the payment of dividends, and other factors the Board of Directors finds relevant. You can find information about our dividends and our dividend payout range on page 65 of the 2019 MD&A, which we incorporate herein by reference.

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

DESCRIPTION OF CAPITAL STRUCTURE

The following summarizes certain provisions of our common shares, preferred shares and Subordinated Capital Notes. This summary is qualified in its entirety by the actual terms and conditions of such shares. For more detail on the Bank's capital structure, see pages 61 to 65 of the 2019 MD&A and Notes 16 and 19 of the 2019 Financial Statements. We incorporate those pages and Notes by reference.

Description of Common Shares

The authorized capital of the Bank includes an unlimited number of common shares without nominal or par value for unlimited consideration. The holders of common shares are entitled to:

(i) Vote at all Bank shareholders' meetings, except for meetings where only holders of a specified class or series of shares are entitled to vote.

(ii) Receive dividends as and when declared by the Board of Directors, subject to the preference of the Bank's holders of preferred shares.

(iii) Receive the remaining property of the Bank if it is liquidated, dissolved, or wound up, only after paying the Bank's holders of preferred shares and paying all outstanding debt.

Description of Preferred Shares

The authorized capital of the Bank includes an unlimited number of Class A Preferred Shares and Class B Preferred Shares without nominal or par value, in series, for unlimited consideration. Class B Preferred shares may be issued in a foreign currency. The following describes certain general terms and conditions of the preferred shares.

Certain Conditions of the Class A Preferred Shares as a Class

Issuable in Series

From time to time, the Board of Directors may resolve to issue Class A Preferred Shares in one or more series with rights, privileges, restrictions, and conditions, which the Board of Directors may also decide. As at December 2, 2019, there were no outstanding Class A Preferred Shares.

The Class A Preferred Shares of each series rank equally to all other series of Class A and Class B Preferred Shares and are entitled to preference over the common shares and over any other shares ranking junior to the Class A Preferred Shares and the Class B Preferred Shares with respect to the payment of dividends and in the distribution of property in the event of the liquidation, dissolution or winding up of the Bank.

Creating and Issuing Shares

Under the Bank Act, we need approval from the holders of Class A Preferred Shares to create any other class of shares with equal or superior rank to Class A Preferred Shares. Shareholders must give this approval as set out below in "Shareholder Approvals." The Bank Act and other laws may also require other forms of approval.

We do not require shareholder approval to create or issue additional Class A Preferred Shares or shares of equal rank if, on the date they are created or issued, we have declared and paid or set apart for payment all dividends payable on cumulative and non-cumulative Class A Preferred Shares, including for the most recently completed fiscal period.

Voting Rights

The holders of the Class A Preferred Shares only have voting rights as a class on certain matters (see below) or as the law requires.

Shareholder Approvals

Holders of the Class A Preferred Shares can give their approval if 66 2/3% or more holders casting vote in favour of doing so at a meeting where the majority of Class A Preferred Shares is represented, or if no quorum is present at such a meeting, at an adjourned meeting at which no quorum requirements apply.

Certain Conditions of the Class B Preferred Shares as a Class

Issuable in Series

From time to time, the Board of Directors may resolve to issue Class B Preferred Shares in one or more series with rights, privileges, restrictions, and conditions, which the Board of Directors may also decide.

The Class B Preferred Shares of each series rank equally to all the other series of Class B and Class A Preferred Shares and are entitled to preference over the common shares and any other shares ranking junior to the Class A Preferred Shares and the Class B Preferred Shares with respect to the payment of dividends and in the distribution of property in the event of the liquidation, dissolution or winding up of the Bank.

Creating and Issuing Shares

Under the Bank Act, we need approval from holders of Class B Preferred Shares to create any other class of shares with equal or superior rank to Class B Preferred Shares. The Bank Act or other laws may also require other forms of approval.

We do not require shareholder approval to create or issue additional Class B Preferred Shares or shares of equal rank if, on the date they are created or issued, we have declared and paid or set apart for payment all dividends payable on cumulative and non-cumulative Class B Preferred Shares, including for the most recently completed fiscal period. As at December 2, 2019, none of the outstanding Class B Preferred Shares have the right to cumulative dividends.

Voting Rights

The holders of the Class B Preferred Shares only have voting rights as a class on certain matters (see below) or as the law requires.

Shareholder Approvals

Holders of the Class B Preferred Shares can give their approval if 66 2/3% or more holders casting vote in favour of doing so at a meeting where the majority of Class B Preferred Shares is represented, or if no quorum is present at such meeting, at an adjourned meeting at which no quorum requirements apply.

Contingent Conversion of Certain Series of Class B Preferred Shares

Upon the occurrence of certain specified trigger events relating to the viability of the Bank, the Class B Preferred Shares Series 27(Non-Viability Contingent Capital (NVCC)), Class B Preferred Shares Series 29 (Non-Viability Contingent Capital (NVCC)), Class B Preferred Shares Series 31 (Non-Viability Contingent Capital) (NVCC)), Class B Preferred Shares Series 33 (Non-Viability Contingent Capital (NVCC)), Class B Preferred Shares Series 35 (Non-Viability Contingent Capital (NVCC)), Class B Preferred Shares Series 36 (Non-Viability Contingent Capital (NVCC)), Class B Preferred Shares Series 38 (Non-Viability Contingent Capital (NVCC)), Class B Preferred Shares Series 40 (Non-Viability Contingent Capital (NVCC)), Class B Preferred Shares Series 42 (Non-Viability Contingent Capital (NVCC)), Class B Preferred Shares Series 44 (Non-Viability Contingent Capital (NVCC)) and Class B Preferred Shares Series 46 (Non-Viability Contingent Capital (NVCC)) will immediately and automatically be converted into common shares of the Bank. The number of common shares into which such Class B Preferred Shares would be converted upon the occurrence of such a trigger event will be determined in accordance with a pre-determined conversion formula specified at the time of issuance of such Class B Preferred Shares.

Description of Other Equity Instruments – Subordinated Capital Notes

The Bank currently has outstanding US$500 million 4.800% Additional Tier 1 Capital Notes (NVCC) ("Subordinated Capital Notes") which are classified as equity and form part of our additional tier 1 non-viability contingent capital. The Subordinated Capital Notes are compound financial instruments that have both equity and liability features. For more details, see "Other Equity Instruments" in Note 16 of the 2019 Financial Statements.

The Subordinated Capital Notes are direct unsecured obligations of the Bank and, in the event of the Bank's insolvency or winding-up, will rank subordinate to all of the Bank's subordinated indebtedness and in right of payment equally with and not prior to indebtedness that ranks equally in right of payment with, or is subordinated to, the Subordinated Capital Notes (other than indebtedness which by its terms ranks subordinate to the Subordinated Capital Notes). The Subordinated Capital Notes will constitute subordinated indebtedness for the purposes of the Bank Act. In the event of the Bank's insolvency or winding-up, the Subordinated Capital Notes will rank ahead of the Bank's common shares and Preferred Shares.

Upon the occurrence of certain specified trigger events relating to the viability of the Bank, the Subordinated Capital Notes will immediately and automatically be converted into common shares of the Bank. The number of common shares into which the Subordinated Capital Notes would be converted upon the occurrence of such a trigger event will be determined in accordance with a pre-determined conversion formula specified at the time of issuance of the Subordinated Capital Notes.

Certain Provisions of the Subordinated Capital Notes

Distributions and Restrictions on Dividend and Retirement of Shares

Interest on the Subordinated Capital Notes is paid semi-annually in arrears for the initial five years. Thereafter, the interest will reset every five years and accrue at a fixed rate. While interest is payable on a semi-annual basis, the Bank may, at its discretion, with prior notice, cancel the payments. If the Bank does not pay the interest in full to the note holders, 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 Subordinated Capital Notes.

Maturity and Redemption

The Subordinated Capital Notes have no scheduled maturity or redemption date. Accordingly, the Bank is not required to make any repayment of the principal amount of the Subordinated Capital Notes except in the event of bankruptcy or insolvency and provided that the NVCC requirements have not been triggered. The Subordinated Capital Notes are redeemable at par five years after issuance solely at the option of the Bank, or following certain regulatory or tax events, in accordance with their terms. All redemptions are subject to regulatory consent.

Purchase for Cancellation

Subject to regulatory consent, the Bank may at any time, purchase for cancellation any Subordinated Capital Notes at any price in the open market.

Events of Default

An event of default in respect of the Subordinated Capital Notes will occur only if the Bank becomes bankrupt or insolvent or becomes subject to the provisions of the *Winding-up and Restructuring Act* (Canada), or if the Bank goes into liquidation, either voluntarily or under an order of a court of competent jurisdiction, passes a resolution for the winding-up, liquidation or dissolution of the Bank or otherwise acknowledges its insolvency. Neither a failure to make a payment on the Subordinated Capital Notes when due (including any interest payment, whether as a result of cancellation or otherwise) nor an NVCC automatic conversion upon the occurrence of a trigger event will constitute an event of default.

Issuance of other Senior or Pari Passu Securities

The terms governing the Subordinated Capital Notes do not limit the Bank's ability to incur additional indebtedness or issue or repurchase securities, other than the restriction on retirement of shares noted above. The Bank may incur additional indebtedness without the authorization of the holders of the Subordinated Capital Notes.

Voting Rights

The holders of Subordinated Capital Notes are not entitled to any rights of holders of common shares, including any rights of shareholders to receive notice, to attend or to vote at any meeting of the shareholders of the Bank. If the Subordinated Capital Notes are converted into common shares of the Bank under NVCC requirements, holders of the Subordinated Capital Notes will become holders of the Bank's common shares and will only have rights as holders of common shares.

Restraints on Bank Shares under the Bank Act

The Bank Act restricts the beneficial ownership of shares of a bank. No person may be a major shareholder of a bank if the bank has equity of $12 billion or more, which applies to the Bank. A major shareholder is defined as a person, or group of persons under common control or acting jointly or in concert, that beneficially owns more than 20% of any class of voting shares or more than 30% of any class of non-voting shares of the bank.

In addition, no person may have a significant interest in any class of shares of a bank, including the Bank, unless the person first receives the approval of the Minister of Finance. A person has a significant interest in a class of shares of a bank when the person, or group of persons under common control or acting jointly or in concert, beneficially owns more than 10% of any class of shares of the bank.

Governments and their agents are also restricted from acquiring shares of a bank, except for certain cases that require the Minister of Finance's consent.

Ratings

The credit ratings that external rating agencies assign to some of our securities are important in the raising of both capital and funding to support our business operations. Maintaining strong credit ratings allows the Bank to access the capital markets at competitive pricing levels. Should our credit ratings experience a downgrade, our cost of funds would likely increase and our access to funding and capital through capital markets could be reduced. A material downgrade of our ratings could also have other consequences, including those set out in Note 8 of the 2019 Financial Statements.

The following table sets out ratings the Bank has received for its outstanding securities from the rating agencies, which are current as at December 2, 2019.

	S&P		Moody's		DBRS		Fitch	
	Rating	**Rank[1]**	**Rating**	**Rank[1]**	**Rating**	**Rank[1]**	**Rating**	**Rank[1]**
Short-term instruments	A-1	1 of 6	P-1	1 of 4	R-1 (high)	1 of 6	F1+	1 of 7
Senior debt[3]	A-	3 of 10	A2	3 of 9	AA (low)	2 of 10	AA-	2 of 10
Long Term Deposits / Legacy Senior Debt[4]	A+	3 of 10	Aa2	2 of 9	AA	2 of 10	AA-	2 of 10
Subordinated debt	A-	3 of 10	Baa1	4 of 9	A (high)	3 of 10	A+	3 of 10
Subordinated debt – NVCC[2]	BBB+	4 of 10	Baa1	4 of 9	A (low)	3 of 10	A+	3 of 10
Subordinated Capital Notes – NVCC[2]	BBB-	4 of 10	Baa3	4 of 9	N/A	N/A	N/A	N/A
Preferred shares	BBB	3 of 9	Baa3	4 of 9	Pfd-2 (high)	2 of 6	N/A	N/A
Preferred shares – NVCC[2]	BBB-	3 of 9	Baa3	4 of 9	Pfd-2	2 of 6	N/A	N/A
Trend/Outlook	Stable	--	Stable	--	Stable	--	Stable	--

Notes: [1] Rank, according to each rating agency's public website, refers to the assigned ratings ranking of all major assignable ratings for each debt or share class, 1 being the highest. Each assignable major rating may be modified further (+/-, high/low) to show relative standing within the major rating categories.
[2] Non-viability contingent capital or NVCC.
[3] Subject to conversion under the Bail-In Regime.
[4] Long Term Deposits / Legacy Senior Debt Includes: (a) Senior debt issued prior to September 23, 2018; and (b) Senior debt issued on or after September 23, 2018 which is excluded from the Bail-In Regime.

A definition of the categories of each rating as at December 2, 2019 from each rating agency's website is outlined in Appendix II to this Annual Information Form. Further information may be obtained from the applicable rating agency. S&P, Moody's, DBRS and Fitch each have a stable outlook on BMO's long-term credit ratings.

On February 1, 2019, in response to the implementation of bail-in rules in Canada, Fitch downgraded its Support Ratings for Canadian D-SIBs to "5" from "2" and Support Ratings Floors to "No Floor" from "BBB-". Fitch's lowered outlook for sovereign support had no impact on the Issuer Default Ratings, Viability Ratings, or issue-level ratings for D-SIBs, including BMO. Fitch's ratings for BMO's senior debt and legacy senior debt are unchanged at AA-.

During fiscal 2019 there were no changes to ratings assigned by S&P, Moody's or DBRS.

Credit ratings are not recommendations to purchase, hold, or sell securities and do not address the market price or suitability of a specific security for a particular investor. Credit ratings may not reflect the potential impact of all risks on the value of securities. In addition, real or anticipated changes in the rating assigned to a security will generally affect the market value of that security. We cannot know for certain that a rating will remain in effect for any given period of time or that a rating agency will not revise or withdraw it entirely in the future.

The Bank paid fees to credit rating agencies to obtain its credit ratings. The Bank may also pay fees for other services from credit rating agencies in the ordinary course of business.

MARKET FOR SECURITIES

Trading Price and Volume

The outstanding common shares of the Bank are listed for trading on the Toronto Stock Exchange (TSX) and on the New York Stock Exchange (NYSE) under the trading symbol BMO. The outstanding preferred shares of the Bank set out below are listed on the TSX with the following trading symbols: BMO.PR.Q for the Class B Preferred Shares Series 25, BMO.PR.A for the Class B Preferred Shares Series 26, BMO.PR.S for the Class B Preferred Shares Series 27 (Non-Viability Contingent Capital (NVCC)), BMO.PR.T for the Class B Preferred Shares Series 29 (Non-Viability Contingent Capital (NVCC)), BMO.PR.W for the Class B Preferred Shares Series 31 (Non-Viability Contingent Capital (NVCC)), BMO.PR.Y for the Class B Preferred Shares Series 33 (Non-Viability Contingent Capital (NVCC)), BMO.PR.Z for the Class B Preferred Shares Series 35 (Non-Viability Contingent Capital (NVCC)), BMO.PR.B for the Class B Preferred Shares Series 38 (Non-Viability Contingent Capital (NVCC)), BMO.PR.C for the Class B Preferred Shares Series 40 (Non-Viability Contingent Capital (NVCC)), BMO.PR.D for the Class B Preferred Shares Series 42 (Non-Viability Contingent Capital (NVCC)), BMO.PR.E for the Class B Preferred Shares Series 44 (Non-Viability Contingent Capital (NVCC)) and BMO.PR.F for the Class B Preferred Shares Series 46 (Non-Viability Contingent Capital (NVCC)).

The following table sets out the reported high and low trading prices in Canadian dollars and the trading volumes of the common and preferred shares of Bank of Montreal on the TSX for the given periods. Prices are based on the reported data from the TSX Historical Data Access.

	BMO Common Shares	PR.Q Series 25	PR.A Series 26	PR.S Series 27	PR.T Series 29	PR.W Series 31	PR.Y Series 33	PR.Z Series 35	PR.B Series 38	PR.C Series 40	PR.D Series 42	PR.E Series 44	PR.F Series 46
November 2018													
- High Price ($)	100.04	23.25	24.38	23.20	22.68	22.60	24.01	24.80	25.68	25.34	25.11	25.20	n.a.
- Low Price ($)	96.58	22.75	23.20	20.23	19.99	20.05	21.40	24.32	25.00	24.14	23.25	23.00	n.a.
- Volume	29,686,330	150,965	23,594	264,252	131,404	160,330	78,336	50,345	1,115,264	149,915	422,356	450,363	n.a.
December 2018													
- High Price ($)	99.99	23.00	23.40	21.11	20.87	20.79	22.20	25.26	25.91	24.35	23.85	23.99	n.a.
- Low Price ($)	86.25	21.90	22.27	17.96	17.51	17.90	19.28	24.13	25.00	21.75	20.78	20.00	n.a.
- Volume	46,105,478	158,674	51,863	763,705	302,819	236,208	319,747	60,177	189,965	453,036	410,728	556,884	n.a.
January 2019													
- High Price ($)	97.73	23.50	23.51	21.07	20.65	20.56	22.35	25.09	25.80	24.35	23.76	24.15	n.a.
- Low Price ($)	87.91	22.50	23.16	18.85	18.52	18.50	20.86	24.25	25.19	22.25	22.00	21.92	n.a.
- Volume	38,870,575	131,955	24,212	279,274	392,621	92,609	146,758	90,054	626,109	428,541	242,825	259,108	n.a.
February 2019													
- High Price ($)	103.27	23.64	23.99	19.95	19.66	19.60	21.70	25.00	25.70	24.30	23.65	23.46	n.a.
- Low Price ($)	95.84	22.67	23.50	18.55	18.18	18.18	20.65	24.30	25.23	22.76	21.95	22.10	n.a.
- Volume	31,930,192	83,437	10,870	336,833	256,951	183,420	124,477	98,152	439,440	550,245	275,061	260,014	n.a.
March 2019													
- High Price ($)	104.60	23.80	24.17	19.96	19.36	19.19	21.44	25.47	26.04	24.48	23.30	23.51	n.a.
- Low Price ($)	99.77	23.30	23.90	18.70	17.92	17.90	20.00	24.80	25.47	23.31	22.73	22.00	n.a.
- Volume	39,863,725	226,084	22,625	145,743	432,484	97,268	167,709	117,172	230,040	144,910	305,003	468,903	n.a.
April 2019													
- High Price ($)	106.51	24.00	24.24	19.45	18.70	18.72	21.72	25.35	26.18	24.24	23.01	23.40	25.39
- Low Price ($)	100.27	23.37	23.88	18.89	18.01	17.99	20.69	24.62	25.82	23.60	22.16	22.25	25.05
- Volume	29,061,991	201,452	8,150	429,466	196,715	207,870	298,100	70,898	112,482	406,423	402,756	276,176	2,903,262
May 2019													
- High Price ($)	106.43	23.76	24.00	18.88	18.30	18.16	21.28	25.22	25.93	24.11	22.70	22.42	25.40
- Low Price ($)	97.45	23.44	23.60	17.52	16.82	16.80	19.15	24.60	25.27	22.32	21.18	20.68	24.80
- Volume	34,523,332	186,400	26,908	242,768	233,600	292,895	137,522	84,003	288,660	172,510	353,560	261,194	964,783
June 2019													
- High Price ($)	101.13	23.80	24.20	18.14	17.22	17.09	19.35	25.00	25.66	22.90	21.99	21.20	24.87
- Low Price ($)	97.83	23.12	23.86	17.01	16.12	15.96	18.35	24.66	25.16	21.73	20.94	20.36	24.10
- Volume	23,819,685	164,706	14,037	458,576	373,580	366,508	89,166	96,132	178,957	345,311	396,875	192,511	240,427
July 2019													
- High Price ($)	101.52	23.92	24.20	19.13	18.12	18.03	20.57	25.31	26.00	23.58	22.67	21.73	25.39
- Low Price ($)	98.09	23.50	23.65	17.89	16.89	16.76	19.28	24.99	25.54	22.56	21.75	20.80	24.80
- Volume	31,606,555	38,331	6,870	419,831	362,725	341,062	245,078	52,050	114,049	114,487	332,699	257,117	454,761
August 2019													
- High Price ($)	98.90	23.71	24.00	18.19	17.74	17.86	20.06	25.25	25.70	23.40	22.38	21.20	24.99
- Low Price ($)	88.24	23.26	23.56	16.42	15.58	15.32	17.33	24.12	24.21	20.35	20.21	19.06	23.25
- Volume	37,481,996	98,840	7,915	511,978	357,220	331,613	273,526	77,267	171,463	223,660	238,463	246,034	245,470
September 2019													
- High Price ($)	98.24	23.81	24.04	18.15	17.54	16.90	19.11	24.90	25.79	22.69	21.71	20.61	24.70
- Low Price ($)	89.66	23.52	23.74	17.40	16.46	16.02	18.11	24.40	24.51	21.06	20.22	19.35	23.41
- Volume	33,852,384	101,466	13,300	238,225	247,212	138,483	78,574	60,276	157,384	141,377	543,954	244,179	359,242
October 2019													
- High Price ($)	99.08	23.94	24.10	18.04	17.25	17.35	19.43	25.28	25.80	22.74	21.83	20.50	24.70
- Low Price ($)	94.64	23.46	23.78	17.26	16.58	16.22	18.25	24.62	25.21	22.01	20.90	19.40	24.02
- Volume	47,418,048	150,947	15,500	272,626	404,989	163,169	163,065	125,504	134,993	223,212	244,965	397,414	378,364

Prior Sales

From time to time, the Bank issues principal at risk notes, securities for which the amount payable at maturity is determined by reference to the price, value or level of an underlying interest such as a stock index, an exchange traded fund or a notional portfolio of equities or other securities. In addition, the Bank periodically issues subordinated debt and other equity instruments which are not listed or quoted on a marketplace. For information about the Bank's issuances of subordinated indebtedness and other equity instruments since October 31, 2018, see the "Subordinated Debt" and "Equity" sections on page 58 of our 2019 MD&A and Notes 15 and 16 of the 2019 Financial Statements, which page and Notes are incorporated herein by reference. Also refer to the Description of Other Equity Instruments – Subordinated Capital Notes section above.

DIRECTORS AND EXECUTIVE OFFICERS

Board of Directors

As at December 2, 2019, the following were directors of the Bank.

DIRECTOR NAME AND PRINCIPAL OCCUPATION	MUNICIPALITY OF RESIDENCE	DIRECTOR SINCE
Jan Babiak Corporate Director	Nashville, Tennessee USA	October 23, 2012
Sophie Brochu, C.M. President and Chief Executive Officer Énergir, a diversified energy company	Bromont, Québec Canada	March 22, 2011
Craig Broderick Corporate Director	Greenwich, Connecticut	August 27, 2018
George A. Cope, C.M. [1] President and Chief Executive Officer BCE and Bell Canada, communications companies	Toronto, Ontario Canada	July 25, 2006
Christine Edwards Capital Partner Winston & Strawn LLP, a law firm	Lake Forest, Illinois U.S.A.	August 1, 2010
Dr. Martin S. Eichenbaum Charles Moskos Professor of Economics Northwestern University	Glencoe, Illinois U.S.A.	March 31, 2015
Ronald H. Farmer Managing Director Mosaic Capital Partners, a management and holding company	Markham, Ontario Canada	November 25, 2003
David Harquail Chief Executive Officer Franco-Nevada Corporation, a royalty and streaming company	Toronto, Ontario	April 5, 2018
Linda S. Huber Chief Financial Officer and Treasurer MSCI Inc.	New York, New York U.S.A.	April 4, 2017
Eric R. La Flèche President and Chief Executive Officer Metro Inc., a food retailer and distributor	Montreal, Québec Canada	March 20, 2012
Lorraine Mitchelmore Corporate Director	Calgary, Alberta Canada	March 31, 2015
Philip S. Orsino, O.C., F.C.A. President and Chief Executive Officer Brightwaters Strategic Solutions Inc., a consulting and advisory services company	Toronto, Ontario Canada	July 1, 1999
J. Robert S. Prichard, O.C., O.Ont., FRSC[1] Chair of the Board, Bank of Montreal Non-Executive Chair, Torys LLP, a law firm	Toronto, Ontario Canada	July 18, 2000
Darryl White Chief Executive Officer BMO Financial Group	Toronto, Ontario Canada	May 24, 2017
Don M. Wilson III Corporate Director	Vero Beach, Florida U.S.A	March 28, 2008

1 On November 1, 2019, BMO announced its intention to appoint George A. Cope as Chair of the Board of Bank of Montreal effective upon his re-election as an independent Director of the Bank at the Bank's March 31, 2020 Annual Meeting of Shareholders. On June 28, 2019, BCE Inc. announced that Mr. Cope would retire as CEO of BCE on January 5, 2020.

A director of the Bank holds office until the next annual meeting of shareholders or until a successor is elected or appointed, unless their seat is vacated before they can do so.

Since November 1, 2014, the directors have held the principal occupations above, or other positions with the same, predecessor, or associated firms except for Mr. Broderick who before January 2018 was Chief Risk Officer of Goldman Sachs & Co., Ms. Huber who before July 2018 was the Executive Vice-President and Chief Financial Officer of Moody's Corporation, Ms. Mitchelmore, who before July 2018 was the President and Chief Executive Officer of Enlighten Innovations Inc. and before January 2016, was the President, Canada Country Chair & Executive Vice President, Heavy Oil, Shell Canada Limited and Mr. White who, from November 2016 until October 2017 was Chief Operating Officer of the Bank and, from November 2014 until October 2016, was Group Head, BMO Capital Markets.

Board Committee Members

There are four committees of the Board of Directors made up of the following members:

Audit and Conduct Review Committee: Jan Babiak (Chair), Sophie Brochu, Dr. Martin S. Eichenbaum, David Harquail, Linda S. Huber and Philip Orsino.

Governance and Nominating Committee: Christine Edwards (Chair), Jan Babiak, George Cope, Ronald Farmer, Robert Prichard, and Don Wilson III.

Human Resources Committee: Ronald Farmer (Chair), George Cope, Christine Edwards, Eric La Flèche, Lorraine Mitchelmore, Robert Prichard and Don Wilson III.

Risk Review Committee: Don Wilson III (Chair), Craig Broderick, Christine Edwards, Dr. Martin S. Eichenbaum, Ronald Farmer, Linda Huber, Lorraine Mitchelmore, Philip Orsino and Robert Prichard.

Executive Officers

At December 2, 2019, the following were executive officers of the Bank:

EXECUTIVE OFFICER NAME	PRINCIPAL OCCUPATION	MUNICIPALITY OF RESIDENCE
Darryl White	Chief Executive Officer	Toronto, Ontario Canada
Dan Barclay	Group Head, BMO Capital Markets	Toronto, Ontario Canada
David R. Casper	Chief Executive Officer, BMO Financial Corp. and Group Head, North American Commercial Banking	Northbrook, Illinois U.S.A.
Patrick Cronin	Chief Risk Officer	Toronto, Ontario Canada
Simon A. Fish	General Counsel	Toronto, Ontario Canada
Thomas E. Flynn	Chief Financial Officer	Toronto, Ontario Canada
Cameron Fowler	President, North American Personal and Business Banking	Toronto, Ontario Canada
Ernie Johannson	Group Head, North American Personal Banking and U.S. Business Banking	Toronto, Ontario Canada
Mona Malone	Head, People & Culture & Chief Human Resources Officer	Toronto, Ontario Canada
Catherine Roche	Head, Marketing and Strategy	Toronto, Ontario Canada
Joanna Rotenberg	Group Head, BMO Wealth Management	Toronto, Ontario Canada
Luke Seabrook[1]	Group Head, Enterprise Initiatives, Infrastructure & Innovation	Toronto, Ontario Canada
Steve Tennyson	Chief Technology Officer & Operations Officer	Toronto, Ontario Canada

[1] On personal leave as of June 1, 2019.

All the executive officers named above have held their present positions or other senior positions with Bank of Montreal or its subsidiaries for the past five years, except for Catherine Roche who, prior to May 2016, was Partner and Managing Director at the Boston Consulting Group.

Shareholdings of Directors and Executive Officers

To the knowledge of the Bank, as at October 31, 2019, the directors and executive officers of Bank of Montreal, as a group, beneficially owned, directly or indirectly, or exercised control or direction over an aggregate of 233,729 common shares of Bank of Montreal, representing less than 0.1% of Bank of Montreal's issued and outstanding common shares.

Additional Disclosure for Directors and Executive Officers

To the Bank's knowledge, no director or executive officer of the Bank:

(a) is, as at October 31, 2019, or was, within the 10 years before, a director, chief executive officer or chief financial officer of any company (including the Bank):

(i) subject to an order (including a cease trade order or an order similar to a cease trade order or an order that denied the relevant company access to any exemption under securities legislation for a period of more than 30 consecutive days), that was issued while the director or executive officer was acting in the capacity as director, chief executive officer or chief financial officer; or

(ii) subject to an order (including a cease trade order or an order similar to a cease trade order or an order that denied the relevant company access to any exemption under securities legislation for a period of more than 30 consecutive days) that was issued after the director or executive officer ceased to be a director, chief executive officer or chief financial officer and which resulted from an event that occurred while that person was acting in the capacity as director, chief executive officer or chief financial officer;

(b) is, as at October 31, 2019, or has been, within the 10 years before, a director or executive officer of any company (including the Bank), that while that person was acting in that capacity or within a year of the person ceasing to act in that capacity, became bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency or was subject to or instituted any proceedings, arrangement or compromise with creditors or had a receiver, receiver manager or trustee appointed to hold its assets; or

(c) has, within the 10 years before October 31, 2019, become bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency, or become subject to or instituted any proceedings, arrangement or compromise with creditors, or had a receiver, receiver manager or trustee appointed to hold the assets of the director or executive officer.

To the Bank's knowledge, none of our directors or executive officers have been subject to: (a) any penalties or sanctions imposed by a court relating to securities legislation or by a securities regulatory authority or has entered into a settlement agreement with a securities regulatory authority; or (b) any other penalties or sanctions imposed by a court or regulatory body, that would likely be considered important to a reasonable investor in making an investment decision.

LEGAL PROCEEDINGS AND REGULATORY ACTIONS

A description of certain legal proceedings to which the Bank is a party appears under the heading "Legal Proceedings" in Note 24 of the 2019 Financial Statements.

In the ordinary course of business, the Bank and its subsidiaries may be assessed fees or fines by a Canadian securities regulatory authority in relation to administrative matters, including late filings or reporting, which may be considered penalties or sanctions pursuant to Canadian securities regulations but which are not, individually or in the aggregate, material to the Bank. In addition, the Bank and its subsidiaries are subject to numerous regulatory authorities around the world, and accordingly fees, administrative penalties, settlement agreements and sanctions may be categorized differently by certain regulators. Any such penalties imposed under these categories against the Bank and its subsidiaries in the 2019 fiscal year, however, are not material, nor would they likely be considered important to a reasonable investor in making an investment decision. Since November 1, 2018, the Bank and its subsidiaries have not entered into any material settlement agreements with a court relating to securities legislation or with a securities regulatory authority.

TRANSFER AGENT AND REGISTRAR

The registrar and transfer agent for the Bank's common and preferred shares is Computershare Trust Company of Canada. This agent has transfer facilities in Montreal, Toronto, Calgary and Vancouver. In addition, Computershare Investor Services PLC and Computershare Trust Company, N.A. serve as transfer agents and registrars for the common shares in Bristol, United Kingdom and Canton, Maine, respectively.

INTERESTS OF EXPERTS

The Bank's Shareholders' Auditors are KPMG LLP. KPMG LLP have confirmed that they are independent with respect to the Bank within the meaning of the relevant rules and related interpretations prescribed by the relevant professional bodies in Canada and any applicable legislation or regulation, and that they are independent accountants with respect to the Bank under all relevant United States professional and regulatory standards.

AUDIT AND CONDUCT REVIEW COMMITTEE INFORMATION

Composition of the Audit and Conduct Review Committee

The following six members make up the Bank's Audit and Conduct Review Committee: Jan Babiak (Chair), Sophie Brochu, Dr. Martin S. Eichenbaum, David Harquail, Linda S. Huber and Philip Orsino. The Committee's responsibilities and duties are set out in the Committee's charter. We include the charter in Appendix I to this Annual Information Form.

The Board of Directors has determined that the members of the Audit and Conduct Review Committee reflect a high level of financial literacy and expertise. Each member of the Audit and Conduct Review Committee is "independent" and "financially literate" according to the definitions under Canadian and United States securities laws and the NYSE corporate governance listing standards, and each of Ms. Babiak, Ms. Huber and Mr. Orsino is an "Audit Committee Financial Expert" as defined under United States securities laws. The Board bases these decisions on each Committee member's education and experience. The following paragraphs describe the relevant education and experience of each Committee member:

Ms. Babiak holds a B.B.A. in accounting from the University of Oklahoma and an M.B.A. from Baldwin Wallace University. She is a Chartered Accountant in the United Kingdom and a Certified Public Accountant in the United States. Ms. Babiak serves on the boards of other public and private companies and was formerly a Managing Partner at Ernst & Young LLP.

Ms. Brochu is a graduate in economics from Université Laval and is the President and Chief Executive Officer of Énergir (formerly Gaz Metro), part of Valener Inc., a publicly traded company. Ms. Brochu also serves on the board of another Canadian public company. Ms. Brochu is a member of the Order of Canada.

Dr. Eichenbaum received a B.Comm from McGill University and a Doctorate in Economics from the University of Minnesota. He served on the advisory council of the Global Markets Institute at Goldman Sachs. He completed a four-year term as co-editor of the American Economic Review in 2015. He has served as a consultant to the Federal Reserve Banks in Atlanta and Chicago and the International Monetary Fund.

Mr. Harquail is Chief Executive Officer of Franco-Nevada Corporation, a publicly traded company. He is also the current Chair of the World Gold Council which works to stimulate the demand for gold on behalf of the leading gold producers. Mr. Harquail has over 35 years of experience on public and non-profit boards and task force advisories. He is currently active on the United Way Toronto & York Region Campaign Cabinet. Mr. Harquail holds a B.A.Sc. in Geological Engineering from the University of Toronto, an MBA from McGill University and is a registered Professional Engineer in Ontario. He is also a major benefactor of the School of Earth Sciences and its Mineral Exploration Research Centre (MERC) at Laurentian University in Sudbury as well as the Centre for Neuromodulation at Sunnybrook Health Sciences Centre in Toronto.

Ms. Huber is Chief Finance Officer and Treasurer of MSCI. Before joining MSCI in 2019, she was Executive Vice President and Chief Financial Officer of Moody's Corporation, with executive responsibility for the corporation's global finance, information technology, communications and corporate services functions, as well as the The Moody's Foundation. Before joining Moody's in 2005, Ms. Huber served in several senior roles in financial services, including Executive Vice President and Chief Financial Officer at U.S. Trust Company, a subsidiary of Charles Schwab & Company, Inc.; Managing Director at Freeman & Co.; Vice President of Corporate Strategy and Development and Vice President and Assistant Treasurer at PepsiCo. Ms. Huber holds an M.B.A. from the Stanford Graduate School of Business and a B.S. (with high honors) in business and economics from Lehigh University.

Mr. Orsino has a B.A. from University of Toronto and is a Fellow of the Chartered Professional Accountants of Canada. He is the President and Chief Executive Officer of Brightwaters Strategic Solutions Inc., a consulting and advisory services company. He was formerly the President and Chief Executive Officer of Jeld-Wen Inc., a global integrated manufacturer of building products until April 2014, and was also formerly the President and Chief Executive Officer of Masonite International Corporation until October 2005, which was listed on the TSX and NYSE. Mr. Orsino was appointed an Officer of the Order of Canada in 2004 and received the 2003 Canada's Outstanding CEO of the Year Award.

Shareholders' Auditors Pre-Approval Policies and Procedures and Fees

For information about the fees paid to KPMG LLP, in the years ended October 31, 2019 and 2018, and the related pre-approval policies and procedures, see page 112 of the 2019 MD&A, which we incorporate herein by reference.

ADDITIONAL INFORMATION

You can find additional information about Bank of Montreal on the Bank's web site at www.bmo.com/investorrelations, on SEDAR (System for Electronic Document Analysis and Retrieval) at www.sedar.com, and on the SEC's web site at www.sec.gov/edgar.

Our proxy circulars contain more information, including directors' and executive officers' compensation, debt, and shareholdings under equity compensation plans. The most recent circular is dated February 7, 2019, in connection with the Bank's Annual Meeting of Shareholders on April 2, 2019 (the 2019 Proxy Circular). We expect the next proxy circular to be dated as of February 5, 2020, in connection with the Bank's Annual Meeting of Shareholders on March 31, 2020 (the 2020 Proxy Circular).

The 2019 Financial Statements and the 2019 MD&A for the fiscal year ended October 31, 2019 provide additional financial information.

You can get copies of this Annual Information Form, as well as copies of the 2019 Financial Statements, the 2019 MD&A, the Bank's 2019 Annual Report, and the 2019 Proxy Circular (after we have mailed these documents to shareholders) by contacting us at:

Bank of Montreal
Corporate Secretary's Department
100 King Street West
1 First Canadian Place, 21st Floor
Toronto, Ontario
Canada M5X 1A1

Telephone: 416 867 6785
Fax: 416 867 6793
Email: corp.secretary@bmo.com

APPENDIX I

BANK OF MONTREAL

AUDIT AND CONDUCT REVIEW COMMITTEE CHARTER

The Committee is responsible for assisting the Board in fulfilling its oversight responsibilities for the integrity of the Bank's financial reporting; the effectiveness of the Bank's internal controls; the independent auditor's qualifications, independence and performance; the Bank's compliance with legal and regulatory requirements; transactions involving related parties; conflicts of interest and confidential information; and standards of business conduct and ethics.

In addition, the Committee will also act as the audit and conduct review committee of Designated Subsidiaries.

PART I
MANDATE

The Committee will, either directly or through one or more sub-committees, perform the duties set out in this Charter and such other duties as may be necessary or appropriate including:

1.1 Financial Reporting

1.1.1 reviewing, together with management and the Shareholders' Auditors:

(i) the appropriateness of, and any changes to, the Bank's accounting and financial reporting;

(ii) the accounting treatment, presentation and impact of significant risks and uncertainties;

(iii) any material relevant proposed changes in accounting standards and securities policies or regulations;

(iv) key estimates and judgments of management;

(v) significant auditing and financial reporting issues and the method of resolution; and

(vi) tax matters that are material to the financial statements.

1.1.2 reviewing, together with management and the Shareholders' Auditors, and approving or, if appropriate, recommending to the Board:

(i) prior to Board review or public disclosure, the audited annual and unaudited interim financial statements and related management's discussion and analysis, the annual information form, and any other financial or non-financial (as considered appropriate) information in material public disclosure documents (other than earnings coverage ratios, capitalization tables and summary financial information derived from any of the foregoing); and

(ii) such returns to OSFI requiring review under the *Bank Act* (Canada);

1.1.3 seeking confirmation from management that the Bank's annual and interim financial filings, fairly present in all material respects the financial condition, results of operations and cash flows of the Bank as of the relevant date and for the relevant periods, prior to recommending to the Board for approval;

1.1.4 reviewing the types of information to be provided and types of presentations to be made to rating agencies and analysts (if any) relating to earnings guidance, and

1.1.5 satisfying itself that adequate procedures are in place for the review of financial information extracted or derived from the Bank's financial statements that is to be publicly disclosed and has not otherwise been reviewed by the Committee.

1.2 Internal Controls

1.2.1 reviewing and approving the Bank's Internal Control Corporate Policy and overseeing the design, implementation, maintenance and effectiveness of the Bank's internal controls, including those related to the prevention, identification and detection of fraud; and reviewing and monitoring other Bank Corporate Policies as the Committee considers appropriate;

1.2.2 requiring management to design, implement, and maintain appropriate internal control procedures;

1.2.3 reviewing management's certifications and assessment of the Bank's internal control over financial reporting and the associated Shareholders' Auditors' report;

1.2.4 reviewing reports on the effectiveness of disclosure controls and procedures;

1.2.5 reviewing and discussing reports from management and the Chief Auditor as to the identification of any significant deficiencies or material weaknesses in the design or operation of the Bank's internal control, risk management, and governance systems and processes, including controls over financial reporting; reviewing any recommendations, as well as remediation plans, including the status of remediation plans implemented by management to rectify any such deficiencies identified; and discussing whether similar or related deficiencies may exist elsewhere in the Bank; and

1.2.6 reviewing as required, correspondence relating to inquiries or investigations by regulators concerning internal controls.

1.3 Internal Audit Function

1.3.1 overseeing and reviewing at least annually the overall internal audit function, its resources and independence, and reviewing and approving the annual audit plan, including assurance that the audit plan is risk-based and encompasses appropriate audit coverage, audit cycle requirements, and provides a basis for reliance by the Committee;

1.3.2 reviewing and approving the Bank's Corporate Audit Mandate setting out the terms of reference of the internal audit function and the Chief Auditor;

1.3.3 reviewing, and jointly with the Human Resources Committee, recommending to the Board, the appointment,re-assignment or dismissal of the Chief Auditor, as required; and annually assessing the effectiveness of the Chief Auditor, in conjunction with the Human Resources Committee, and reviewing and approving his or her mandate;

1.3.4 annually reviewing and approving the organizational structure, budget, resource plan and strategic priorities of the Corporate Audit function and assessing its effectiveness having regard to its role as an independent control function;

1.3.5 reviewing the results of periodic independent reviews of the Corporate Audit function;

1.3.6 reviewing the quarterly report of the Chief Auditor, together with management's response;

1.3.7 reviewing any other reports submitted to the Committee by the Chief Auditor; and

1.3.8 communicating directly with the Chief Auditor and participating in his or her initial and ongoing engagement and evaluation.

1.4 Shareholders' Auditors

1.4.1 reviewing and evaluating the quality, independence, objectivity and professional skepticism of the Shareholders' Auditors and the lead auditor;

1.4.2 annually reviewing the performance of the Shareholders' Auditors including assessing their effectiveness and quality of service, to facilitate an informed recommendation on re-appointment of the Shareholders' Auditors and, on a periodic basis, performing a comprehensive review of the performance of the Shareholders' Auditors over multiple years to assess the audit firm, its independence and application of professional skepticism;

1.4.3 reviewing Shareholders' Auditors' audit findings reports with the Shareholders' Auditors, the Chief Auditor, and management including:

(i) the quality of the financial statements;

(ii) the Shareholders' Auditors' evaluation of the Bank's internal control over financial reporting;

(iii) the degree of cooperation the Shareholders' Auditors received from management; any problems or difficulties experienced by the Shareholders' Auditors in conducting the audit, including management's responses in respect thereof, any restrictions imposed by management or significant accounting issues on which there was a disagreement with management;

(iv) any concerns expressed by the Shareholders' Auditors related to accounting and auditing matters, including the risk of material misstatements;

(v) the appropriateness and quality of all critical accounting policies and practices used by the Bank and of the selection of new policies and practices; and

(vi) any material judgments that have been discussed with management, the ramifications of their use and the Shareholders' Auditors' preferred treatment, as well as any other material communications with management, and advising the Board of these matters as considered appropriate;

1.4.4 overseeing the resolution of any disagreements between the Shareholders' Auditors and management;

1.4.5 reviewing all material correspondence between the Shareholders' Auditors and management related to audit findings;

1.4.6 reviewing the Shareholders' Auditors' report under Section 328 of the *Bank Act* (Canada);

1.4.7 obtaining and reviewing a report from the Shareholders' Auditors at least annually addressing: (i) the Shareholders' Auditors' internal quality control procedures; (ii) any material issues raised by the most recent internal quality-control review or peer review of the Shareholders' Auditors, or by any inquiry or investigation by governmental or professional authorities including the Canadian Public Accountability Board and the Public Company Accounting Oversight Board, within the preceding five years, respecting one or more audits carried out by the Shareholders' Auditors; (iii) any steps taken to deal with any such issues; (iv) the Shareholders' Auditors' internal procedures to ensure independence; and (v) the delineation of all relationships between the Shareholders' Auditors and the Bank;

1.4.8 reviewing any notices required to be communicated/delivered by the Shareholders' Auditors to the Committee, including those required by the Canadian Public Accountability Board, Office of the Superintendent of Financial Institutions, and the U.S. Public Accounting Oversight Board, and taking such action and making recommendations to the Board as appropriate in connection therewith;

1.4.9 reviewing the terms of the Shareholders' Auditors' engagement, the annual audit plan, including assurance that the audit plan is risk-based and appropriately addresses the risks of material misstatement, as well as any change in the materiality level used by the Shareholders' Auditors, and total fees payable and making recommendations to the Board as appropriate;

1.4.10 reviewing an annual written confirmation of the Shareholders' Auditors that they are independent in accordance with applicable independence rules and report directly to the Committee, as representatives of the Bank's shareholders;

1.4.11 reviewing and recommending to the Board the approval of the Bank's Auditor Independence Standard;

1.4.12 pre-approving audit services and permitted non-audit services by the Shareholders' Auditors in accordance with the Bank's Auditor Independence Standard; and

1.4.13 reviewing and approving the Bank's policies for hiring current or former partners or employees of the current or former Shareholders' Auditors and reviewing the Shareholders' Auditors' partner rotation.

1.5 Finance, Legal & Regulatory Compliance Functions

1.5.1 reviewing and, jointly with the Human Resources Committee, recommending to the Board the respective appointment,re-assignment or dismissal of the Chief Financial Officer, the General Counsel and the Chief Compliance Officer, as required; and annually assessing, in conjunction with the Human Resources Committee, the effectiveness of the Chief Financial Officer, the General Counsel and the Chief Compliance Officer, and reviewing and approving their respective mandates;

1.5.2 annually reviewing and approving the organizational structure, budget, resource plan and strategic priorities of the finance and legal & compliance, functions and assessing their effectiveness having regard to their respective roles as independent control functions;

1.5.3 reviewing the results of periodic independent reviews of the finance and compliance functions; and

1.5.4 reviewing and overseeing the status of remediation plans implemented by management to rectify any deficiencies identified.

1.6 Financial Risk Management

1.6.1 monitoring the Bank's major financial risk exposures and the steps management has taken to monitor and control such exposures; and

1.6.2 reviewing investments or transactions that could adversely affect the wellbeing of the Bank which the Shareholders' Auditors or any officer of the Bank may bring to the Committee's attention.

1.7 Legal & Regulatory Compliance

1.7.1 reviewing and approving the Legal, Regulatory and Reputation Risk Corporate Policy;

1.7.2 reviewing, with the Bank's General Counsel and the Chief Compliance Officer, the adequacy and effectiveness of the Bank's enterprise compliance program and the results of related monitoring and oversight activities;

1.7.3 reviewing an annual report on significant litigation matters and reviewing quarterly any material developments;

1.7.4 reviewing and approving the Bank's Anti-Money Laundering and Anti-Terrorist Financing Program framework, including key policies and any significant amendments;

1.7.5 meeting, at least annually, with the Chief Anti-Money Laundering Officer and the Chief Auditor to review their respective reports on the Anti-Money Laundering and Anti-Terrorist Financing Program;

1.7.6 meeting annually with representatives of OSFI as a Committee or as part of the Board, to receive OSFI's report on the results of its annual examination of the Bank; and

1.7.7 reviewing any other relevant reports of regulators to the Bank and any required action by management.

1.8 Business Conduct and Sustainability

1.8.1 reviewing and recommending for Board approval BMO's Code of Conduct;

1.8.2 approving any exceptions from BMO's Code of Conduct, as appropriate;

1.8.3 assessing the effectiveness of the Bank's governance frameworks aimed at (i) fostering an ethical culture, (ii) encouraging compliance with both the letter and spirit of applicable laws, regulations and consumer protections, and (iii) reducing misconduct;

1.8.4 reviewing procedures for the receipt, retention and treatment of complaints received by the Bank regarding accounting, internal control over financial reporting or auditing matters; and the confidential anonymous submission of concerns by employees of the Bank regarding questionable accounting or auditing matters;

1.8.5 reviewing reports relating to employee and/or customer concerns received through the Office of the Ombudsman;

1.8.6 approving BMO's environmental social and governance report and Public Accountability Statement prior to disclosure;

1.8.7 reviewing any "up the ladder" report received by the Committee in accordance with written procedures adopted by the Committee. The Bank's "up the ladder" procedure, adopted by the Bank's Legal Group, sets out reporting protocols that comply with s.307 of the *Sarbanes Oxley Act of 2002* for the Bank's lawyers in the event of a material violation of certain laws;

1.8.8 determining the necessity of, and overseeing any, investigations in connection with any “up the ladder” report; and

1.8.9 assessing the effectiveness of the Bank’s governance of sustainability issues.

1.9 Self Dealing

1.9.1 overseeing the effectiveness of self-dealing identification and procedures established by management for related and affected parties and monitoring compliance with applicable laws;

1.9.2 reviewing and approving as considered appropriate: (i) practices to identify related party transactions that could have a material effect on the stability or solvency of the Bank and; (ii) the measurement criteria and benchmarks for permitted related party transactions;

1.9.3 reviewing and, if advisable, approving the terms and conditions of related party loans that exceed established benchmarks; and

1.9.4 reviewing reports to the Committee on related and affected party transactions.

1.10 Conflicts of Interest and Confidential Information

1.10.1 overseeing the Bank’s procedures to identify, resolve and, where possible, reduce incidences of, conflicts of interest;

1.10.2 overseeing the Bank’s procedures to restrict the use and disclosure of confidential information;

1.10.3 reviewing and approving the Bank’s Disclosure Corporate Policy;

1.10.4 reviewing reports to the Committee relating to the use and disclosure of customer and employee information; and

1.10.5 overseeing the Bank’s compliance with privacy legislation.

1.11 Consumer Protection Measures and Complaints

1.11.1 overseeing the Bank’s procedures to make disclosure of information to Bank customers as required by the *Bank Act* (Canada), the *Trust and Loan Companies Act* (Canada), and the *Insurance Companies Act* (Canada);

1.11.2 overseeing the Bank’s procedures for dealing with complaints;

1.11.3 reviewing the annual report of the Office of the Ombudsman on complaint resolution;

1.11.4 overseeing the Bank’s procedures for complying with obligations imposed by the Financial Consumer Agency of Canada and applicable U.S. regulatory agencies; and

1.11.5 reviewing reports to the Committee relating to disclosure of information to customers and complaints.

1.12 Aircraft and Chief Executive Officer Expense Accounts

1.12.1 reviewing and approving, on an annual basis, the report on Bank aircraft and Chief Executive Officer expense accounts; and

1.12.2 the chair of the Committee will review, on a quarterly basis, the report on Chief Executive Officer expense accounts.

PART II

COMPOSITION

2.1 Members

2.1.1 The Committee will consist of three or more directors as determined by the Board. At least a majority of the members of the Committee will not be "affiliated" with the Bank for the purposes of the Bank Act (Canada). Each member of the Committee will be: (i) a director who is not an officer or employee of the Bank or an affiliate of the Bank; and (ii) "independent" for the purposes of applicable Canadian and United States securities laws and the New York Stock Exchange Rules.

2.1.2 Committee members will be Financially Literate or become so within a reasonable period after appointment to the Committee. At least one Committee member will qualify as an Audit Committee Financial Expert. Committee members will not serve on more than three public company audit committees without the approval of the Board.

2.1.3 The Board will, having considered the recommendation of the Governance and Nominating Committee, appoint the members of the Committee and the chair of the Committee annually following the meeting of the shareholders at which directors are elected each year. The Board may appoint a member to fill a vacancy which occurs in the Committee between annual elections of directors and increase the number of Committee members as it determines appropriate. If a member of the Committee becomes "affiliated" with the Bank for the purposes of the *Bank Act* (Canada), the member may continue as a member of the Committee with the approval of the Governance and Nominating Committee, in consultation with the Bank's General Counsel. Any member of the Committee may be removed or replaced at any time by the Board.

2.1.4 In addition to any orientation provided by the Governance and Nominating Committee, the chair of the Committee will provide orientation to new members of the Committee with respect to their duties and responsibilities as members of the Committee.

2.1.5 The Committee may invite other directors to attend Committee meetings or otherwise provide input as needed to acquire additional specific skills as required to carry out its mandate.

PART III

COMMITTEE PROCEDURE

3.1 Meetings

3.1.1 The Committee will meet as frequently as it determines necessary but not less than once each quarter. Meetings may be called by the Chair of the Board, the chair of the Committee or any two members of the Committee. The chair of the Committee must call a meeting when requested to do so by any member of the Committee, the Shareholders' Auditors, the Chief Auditor, the Chair of the Board, the Chief Executive Officer, the Chief Financial Officer or the General Counsel

3.1.2 Notice of the time and place of each meeting of the Committee, other than *ad hoc* meetings, will be given to each member of the Committee and the Shareholders' Auditors, not less than 48 hours before the time when the meeting is to be held. A quorum of the Committee will be a majority of its members. The powers of the Committee may be exercised at a meeting at which a quorum of the Committee is present in person or by telephone or other electronic means or by a resolution signed by all members entitled to vote on that resolution at a meeting of the Committee. Each member is entitled to one vote in Committee proceedings.

3.1.3 Notice of the time and place of *ad hoc* meetings will be given to each member not less than two hours before the time when the meeting is to be held.

3.1.4 The chair of the Committee will preside at all meetings of the Committee at which he or she is present and will, in consultation with the Chief Financial Officer, the Chief Auditor, the General Counsel and the Shareholders' Auditors, develop the agenda for each Committee meeting. The agenda for each meeting of the Committee, other than *ad hoc* meetings, will be delivered together with such other materials as the chair determines necessary, to each member of the Committee at least 48 hours prior to the meeting. The chair will designate from time to time a person who may be, but need not be, a member of the Committee, to be secretary of the Committee. Minutes will be kept of all meetings of the Committee and will be maintained by the Bank's Corporate Secretary.

3.1.5 The procedure at meetings is to be determined by the Committee unless otherwise determined by the By-Laws of the Bank, by a resolution of the Board or by this Charter.

3.1.6 The Committee will meet at least quarterly in separate private sessions with each of the Shareholders' Auditors and the Chief Auditor, and as appropriate with management including the Chief Financial Officer, the General Counsel, the Chief Compliance Officer and the Chief Anti-Money Laundering Officer.

3.1.7 The Committee will meet at the end of each meeting with only members of the Committee present.

3.1.8 The Committee may invite any director, officer or employee of the Bank or the Bank's counsel or the Shareholders' Auditors or any other person, as appropriate, to attend meetings of the Committee to assist in the discussion and examination of the matters under consideration by the Committee. The Shareholders' Auditors will, at the expense of the Bank, be entitled to attend and be heard at any meeting of the Committee.

3.2 Reports

3.2.1 The Committee will report the proceedings of each meeting and all recommendations made by the Committee at such meeting to the Board at the Board's next meeting. The Committee will make such recommendations to the Board as it may deem appropriate and will have such decision-making authority as the Board may determine from time to time. The Committee will approve the report of the Committee to be included in the Bank's Management Proxy Circular and such other reports relating to the activities of the Committee as may be required by the Bank or the Board from time to time. In addition, the Committee will prepare and submit to the Board for its review and approval the report required to be submitted by the Board to OSFI within 90 days after the financial year-end of the Bank concerning the activities of the Committee during the year in carrying out its conduct reviewresponsibilities.

3.3 Access to Management and Outside Advisors and Continuing Education

3.3.1 The Committee will have full, free and unrestricted access to management and employees, the Chief Auditor and the Shareholders' Auditors. The Committee has the authority to engage independent legal counsel, consultants or other advisors, with respect to any issue or to assist it in fulfilling its responsibilities without consulting or obtaining the approval of any officer of the Bank and the Bank will provide appropriate funding, as determined by the Committee, for the payment of: compensation to the Shareholders' Auditors engaged for the purpose of preparing or issuing an auditor's report or performing the audit, review or attest services for the Bank; compensation to any advisors employed by the Committee; and ordinary administrative expenses of the Committee that are necessary or appropriate in carrying out its duties.

3.3.2 The Committee will have access to continuing education programs to assist the Committee in fulfilling its responsibilities and the Bank will provide appropriate funding for such programs.

3.4 Annual Review and Assessment

3.4.1 The Committee will ensure that an annual review and assessment of the Committee's performance and effectiveness, including a review of its compliance with this Charter, will be conducted in accordance with the process developed by the Board's Governance and Nominating Committee and approved by the Board. The results thereof will be reported in accordance with the process established by the Board's Governance and Nominating Committee and approved by the Board.

3.4.2 The Committee will review and assess the adequacy of this Charter on an annual basis taking into account all legislative and regulatory requirements applicable to the Committee as well as any best practice guidelines recommended by regulators or stock exchanges with whom the Bank has a reporting relationship and, if appropriate, will recommend changes to the Board's Governance and Nominating Committee.

3.5 Definitions

"**Audit Committee Financial Expert**" means a person who has the following attributes:

(i) an understanding of generally accepted accounting principles and financial statements;

(ii) the ability to assess the general application of such principles in connection with the accounting for estimates, accruals and reserves;

(iii) experience preparing, auditing, analyzing or evaluating financial statements that present a breadth and level of complexity of accounting issues that are generally comparable to the breadth and complexity of issues that can reasonably be expected to be raised by the Bank's financial statements, or experience actively supervising one or more persons engaged in such activities;

(iv) an understanding of internal control over financial reporting; and

(v) an understanding of audit committee functions, acquired through any one or more of the following:

a) education and experience as a principal financial officer, principal accounting officer, controller, public accountant or auditor or experience in one or more positions that involve the performance of similar functions;

b) experience actively supervising a principal financial officer, principal accounting officer, controller, public accountant, auditor or person performing similar functions;

c) experience overseeing or assessing the performance of companies or public accountants with respect to the preparation, auditing or evaluation of financial statements; or

d) other relevant experience.

"Auditor Independence Standard" means the Bank's Auditor Independence Standard that provides guidance for engaging the Shareholders' Auditors to perform audit and permitted non-audit services for the Bank, its subsidiaries and material entities over which the Bank has significant influence.

"Bank" means Bank of Montreal and as the context requires, subsidiaries of the Bank.

"Board" means the Board of Directors of Bank of Montreal.

"Committee" means the Audit and Conduct Review Committee of the Board of Directors of Bank of Montreal.

"Chief Anti-Money Laundering Officer" means the Bank's officer appointed as Chief Anti-Money Laundering Officer.

"Designated Subsidiary" means as requested by the Board, those subsidiaries of the Bank for which the Committee will act as audit and conduct review committee.

"Financially Literate" means the ability to read and understand a set of financial statements that present a breadth and level of complexity of accounting issues that are generally comparable to the breadth and complexity of the issues that can reasonably be expected to be raised by the Bank's financial statements.

"OSFI" means the Office of the Superintendent of Financial Institutions.

"Shareholders' Auditors" mean the independent financial statement auditors of the Bank.

APPENDIX II

CREDIT RATING CATEGORIES

(a) Standard & Poor's ("S&P")

S&P has different rating scales for short-term debt, long-term debt and preferred shares. S&P short-term issue credit ratings are generally assigned to those obligations considered short-term in the relevant market. Short-term ratings are also used to indicate the creditworthiness of an obligor with respect to put features on long-term obligations. A short-term obligation rated A-1 indicates S&P's view that the Bank's capacity to meet its financial commitments on these obligations is strong.

S&P long-term issue credit ratings are based, in varying degrees, on the following considerations: likelihood of payment—capacity and willingness of the obligor to meet its financial commitment on a financial obligation in accordance with the terms of the obligation; nature of and provisions of the financial obligation; and protection afforded by, and relative position of, the financial obligation in the event of bankruptcy, reorganization, or other arrangement under the laws of bankruptcy and other laws affecting creditors' rights. A rating in the 'A' category means the obligation is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than obligations in higher-rated categories, however, the obligor's capacity to meet its financial commitment on the obligation is still strong. An obligation rated in the BBB category indicates that the obligation exhibits adequate protection parameters, however, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity of the obligor to meet its financial commitment on the obligation. Ratings from AA to CCC may be modified by the addition of a plus (+) or minus (–) sign to show relative standing within the major rating categories.

The S&P preferred share rating on the Canadian scale is a forward-looking opinion about the creditworthiness of an obligor with respect to a specific preferred share obligation issued in the Canadian market, relative to preferred shares issued by other issuers in the Canadian market. The Canadian scale rating is fully determined by the applicable global scale rating, and there are no additional analytical criteria associated with the determination of ratings on the Canadian scale.

A rating outlook assesses the potential direction of a long-term credit rating over the intermediate term (typically six months to two years). In determining a rating outlook, consideration is given to any changes in the economic and/or fundamental business conditions. An outlook is not necessarily a precursor of a rating change or future CreditWatch action.

The "Stable" rating outlook means that a rating is not likely to change.

(b) Moody's Investors Service ("Moody's")

Moody's has different rating scales for short-term ratings and long-term ratings.

Ratings assigned by Moody's are forward-looking opinions of the relative credit risks of financial obligations issued by non-financial corporates, financial institutions, structured finance vehicles, project finance vehicles, and public sector entities.

Moody's short-term ratings are assigned to obligations with an original maturity of 13 months or less and reflect both on the likelihood of a default or impairment on contractual financial obligations and the expected financial loss suffered in the event of default or impairment. The P-1 rating is the highest of four rating categories and indicates issuers (or supporting institutions) that have a superior ability to repay short-term debt obligations.

Moody's long-term ratings are assigned to issuers or obligations with an original maturity of one-year or more and reflect both on the likelihood of a default on contractually promised payments and the expected financial loss suffered in the event of default. Obligations rated in the Aa category are judged to be of high quality and are subject to very low credit risk. Obligations rated in the A category are judged to be upper-medium grade and subject to low credit risk. Obligations rated in the Baa category are judged to be medium-grade and subject to moderate credit risk and as such may possess certain speculative characteristics. Moody's appends numerical modifiers 1, 2, and 3 to each generic rating classification from Aa through Caa. The modifier 1 indicates that the obligation ranks in the higher end of its generic rating category; the modifier 2 indicates a mid-range ranking; and the modifier 3 indicates a ranking in the lower end of that generic rating category.

Moody's Issuer Ratings are opinions of the ability of entities to honour senior unsecured debt and debt-like obligations.

The Moody's rating outlook is an opinion regarding the likely rating direction over the medium term.

The "Stable" rating outlook indicates a low likelihood of a rating change over the medium term.

(c) DBRS Limited ("DBRS")

DBRS has different rating scales for short-term debt, long-term debt and preferred shares. DBRS rating approach is based on a combination of quantitative and qualitative considerations.

The DBRS short-term debt rating scale provides an opinion on the risk that an issuer will not meet its short-term financial obligations in a timely manner. The R-1 and R-2 rating categories are further denoted by the subcategories "high", "middle" and "low". An obligation rated R-1(high) is of the highest credit quality and indicates the capacity for the payment of short-term financial obligations as they fall due is exceptionally high; unlikely to be adversely affected by future events.

The DBRS long-term rating scale provides an opinion on the risk of default. That is, the risk that an issuer will fail to satisfy its financial obligations in accordance with the terms under which the obligations have been issued. All rating categories other than AAA and D also contain subcategories "(high)" and "(low)". The absence of either a "(high)" or "(low)" designation indicates the rating is in the middle of the category. Long-term financial obligations rated AA are of superior credit quality and capacity for the payment is considered high; credit quality differs from AAA only to a small degree; unlikely to be significantly vulnerable to future events. Long-term financial obligations rated A are of good credit quality and capacity for payment is considered substantial, but of lesser credit quality than AA, and may be vulnerable to future events but qualifying negative factors are considered manageable.

The DBRS preferred share rating scale is used in the Canadian securities market and is meant to give an indication of the risk that a borrower will not fulfill its full obligations in a timely manner, with respect to both dividend and principal commitments. Each rating category is denoted by the subcategories "high" and "low". The absence of either a "high" or "low" designation indicates the rating is in the middle of the category. The Pfd-2 rating indicates a satisfactory credit quality.

Rating trends provide guidance in respect of DBRS's opinion regarding the outlook for a rating.

The "Stable" rating trend indicates a lower likelihood that the rating could change in the future than would be the case if the rating trend was positive or negative.

(d) Fitch

Fitch publishes opinions on a variety of scales.

A short-term issuer or obligation rating is based on the short-term vulnerability to default of the rated entity and relates to the capacity to meet financial obligations in accordance with the documentation governing the relevant obligation. For banks, "short term" typically means up to 13 months. A rating of F1+ indicates the highest short-term credit quality. The added "+" denotes an exceptionally strong credit feature.

Rated entities in a number of sectors, including financial and non-financial corporations, are generally assigned Issuer Default Ratings ("IDRs"). IDRs opine on an entity's relative vulnerability to default on financial obligations. A rating of AA indicates a very high credit quality and denotes expectation of very low default risk. A rating of A indicates a high credit quality and denotes expectation of low default risk. The modifiers "+" or "-" may be appended to a rating to denote relative status within major rating categories.

Rating Outlooks indicate the direction a rating is likely to move over a one to two-year period.

The "Stable" rating outlook means that the rating is not likely to change over a one to two-year period.

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Management's Discussion and Analysis

BMO's Chief Executive Officer and its Chief Financial Officer have signed a statement outlining management's responsibility for financial information in the annual consolidated financial statements and Management's Discussion and Analysis (MD&A). The statement, which can be found on page 130, also explains the roles of the Audit and Conduct Review Committee and Board of Directors in respect of that financial information.

The MD&A comments on BMO's operations and financial condition for the years ended October 31, 2019 and 2018. The MD&A should be read in conjunction with our consolidated financial statements for the year ended October 31, 2019. The MD&A commentary is as at December 3, 2019. Unless otherwise indicated, all amounts are stated in Canadian dollars and have been derived from consolidated financial statements prepared in accordance with International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board. We also comply with interpretations of IFRS by our regulator, the Office of the Superintendent of Financial Institutions Canada. References to generally accepted accounting principles (GAAP) mean IFRS.

Effective the first quarter of 2019, the bank adopted IFRS 15, *Revenue from Contracts with Customers* (IFRS 15) and we elected to retrospectively present prior periods as if IFRS 15 had always been applied. Effective the first quarter of 2018, the bank prospectively adopted IFRS 9, *Financial Instruments* (IFRS 9). Prior periods have not been restated. Since November 1, 2011, BMO's financial results have been reported in accordance with IFRS. Results for years prior to 2011 have not been restated and are presented in accordance with Canadian GAAP (CGAAP), as defined at that time. As such, certain growth rates and compound annual growth rates (CAGR) may not be meaningful. Prior periods have been reclassified for methodology changes and transfers of certain businesses between operating groups. Refer to page 33.

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23 **2019 Financial Performance Review** provides a detailed review of BMO's consolidated financial performance by major income statement category. It also includes a summary of the impact of changes in foreign exchange rates.

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57 **Financial Condition Review** comments on our assets and liabilities by major balance sheet category. It includes a review of our capital adequacy and our approach to optimizing our capital position to support our business strategies and maximize returns to our shareholders. It also includes a review of off-balance sheet arrangements and certain select financial instruments.

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Regulatory Filings

Our continuous disclosure materials, including our interim consolidated financial statements and interim MD&A, audited annual consolidated financial statements and annual MD&A, Annual Information Form and Notice of Annual Meeting of Shareholders and Management Proxy Circular, are available on our website at www.bmo.com/investorrelations, on the Canadian Securities Administrators' website at www.sedar.com and on the EDGAR section of the SEC's website at www.sec.gov. BMO's Chief Executive Officer and its Chief Financial Officer certify the appropriateness and fairness of BMO's annual and interim consolidated financial statements, MD&A and Annual Information Form, the effectiveness of BMO's disclosure controls and procedures and the effectiveness of, and any material weaknesses relating to, BMO's internal control over financial reporting.

Factors That May Affect Future Results

As noted in the following Caution Regarding Forward-Looking Statements, all forward-looking statements and information, by their nature, are subject to inherent risks and uncertainties, both general and specific, which may cause actual results to differ materially from the expectations expressed in any forward-looking statement. The Enterprise-Wide Risk Management section starting on page 68 describes a number of risks, including credit and counterparty, market, insurance, liquidity and funding, operational, legal and regulatory, business, strategic, environmental and social, and reputation risk. Should our risk management framework prove ineffective, there could be a material adverse impact on our financial position and results.

Caution Regarding Forward-Looking Statements

Bank of Montreal's public communications often include written or oral forward-looking statements. Statements of this type are included in this document, and may be included in other filings with Canadian securities regulators or the U.S. Securities and Exchange Commission, or in other communications. All such statements are made pursuant to the "safe harbor" provisions of, and are intended to be forward-looking statements under, the United States Private Securities Litigation Reform Act of 1995 and any applicable Canadian securities legislation. Forward-looking statements in this document may include, but are not limited to, statements with respect to our objectives and priorities for fiscal 2020 and beyond, our strategies or future actions, our targets, expectations for our financial condition or share price, the regulatory environment in which we operate and the results of or outlook for our operations or for the Canadian, U.S. and international economies, and include statements of our management. Forward-looking statements are typically identified by words such as "will", "would", "should", "believe", "expect", "anticipate", "project", "intend", "estimate", "plan", "goal", "target", "may" and "could".

By their nature, forward-looking statements require us to make assumptions and are subject to inherent risks and uncertainties, both general and specific in nature. There is significant risk that predictions, forecasts, conclusions or projections will not prove to be accurate, that our assumptions may not be correct, and that actual results may differ materially from such predictions, forecasts, conclusions or projections. We caution readers of this document not to place undue reliance on our forward-looking statements, as a number of factors – many of which are beyond our control and the effects of which can be difficult to predict – could cause actual future results, conditions, actions or events to differ materially from the targets, expectations, estimates or intentions expressed in the forward-looking statements.

The future outcomes that relate to forward-looking statements may be influenced by many factors, including but not limited to: general economic and market conditions in the countries in which we operate; the Canadian housing market; weak, volatile or illiquid capital and/or credit markets; interest rate and currency value fluctuations; changes in monetary, fiscal, or economic policy and tax legislation and interpretation; the level of competition in the geographic and business areas in which we operate; changes in laws or in supervisory expectations or requirements, including capital, interest rate and liquidity requirements and guidance, and the effect of such changes on funding costs; judicial or regulatory proceedings; the accuracy and completeness of the information we obtain with respect to our customers and counterparties; failure of third parties to comply with their obligations to us; our ability to execute our strategic plans and to complete and integrate acquisitions, including obtaining regulatory approvals; critical accounting estimates and the effect of changes to accounting standards, rules and interpretations on these estimates; operational and infrastructure risks, including with respect to reliance on third parties; changes to our credit ratings; political conditions, including changes relating to or affecting economic or trade matters; global capital markets activities; the possible effects on our business of war or terrorist activities; outbreaks of disease or illness that affect local, national or international economies; natural disasters and disruptions to public infrastructure, such as transportation, communications, power or water supply; technological changes; information, privacy and cyber security, including the threat of data breaches, hacking, identity theft and corporate espionage, as well as the possibility of denial of service resulting from efforts targeted at causing system failure and service disruption; and our ability to anticipate and effectively manage risks arising from all of the foregoing factors.

We caution that the foregoing list is not exhaustive of all possible factors. Other factors and risks could adversely affect our results. For more information, please refer to the discussion in the Risks That May Affect Future Results section, and the sections related to credit and counterparty, market, insurance, liquidity and funding, operational, legal and regulatory, business, strategic, environmental and social, and reputation risk, in the Enterprise-Wide Risk Management section that begins on page 68, all of which outline certain key factors and risks that may affect our future results. Investors and others should carefully consider these factors and risks, as well as other uncertainties and potential events, and the inherent uncertainty of forward-looking statements. We do not undertake to update any forward-looking statements, whether written or oral, that may be made from time to time by the organization or on its behalf, except as required by law. The forward-looking information contained in this document is presented for the purpose of assisting our shareholders in understanding our financial position as at and for the periods ended on the dates presented, as well as our strategic priorities and objectives, and may not be appropriate for other purposes.

Material economic assumptions underlying the forward-looking statements contained in this document are set out in the Economic Developments and Outlook section on page 18. Assumptions about the performance of the Canadian and U.S. economies, as well as overall market conditions and their combined effect on our business, are material factors we consider when determining our strategic priorities, objectives and expectations for our business. In determining our expectations for economic growth, both broadly and in the financial services sector, we primarily consider historical economic data provided by governments, historical relationships between economic and financial variables, and the risks to the domestic and global economy.

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Who We Are

Established in 1817, BMO Financial Group (BMO) is a highly diversified financial services provider based in North America. We are the eighth largest bank in North America by assets, with total assets of $852 billion, and an engaged and diverse base of employees. BMO provides a broad range of personal and commercial banking, wealth management, global markets and investment banking products and services, conducting business through three operating groups: Personal and Commercial Banking, BMO Wealth Management and BMO Capital Markets. We serve eight million customers across Canada through our Canadian personal and commercial banking arm, BMO Bank of Montreal. In the United States, we serve customers through BMO Harris Bank, based in the U.S. Midwest, with more than two million personal, business and commercial banking customers. We also serve customers through our wealth management businesses – BMO Private Wealth, BMO InvestorLine, BMO Wealth Management U.S., BMO Global Asset Management and BMO Insurance. BMO Capital Markets, our Investment and Corporate Banking and Global Markets division, provides a full suite of financial products and services to North American and international clients.

Our Financial Objectives

BMO's medium-term financial objectives for certain important performance measures are set out below. These measures establish a range of performance objectives over time. We aim to deliver top-tier total shareholder return and achieve our financial objectives by aligning our operations with, and executing on, our strategic priorities. We consider top-tier returns to be top-quartile shareholder returns, relative to our Canadian and North American peer groups.

BMO's business planning process is rigorous, sets ambitious goals and considers the prevailing economic conditions, our risk appetite, our customers' evolving needs and the opportunities available across our lines of business. It includes clear and direct accountability for annual performance that is measured against both internal and external benchmarks and progress toward our strategic priorities.

Our medium-term financial objectives on an adjusted basis are to achieve average annual earnings per share (adjusted EPS) growth of 7% to 10%, earn an average annual return on equity (adjusted ROE) of 15% or more, generate average annual net operating leverage of 2% or more and maintain capital ratios that exceed regulatory requirements. These objectives are guideposts as we execute against our strategic priorities. In managing our operations and risk, we recognize that current profitability and the ability to meet these objectives in a single period must be balanced with the need to invest in our businesses for their future long-term health and growth prospects.

Our one-year adjusted EPS growth rate in 2019 was 4.9%, and has averaged 7.9% over the past three years, in line with our target range of 7% to 10%. Adjusted net operating leverage in 2019 was 0.8%, in part reflecting a severance expense in BMO Capital Markets. Adjusted net operating leverage was positive in each of the past three years. Our one-year adjusted ROE was 13.7%, down from 14.6% in 2018, and has averaged 14% over the past three years. In an environment of continued low interest rates and with expectations for increased capital requirements, a ROE of 15% will be challenging to meet in the near term, although we believe it to be an appropriate objective as we continue to enhance the efficiency and profitability of our business. We are well-capitalized with a Common Equity Tier 1 Ratio of 11.4%.

Key Performance Data

As at and for the periods ended October 31, 2019	1-year	5-year*	10-year*
Average annual total shareholder return	3.2	7.8	11.6
Average growth in annual EPS	6.0	6.3	11.9
Average growth in annual adjusted EPS	4.9	7.4	9.0
Average annual ROE	12.6	12.7	13.8
Average annual adjusted ROE	13.7	13.7	14.4
Compound growth in annual dividends declared per share	7.4	5.7	3.8
Dividend yield**	4.2	4.0	4.2
Price-to-earnings multiple**	11.3	11.9	11.9
Market value/book value ratio**	1.36	1.45	1.53
Common Equity Tier 1 Ratio	11.4	na	na

* 5-year and 10-year growth rates reflect growth based on CGAAP in 2009 and IFRS in 2014 and 2019, respectively.

** 1-year measure as at October 31, 2019; 5-year and 10-year measures are the average of year-end values.

na – not applicable

Adjusted results in this section are non-GAAP and are discussed in the Non-GAAP Measures section on page 17.

The Our Financial Objectives section above and the Economic Developments and Outlook and Enterprise-Wide Strategy sections that follow contain certain forward-looking statements. By their nature, forward-looking statements require us to make assumptions and are subject to inherent risks and uncertainties. Refer to the Caution Regarding Forward-Looking Statements on page 14 of this MD&A for a discussion of such risks and uncertainties and the material factors and assumptions related to the statements set forth in such sections.

MANAGEMENT'S DISCUSSION AND ANALYSIS

Financial Highlights

(Canadian $ in millions, except as noted)	2019	2018	2017
Summary Income Statement			
Net interest income (1)	**12,888**	11,438	11,275
Non-interest revenue (1)(2)	**12,595**	11,467	10,832
Revenue (2)	**25,483**	22,905	22,107
Insurance claims, commissions and changes in policy benefit liabilities (CCPB)	**2,709**	1,352	1,538
Revenue, net of CCPB	**22,774**	21,553	20,569
Provision for (recovery of) credit losses on impaired loans (3)	**751**	700	na
Provision for (recovery of) credit losses on performing loans (3)	**121**	(38)	na
Total provision for credit losses (3)	**872**	662	746
Non-interest expense (2)	**14,630**	13,477	13,192
Provision for income taxes (4)	**1,514**	1,961	1,292
Net income	**5,758**	5,453	5,339
Attributable to bank shareholders	**5,758**	5,453	5,337
Attributable to non-controlling interest in subsidiaries	**–**	–	2
Adjusted net income	**6,249**	5,982	5,497
Common Share Data ($, except as noted)			
Earnings per share	**8.66**	8.17	7.90
Adjusted earnings per share	**9.43**	8.99	8.15
Earnings per share growth (%)	**6.0**	3.3	14.3
Adjusted earnings per share growth (%)	**4.9**	10.3	8.3
Dividends declared per share	**4.06**	3.78	3.56
Book value per share	**71.54**	64.73	61.91
Closing share price	**97.50**	98.43	98.83
Number of common shares outstanding (in millions)			
End of period	**639.2**	639.3	647.8
Average diluted	**640.4**	644.9	652.0
Total market value of common shares ($ billions)	**62.3**	62.9	64.0
Dividend yield (%)	**4.2**	3.8	3.6
Dividend payout ratio (%)	**46.8**	46.1	44.9
Adjusted dividend payout ratio (%)	**43.0**	41.9	43.5
Financial Measures and Ratios (%)			
Return on equity	**12.6**	13.3	13.2
Adjusted return on equity	**13.7**	14.6	13.6
Return on tangible common equity	**15.1**	16.2	16.3
Adjusted return on tangible common equity	**16.1**	17.5	16.4
Net income growth	**5.6**	2.1	15.3
Adjusted net income growth	**4.5**	8.8	9.5
Revenue growth	**11.3**	3.6	5.5
Revenue growth, net of CCPB	**5.7**	4.8	5.9
Non-interest expense growth	**8.6**	2.2	2.1
Adjusted non-interest expense growth	**5.0**	3.5	3.5
Efficiency ratio, net of CCPB	**64.2**	62.5	64.1
Adjusted efficiency ratio, net of CCPB	**61.4**	61.9	62.7
Operating leverage, net of CCPB	**(2.9)**	2.6	3.8
Adjusted operating leverage, net of CCPB	**0.8**	1.3	2.0
Net interest margin on average earning assets	**1.70**	1.67	1.74
Effective tax rate (4)	**20.8**	26.5	19.5
Adjusted effective tax rate	**21.1**	20.7	19.8
Total PCL-to-average net loans and acceptances (annualized)	**0.20**	0.17	0.20
PCL on impaired loans-to-average net loans and acceptances (annualized)	**0.17**	0.18	0.22
Balance Sheet (as at $ millions, except as noted)			
Assets	**852,195**	773,293	709,604
Gross loans and acceptances	**451,537**	404,215	376,886
Net loans and acceptances	**449,687**	402,576	375,053
Deposits	**568,143**	520,928	479,792
Common shareholders' equity	**45,728**	41,381	40,105
Cash and securities-to-total assets ratio (%)	**28.9**	29.9	28.5
Capital Ratios (%)			
Common Equity Tier 1 Ratio	**11.4**	11.3	11.4
Tier 1 Capital Ratio	**13.0**	12.9	13.0
Total Capital Ratio	**15.2**	15.2	15.1
Leverage Ratio	**4.3**	4.2	4.4
Foreign Exchange Rates ($)			
As at Canadian/U.S. dollar	**1.3165**	1.3169	1.2895
Average Canadian/U.S. dollar	**1.3290**	1.2878	1.3071

(1) Effective the first quarter of 2019, certain dividend income in our Global Markets business has been reclassified from non-interest revenue to net interest income. Results for prior periods and related ratios have been reclassified to conform with the current year's presentation.

(2) Effective the first quarter of 2019, the bank adopted IFRS 15, *Revenue from Contracts with Customers* (IFRS 15) and elected to retrospectively present prior periods as if IFRS 15 had always been applied. As a result, loyalty rewards and cash promotion costs on cards previously recorded in non-interest expense are presented as a reduction in non-interest revenue. In addition, certain out-of-pocket expenses reimbursed to BMO from customers have been reclassified from a reduction in non-interest expense to non-interest revenue. Refer to the Changes in Accounting Policies in 2019 section on page 111 for further details.

(3) Effective the first quarter of 2018, the bank prospectively adopted IFRS 9, *Financial Instruments* (IFRS 9). Under IFRS 9, we record a provision for credit losses on impaired loans and a provision for credit losses on performing loans. Prior periods have not been restated. The total provision for credit losses in prior periods includes both specific and collective provisions.

(4) Fiscal 2018 reported net income included a $425 million (US$339 million) charge related to the revaluation of our U.S. net deferred tax asset as a result of the enactment of the U.S. *Tax Cuts and Jobs Act*. For more information, refer to the Critical Accounting Estimates – Income Taxes and Deferred Tax Assets section on page 119 of BMO's 2018 Annual Report.

Certain comparative figures have been reclassified to conform with the current year's presentation.
Adjusted results in this table are non-GAAP amounts or non-GAAP measures. Please refer to the Non-GAAP Measures section on page 17.
na – not applicable

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Non-GAAP Measures

Results and measures in this document are presented on a GAAP basis. Unless otherwise indicated, all amounts are in Canadian dollars and have been derived from consolidated financial statements prepared in accordance with International Financial Reporting Standards (IFRS). References to GAAP mean IFRS. They are also presented on an adjusted basis that excludes the impact of certain items, as set out in the table below. Results and measures that exclude the impact of Canadian/U.S. dollar exchange rate movements on our U.S. segment are non-GAAP measures. Refer to the Foreign Exchange section on page 23 for a discussion of the effects of changes in exchange rates on our results. Management assesses performance on a reported basis and on an adjusted basis, and considers both to be useful in assessing underlying ongoing business performance. Presenting results on both bases provides readers with a better understanding of how management assesses results. It also permits readers to assess the impact of certain specified items on results for the periods presented, and to better assess results excluding those items that may not be reflective of ongoing results. As such, the presentation may facilitate readers' analysis of trends. Except as otherwise noted, management's discussion of changes in reported results in this document applies equally to changes in the corresponding adjusted results. Adjusted results and measures are non-GAAP and as such do not have standardized meanings under GAAP. They are unlikely to be comparable to similar measures presented by other companies and should not be viewed in isolation from, or as a substitute for, GAAP results.

(Canadian $ in millions, except as noted)	**2019**	2018	2017
Reported Results			
Revenue	**25,483**	22,905	22,107
Insurance claims, commissions and changes in policy benefit liabilities (CCPB)	**(2,709)**	(1,352)	(1,538)
Revenue, net of CCPB	**22,774**	21,553	20,569
Provision for credit losses	**(872)**	(662)	(746)
Non-interest expense	**(14,630)**	(13,477)	(13,192)
Income before income taxes	**7,272**	7,414	6,631
Provision for income taxes	**(1,514)**	(1,961)	(1,292)
Net Income	**5,758**	5,453	5,339
Diluted EPS ($)	**8.66**	8.17	7.90
Adjusting Items (Pre-tax) (1)			
Acquisition integration costs (2)	**(13)**	(34)	(87)
Amortization of acquisition-related intangible assets (3)	**(128)**	(116)	(149)
Restructuring costs (4)	**(484)**	(260)	(59)
Reinsurance adjustment (5)	**(25)**	–	–
Decrease in the collective allowance for credit losses (6)	**–**	–	76
Benefit from the remeasurement of an employee benefit liability (7)	**–**	277	–
Adjusting items included in reported pre-tax income	**(650)**	(133)	(219)
Adjusting Items (After tax) (1)			
Acquisition integration costs (2)	**(10)**	(25)	(55)
Amortization of acquisition-related intangible assets (3)	**(99)**	(90)	(116)
Restructuring costs (4)	**(357)**	(192)	(41)
Reinsurance adjustment (5)	**(25)**	–	–
Decrease in the collective allowance for credit losses (6)	**–**	–	54
Benefit from the remeasurement of an employee benefit liability (7)	**–**	203	–
U.S. net deferred tax asset revaluation (8)	**–**	(425)	–
Adjusting items included in reported net income after tax	**(491)**	(529)	(158)
Impact on diluted EPS ($)	**(0.77)**	(0.82)	(0.25)
Adjusted Results			
Revenue	**25,483**	22,905	22,107
Insurance claims, commissions and changes in policy benefit liabilities (CCPB)	**(2,684)**	(1,352)	(1,538)
Revenue, net of CCPB	**22,799**	21,553	20,569
Provision for credit losses	**(872)**	(662)	(822)
Non-interest expense	**(14,005)**	(13,344)	(12,897)
Income before income taxes	**7,922**	7,547	6,850
Provision for income taxes	**(1,673)**	(1,565)	(1,353)
Net Income	**6,249**	5,982	5,497
Diluted EPS ($)	**9.43**	8.99	8.15

(1) Adjusting items are generally included in Corporate Services, with the exception of the amortization of acquisition-related intangible assets and certain acquisition integration costs, which are charged to the operating groups, and the reinsurance adjustment, which is included in BMO Wealth Management.
(2) Acquisition integration costs related to the acquired BMO Transportation Finance business are charged to Corporate Services, since the acquisition impacts both Canadian and U.S. P&C businesses. KGS–Alpha acquisition integration costs are reported in BMO Capital Markets. Acquisition integration costs are recorded in non-interest expense.
(3) These amounts were charged to the non-interest expense of the operating groups. Before-tax and after-tax amounts for each operating group are provided on pages 33, 36, 40, 44 and 48.
(4) Fiscal 2019 reported net income included a restructuring charge of $357 million after-tax ($484 million pre-tax), related to severance and a small amount of real estate-related costs, to continue to improve our efficiency, including accelerating delivery against key bank-wide initiatives focused on digitization, organizational redesign and simplification of the way we do business. The restructuring charges in 2018 and 2017 were a result of similar bank-wide programs. Restructuring costs are included in non-interest expense in Corporate Services.
(5) Fiscal 2019 reported net income included a reinsurance adjustment of $25 million (pre-tax and after-tax) in claims, commissions and changes in policy benefit liabilities for the net impact of major reinsurance claims from Japanese typhoons that were incurred after our announced decision to wind down our reinsurance business. This reinsurance adjustment is included in BMO Wealth Management.
(6) Adjustments to the collective allowance for credit losses are recorded in Corporate Services provision for credit losses in 2017.
(7) Fiscal 2018 reported net income included a benefit of $203 million after-tax ($277 million pre-tax) from the remeasurement of an employee benefit liability as a result of an amendment to our other employee future benefits plan for certain employees that was announced in the fourth quarter of 2018. This amount has been included in non-interest expense in Corporate Services.
(8) Fiscal 2018 reported net income included a $425 million (US$339 million) charge related to the revaluation of our U.S. net deferred tax asset as a result of the enactment of the U.S. *Tax Cuts and Jobs Act*. For more information, refer to the Critical Accounting Estimates – Income Taxes and Deferred Tax Assets section on page 119 of BMO's 2018 Annual Report.

Certain comparative figures have been reclassified to conform with the current year's presentation and for changes in accounting policy. For more information, refer to page 111.

Adjusted results and measures in this table are non-GAAP amounts or non-GAAP measures.

MANAGEMENT'S DISCUSSION AND ANALYSIS

Economic Developments and Outlook

Economic Developments in 2019 and Outlook for 2020

Growth in the Canadian economy moderated in 2019 in response to earlier increases in interest rates, reductions in oil output and weakness in global economic activity. Despite robust employment gains, consumer spending has remained subdued due to elevated levels of household indebtedness. Business investment weakened in the face of rising uncertainty related to global trade policies, including the delayed ratification of the United States-Mexico-Canada Agreement. Despite the relatively low value of the Canadian dollar, exports weakened due to a slowdown in global demand. However, after weakening in response to stricter mortgage rules in 2018, housing market activity strengthened as a result of lower mortgage rates and population growth driven by immigration. After raising rates moderately since mid-2017, the Bank of Canada has held interest rates steady at still-low levels since October 2018 to support the economy, and it is expected to keep rates stable in 2020. Low interest rates and some encouragement from fiscal stimulus measures announced during the 2019 federal election campaign should support an improvement in real GDP growth, which is expected to rise to 1.8% in 2020 from an estimated rate of 1.7% in 2019. Sales volumes and prices in the housing market are expected to continue to rise moderately, supported by low borrowing costs and the First-Time Home Buyer Incentive. The unemployment rate is expected to stay near the current four-decade low of 5.5%. The Canadian dollar will likely remain close to recent low levels, around US$0.76 in the year ahead, due to the continuing trade deficit. Industry-wide consumer credit is anticipated to grow by 3.0% in 2020, while residential mortgage demand is projected to rise by 3.6%. Non-financial business loan growth is expected to slow to 5.1% in 2020 from an estimated rate of 10.0% in 2019, reflecting weaker business investment.

U.S. real GDP growth slowed to an estimated 2.3% in 2019 from 2.9% in 2018, as a result of less supportive fiscal policies and the adverse effects of trade protectionism on business investment. Exports weakened in the face of retaliatory tariffs, a strong U.S. dollar and a slowdown in global demand. However, lower mortgage rates have led to an upturn in the housing market, while steady growth in personal income, record household wealth and low debt servicing costs have supported consumer spending. Recent interest rate reductions by the Federal Reserve and a planned increase in federal spending should support steadier growth in real GDP of 1.8% in 2020. With the economy likely to grow at a rate close to its long-run potential, unemployment should remain near recent half-century lows. Growth in industry-wide consumer credit is expected to remain moderate at 3.3% in 2020, while recent declines in interest rates should encourage some improvement in residential mortgage demand growth, which is expected to rise to 4.0%. Restrained business investment is projected to result in industry-wide business credit growth moderating to 4.2% in 2020 following very strong gains in the previous two years.

The average rate of economic expansion in the eight states in which BMO has both personal and commercial banking businesses (Illinois, Wisconsin, Missouri, Kansas, Indiana, Minnesota, Florida and Arizona) is expected to moderate from an estimated rate of 2.5% in 2019 to 2.0% in 2020 in response to slower population growth in the U.S. Midwest region, trade-related declines in manufacturing output and continued budgetary constraints in Illinois. We consider this rate of growth to be acceptable, given the record duration of the economic expansion.

The major risks affecting the North American economic outlook relate to a further escalation in trade disputes, in particular between the United States and China and possibly between the United States and the European Union. Although trade tariffs have slowed economic growth only moderately, new protectionist measures could send the unemployment rate higher. Heightened political uncertainty related to the presidential impeachment inquiry, as well as rising geopolitical tensions, notably between the United States and Iran, could also destabilize global financial markets and weaken the U.S. economy. Uncertainty related to the United Kingdom's exit from the European Union is not expected to have a material adverse impact on the North American economy.

This Economic Developments and Outlook section contains forward-looking statements. Please refer to the Caution Regarding Forward-Looking Statements.

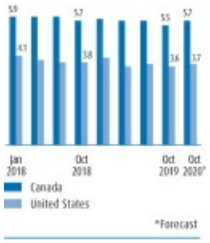
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Real Growth in Gross Domestic Product (%)



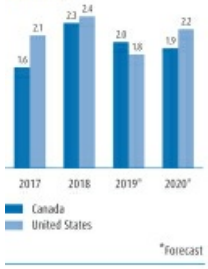
The U.S. and Canadian economies are expected to grow modestly in 2020 amid continued uncertainty related to trade policies.

Canadian and U.S. Unemployment Rates (%)



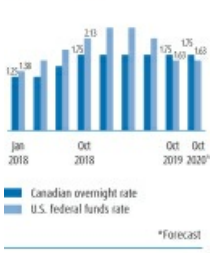
Unemployment rates in Canada and the United States are projected to hold fairly steady.

Consumer Price Index Inflation (%)



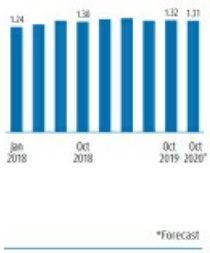
Inflation is expected to remain near the central bank targets.

Canadian and U.S. Interest Rates (%)



Central banks are expected to keep rates steady in 2020.

Canadian/U.S. Dollar Exchange Rates



The Canadian dollar is expected to remain close to recent low levels.

Data points are averages for the month, quarter or year, as appropriate, except for interest rates, which are for the period-end. References to years are calendar years.

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Enterprise-Wide Strategy

Our Purpose: Boldly Grow the Good *in business and life*

Our Strategic Priorities

- Drive leading growth in priority areas by earning customer loyalty
- Simplify, speed up, and improve productivity
- Harness the power of digital and data to grow
- Be leaders in taking and managing prudent risk, consistent with our overall risk appetite
- Activate a high-performance culture

Our operating group strategies are outlined in the 2019 Operating Groups Performance Review, which starts on page 32.

Our Values

Integrity

Do what's right

Empathy

Put others first

Diversity

Learn from difference

Responsibility

Make tomorrow better

Our Sustainability Principles

BMO is dedicated to pursuing growth in a responsible and sustainable manner. Our sustainability principles stand alongside our strategic priorities – a demonstration of the inextricable connection between financial performance and corporate responsibility. Our success as a business depends on meeting our commitments to our community and our planet, our employees and our customers. All of these intersect at the source of sustainable growth.

Social Change

Help people adapt and thrive by embracing diversity and tailoring our products and services to meet changing expectations

Financial Resilience

Work with our customers to achieve their goals, and provide guidance and support to underserved communities

Community-Building

Foster social and economic well-being in the places where we live, work and give back

Environmental Impact

Reduce our environmental footprint while considering the impacts of our business

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Value Measures

Total Shareholder Return

The average annual total shareholder return (TSR) is a key measure of shareholder value, and confirms that our strategic priorities drive value creation for our shareholders. Our one-year TSR was 3.2%, relatively unchanged from the prior year. Our three-year and five-year average annual TSR of 8.6% and 7.8%, respectively, outperformed the overall market in Canada.

The table below summarizes dividends paid on BMO common shares over the past five years and the movements in BMO's share price. An investment of $1,000 in BMO common shares made at the beginning of fiscal 2015 would have been worth $1,454 as at October 31, 2019, assuming reinvestment of dividends, for a total return of 45.4%.

On December 3, 2019, BMO announced that the Board of Directors had declared a quarterly dividend on common shares of $1.06 per share, an increase of $0.03 per share or 3% from the prior quarter and up $0.06 per share or 6% from a year ago. The dividend is payable on February 26, 2020, to shareholders of record on February 3, 2020. We have increased our quarterly dividend declared four times and 14% over the past two years from $0.93 per common share for the first quarter of 2018. Dividends paid over a five-year period have increased at an average annual compound rate of approximately 6%.

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

Total Shareholder Return

For the year ended October 31	2019	2018	2017	2016	2015	**3-year CAGR** (1)	**5-year CAGR** (1)
Closing market price per common share ($)	97.50	98.43	98.83	85.36	76.04	**4.5**	**3.6**
Dividends paid ($ per share)	3.99	3.72	3.52	3.36	3.20	**5.9**	**5.6**
Dividend yield (%)	4.2	3.8	3.6	4.0	4.3	**nm**	**nm**
Increase (decrease) in share price (%)	(0.9)	(0.4)	15.8	12.3	(7.0)	**nm**	**nm**
Total annual shareholder return (%) (2)	3.2	3.3	20.2	17.0	(3.0)	**8.6**	**7.8**

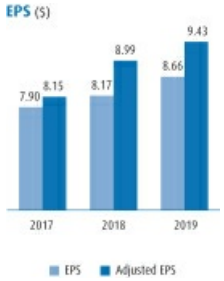
(1) Compound annual growth rate (CAGR) expressed as a percentage.
(2) Total annual shareholder return assumes reinvestment of quarterly dividends and therefore does not equal the sum of dividend and share price returns in the table.
nm – not meaningful

Earnings per Share Growth

The year-over-year percentage changes in earnings per share (EPS) and in adjusted EPS are our key measures for analyzing earnings growth. All references to EPS are to diluted EPS, unless otherwise indicated.

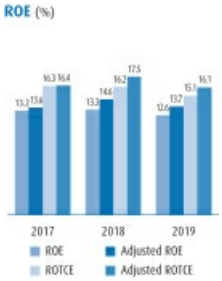
EPS was $8.66, up $0.49 or 6% from $8.17 in 2018. Adjusted EPS was $9.43, up $0.44 or 5% from $8.99 in 2018. EPS growth primarily reflected increased earnings. Reported net income available to common shareholders was 5% higher year-over-year, while the average number of diluted common shares outstanding decreased by 1%, primarily due to share buybacks.

Earnings per share (EPS) is calculated by dividing net income attributable to bank shareholders, after deducting preferred share dividends and distributions on other equity instruments, by the average number of common shares outstanding. Diluted EPS, which is our basis for measuring performance, adjusts for possible conversions of financial instruments into common shares if those conversions would reduce EPS, and is more fully explained in Note 23 on page 197 of the consolidated financial statements. Adjusted EPS is calculated in the same manner using adjusted net income.



Adjusted results in this section are non-GAAP and are discussed in the Non-GAAP Measures section on page 17.

Return on Equity



Reported return on equity (ROE) was 12.6% in 2019 and adjusted ROE was 13.7%, compared with 13.3% and 14.6%, respectively, in 2018. Reported and adjusted ROE decreased in 2019, primarily due to growth in common equity exceeding growth in net income. There was an increase of $278 million or 5% in net income available to common shareholders and an increase of $240 million or 4% in adjusted net income available to common shareholders in 2019. Average common shareholders' equity increased $4.4 billion or 11% from 2018, primarily due to growth in retained earnings and accumulated other comprehensive income. The reported return on tangible common equity (ROTCE) was 15.1%, compared with 16.2% in 2018, and adjusted ROTCE was 16.1%, compared with 17.5% in 2018. Book value per share increased 11% from the prior year to $71.54, largely reflecting the increase in shareholders' equity.

Return on common shareholders' equity (ROE) is calculated as net income, less non-controlling interest in subsidiaries and preferred dividends, as a percentage of average common shareholders' equity. Common shareholders' equity is comprised of common share capital, contributed surplus, accumulated other comprehensive income (loss) and retained earnings. Adjusted ROE is calculated using adjusted net income rather than net income.

Return on tangible common equity (ROTCE) is calculated as net income available to common shareholders adjusted for the amortization of acquisition-related intangible assets as a percentage of average tangible common equity. Tangible common equity is calculated as common shareholders' equity less goodwill and acquisition-related intangible assets, net of related deferred tax liabilities. Adjusted ROTCE is calculated using adjusted net income rather than net income. ROTCE is commonly used in the North American banking industry and is meaningful because it measures the performance of businesses consistently, whether they were acquired or developed organically.

Return on Equity and Return on Tangible Common Equity

(Canadian $ in millions, except as noted)

For the year ended October 31	**2019**	2018	2017
Reported net income	**5,758**	5,453	5,339
Attributable to non-controlling interest in subsidiaries	**–**	–	(2)
Preferred dividends	**(211)**	(184)	(184)
Net income available to common shareholders (A)	**5,547**	5,269	5,153
After-tax amortization of acquisition-related intangible assets	**99**	90	116
Net income available to common shareholders after adjusting for amortization of acquisition-related intangible assets (B)	**5,646**	5,359	5,269
After-tax impact of other adjusting items (1)	**392**	439	42
Adjusted net income available to common shareholders (C)	**6,038**	5,798	5,311
Average common shareholders' equity (D)	**44,170**	39,754	38,962
Return on equity (%) (= A/D)	**12.6**	13.3	13.2
Adjusted return on equity (%) (= C/D)	**13.7**	14.6	13.6
Average tangible common equity (E)	**37,456**	33,125	32,303
Return on tangible common equity (%) (= B/E)	**15.1**	16.2	16.3
Adjusted return on tangible common equity (%) (= C/E)	**16.1**	17.5	16.4

(1) Other adjusting items included the reinsurance adjustment in 2019, a charge related to the revaluation of our U.S. net deferred tax asset and a benefit from the remeasurement of an employee benefit liability in 2018, and a decrease in the collective allowance in 2017. All periods also include restructuring and acquisition integration costs.

Adjusted results in this section are non-GAAP and are discussed in the Non-GAAP Measures section on page 17.

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

Common Equity Tier 1 Ratio



BMO's Common Equity Tier 1 (CET1) Ratio reflects a well-capitalized position relative to the risk in our business. Our CET1 Ratio was 11.4% as at October 31, 2019, compared with 11.3% as at October 31, 2018. The CET1 Ratio increased from the end of fiscal 2018, as higher CET1 capital, primarily from retained earnings growth, more than offset higher risk-weighted assets, which were driven by business growth.

Common Equity Tier 1 (CET1) Ratio is calculated as CET1 capital, which is comprised of common shareholders' equity less deductions for goodwill, intangible assets, pension assets, and certain deferred tax assets and other items, divided by risk-weighted assets for CET1.

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2019 Financial Performance Review

This section provides a review of our enterprise financial performance for 2019 that focuses on the Consolidated Statement of Income included in our consolidated financial statements, which begin on page 137. A review of our operating groups' strategies and performance follows the enterprise review. A summary of the enterprise financial performance for 2018 begins on page 55.

Foreign Exchange

The Canadian dollar equivalents of BMO's U.S. results that are denominated in U.S. dollars increased relative to 2018 due to the stronger U.S. dollar. The table below indicates the relevant average Canadian/U.S. dollar exchange rates and the impact of changes in those rates on our U.S. segment results. References in this document to the impact of the U.S. dollar do not include U.S. dollar-denominated amounts recorded outside of BMO's U.S. segment.

Changes in the exchange rate will affect future results measured in Canadian dollars, and the impact on those results is a function of the periods in which revenue, expenses and provisions for (recoveries of) credit losses arise. If future results are consistent with results in 2019, each one cent increase (decrease) in the Canadian/U.S. dollar exchange rate, expressed in terms of how many Canadian dollars one U.S. dollar buys, would be expected to increase (decrease) the Canadian dollar equivalent of our U.S. segment net income before income taxes for the year by $16 million, in the absence of hedging transactions.

Economically, our U.S. dollar income stream was unhedged to changes in foreign exchange rates during 2019, 2018 and 2017. We regularly determine whether to enter into hedging transactions in order to mitigate the impact of foreign exchange rate movements on net income.

Refer to the Enterprise-Wide Capital Management section on page 59 for a discussion of the impact that changes in foreign exchange rates can have on our capital position.

Changes in foreign exchange rates will also affect accumulated other comprehensive income, primarily as a result of the translation of our investment in foreign operations. Each one cent increase (decrease) in the Canadian/U.S. dollar exchange rate, expressed in terms of how many Canadian dollars one U.S. dollar buys, would be expected to increase (decrease) the translation of our investment in foreign operations by $159 million.

Effects of Changes in Exchange Rates on BMO's U.S. Segment Reported and Adjusted Results

(Canadian $ in millions, except as noted)	**2019 vs. 2018**	2018 vs. 2017
Canadian/U.S. dollar exchange rate (average)		
2019	**1.3290**	
2018	**1.2878**	1.2878
2017		1.3071
Effects on U.S. segment reported results		
Increased (decreased) net interest income	**140**	(62)
Increased (decreased) non-interest revenue	**94**	(48)
Increased (decreased) revenue	**234**	(110)
Decreased (increased) provision for credit losses	**(7)**	2
Decreased (increased) expenses	**(165)**	77
Decreased (increased) income taxes (1)	**(35)**	28
Increased (decreased) reported net income (1)	**27**	(3)
Effects on U.S. segment adjusted results		
Increased (decreased) net interest income	**140**	(62)
Increased (decreased) non-interest revenue	**94**	(48)
Increased (decreased) revenue	**234**	(110)
Decreased (increased) provision for credit losses	**(7)**	2
Decreased (increased) expenses	**(160)**	75
Decreased (increased) income taxes (1)	**(14)**	6
Increased (decreased) adjusted net income (1)	**53**	(27)

(1) Reported net income in the first quarter of 2018 included a $425 million (US$339 million) charge due to the revaluation of our U.S. net deferred tax asset as a result of the enactment of the U.S. *Tax Cuts and Jobs Act*. Results reflect the impact of the foreign exchange revaluation of the tax charge. For more information, refer to the Critical Accounting Estimates – Income Taxes and Deferred Tax Assets section on page 119 of BMO's 2018 Annual Report.

Adjusted results in this section are non-GAAP and are discussed in the Non-GAAP Measures section on page 17.

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

Caution

This Foreign Exchange section contains forward-looking statements. Please refer to the Caution Regarding Forward-Looking Statements.

Net Income

Reported net income was $5,758 million in 2019, an increase of $305 million or 6% from the prior year. Adjusted net income was $6,249 million, an increase of $267 million or 4%, and also 4% excluding the impact of the stronger U.S. dollar. Adjusted net income in the current and prior year excludes restructuring charges, amortization of acquisition-related intangible assets and acquisition-related costs. The current year excludes the net impact of major reinsurance claims from Japanese typhoons that were incurred after our announced decision to wind down our reinsurance business. Adjusted net income in the prior year also excludes a one-time non-cash charge related to the revaluation of our U.S. net deferred tax asset due to U.S. tax reform and a benefit from the remeasurement of an employee benefit liability. For more information, refer to the Non-GAAP Measures table on page 17.

Reported and adjusted net income growth largely reflects good performance in our P&C businesses and an increase in Corporate Services, partially offset by a decrease in BMO Capital Markets. Reported net income in BMO Wealth Management decreased, while adjusted net income increased.

Canadian P&C reported net income of $2,626 million and adjusted net income of $2,628 million, which excludes the amortization of acquisition-related intangible assets, both increased $77 million, or 3% from the prior year, due to higher revenue, partially offset by higher expenses and higher provision for credit losses. The prior year included a gain related to the restructuring of Interac Corporation.

U.S. P&C reported net income of $1,611 million increased $217 million or 16%, and adjusted net income of $1,654 million increased $215 million or 15% from the prior year. Adjusted net income excludes the amortization of acquisition-related intangible assets. On a U.S. dollar basis, reported net income of $1,212 million increased $130 million or 12%, and adjusted net income of $1,244 million increased $127 million or 11% from the prior year, primarily due to good revenue performance and lower provision for credit losses, partially offset by higher expenses.

BMO Wealth Management reported net income was $1,060 million, compared with $1,072 million in the prior year. Adjusted net income, which excludes the fourth-quarter reinsurance adjustment and the amortization of acquisition-related intangible assets, was $1,122 million, an increase of $9 million or 1% from the prior year. Traditional Wealth reported net income was $862 million, an increase of $57 million or 7% from the prior year, and adjusted net income was $899 million, an increase of $53 million or 6%, primarily due to higher deposit and loan revenue. Insurance reported net income was $198 million, compared with $267 million in the prior year, and adjusted net income was $223 million, compared with $267 million, primarily due to lower reinsurance revenue.

BMO Capital Markets reported net income was $1,086 million, compared with $1,156 million in the prior year, and adjusted net income, which excludes the amortization of acquisition-related intangible assets and acquisition integration costs, was $1,113 million, compared with $1,169 million. Higher revenue was more than offset by higher expenses, including a severance expense in the second quarter of 2019, and higher provisions for credit losses.

Corporate Services reported net loss was $625 million, compared with a reported net loss of $718 million in the prior year. Adjusted net loss was $268 million, compared with an adjusted net loss of $290 million in the prior year. Adjusted results in both the current and prior year exclude restructuring charges. The prior year also excludes a one-time non-cash charge due to the revaluation of our U.S. net deferred tax asset, a benefit from the remeasurement of an employee benefit liability and acquisition integration costs. The adjusted net loss improved, primarily due to lower expenses, while revenue excluding the taxable equivalent basis (teb) adjustment was relatively unchanged. Reported results increased, primarily due to the impact of the adjusting items noted above.

Further discussion is provided in the 2019 Operating Groups Performance Review section on pages 32 to 51.

Adjusted results in this section are non-GAAP and are discussed in the Non-GAAP Measures section on page 17.

Revenue (1)

Reported revenue of $25,483 million increased $2,578 million or 11% from the prior year, or 10% excluding the impact of the stronger U.S. dollar. On a basis that nets insurance claims, commissions and changes in policy benefit liabilities (CCPB) against insurance revenue (net revenue), revenue was $22,774 million, an increase of $1,221 million or 6%, or 5% excluding the impact of the stronger U.S. dollar, driven by good performance in our P&C businesses and BMO Capital Markets, including the impact of the acquisition of KGS-Alpha. BMO Wealth Management and Corporate Services revenue also increased.

BMO analyzes revenue at the consolidated level based on GAAP revenue as reported in the consolidated financial statements, and on an adjusted basis. Consistent with our Canadian peer group, we analyze revenue on a teb at the operating group level. The teb adjustments for 2019 totalled $296 million, a decrease from $313 million in 2018.

Canadian P&C revenue increased $396 million or 5% from the prior year, reflecting higher balances across most products, increased non-interest revenue and higher margins. The prior year included a gain related to the restructuring of Interac Corporation.

U.S. P&C revenue increased $441 million or 9% from the prior year on a Canadian dollar basis. On a U.S. dollar basis, revenue of $4,049 million increased $215 million or 6%, primarily reflecting higher balances across most products and increased non-interest revenue, partially offset by a lower net interest margin.

BMO Wealth Management revenue, net of reported CCPB, was $4,953 million, relatively unchanged from the prior year. Revenue, net of adjusted CCPB, was $4,978 million, an increase of $29 million or 1%. Revenue in Traditional Wealth was $4,555 million, an increase of $85 million or 2%, primarily due to higher deposit and loan revenue and the impact of a legal provision in the prior year, partially offset by lower fee-based revenue, including lower performance fees from our asset management business. Insurance revenue, net of reported CCPB, was $398 million, compared with $479 million in the prior year, primarily due to lower reinsurance revenue. Insurance revenue, net of adjusted CCPB, which excludes the reinsurance adjustment, was $423 million, compared with $479 million in the prior year.

BMO Capital Markets revenue increased $371 million or 9% from the prior year, or 7% excluding the impact of the stronger U.S. dollar. Investment and Corporate Banking revenue increased, primarily due to higher corporate banking-related revenue and underwriting and advisory revenue. Global Markets revenue increased, primarily due to higher interest rate trading revenue, including the significant contribution from the acquisition of KGS-Alpha, and higher commodities trading revenue, partially offset by lower equity trading revenue.

Corporate Services revenue increased $9 million from the prior year.

Further discussion is provided in the 2019 Operating Groups Performance Review section on pages 32 to 51.

(1) Insurance revenue can experience variability arising from fluctuations in the fair value of insurance assets, caused by movements in interest rates and equities markets. The investments which support policy benefit liabilities are predominantly fixed income assets recorded at fair value, with changes in fair value recorded in insurance revenue in the Consolidated Statement of Income. These fair value changes are largely offset by changes in the fair value of policy benefit liabilities, the impact of which is reflected in insurance claims, commissions and changes in policy benefit liabilities. The discussion of revenue on a net basis reduces this variability in results, which allows for a better discussion of operating results. For additional discussion of insurance claims, commissions and changes in policy benefit liabilities, refer to page 28.

Taxable equivalent basis (teb) Revenues of operating groups are presented in our MD&A on a taxable equivalent basis (teb). 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. This adjustment is offset in Corporate Services.

Revenue

(Canadian $ in millions, except as noted) For the year ended October 31	**2019**	2018	2017	**Change from 2018 (%)**
Net interest income	**12,888**	11,438	11,275	**13**
Non-interest revenue	**12,595**	11,467	10,832	**10**
Total revenue	**25,483**	22,905	22,107	**11**
Total revenue, net of CCPB	**22,774**	21,553	20,569	**6**
Total revenue, net of adjusted CCPB	**22,799**	21,553	20,569	**6**

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

Net Interest Income

Net interest income was $12,888 million, an increase of $1,450 million or 13%, or 11% excluding the impact of the stronger U.S. dollar.

On a basis that excludes trading revenue, net interest income was $11,665 million, an increase of $943 million or 9%, or 8% excluding the impact of the stronger U.S. dollar, largely due to higher loan and deposit balances, partially offset by a lower net interest margin.

Average earning assets were $758.9 billion, an increase of $75.9 billion or 11%, or 10% excluding the impact of the stronger U.S. dollar, due to loan growth, higher securities, and higher securities borrowed or purchased under resale agreements.

BMO's overall net interest margin increased 3 basis points, primarily due to higher net interest income from trading activities and a higher margin in Canadian P&C, partially offset by a higher volume of assets in BMO Capital Markets and Corporate Services, which have a lower spread than the bank. On a basis that excludes trading revenue, BMO's net interest margin decreased 4 basis points, primarily due to a higher volume of assets in BMO Capital Markets and Corporate Services, which have a lower spread than the bank, partially offset by a higher margin in Canadian P&C and a positive contribution from growth in U.S. P&C.

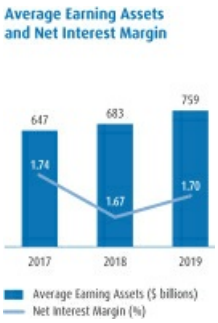
Table 3 on page 118 provides further details on net interest income and net interest margin.

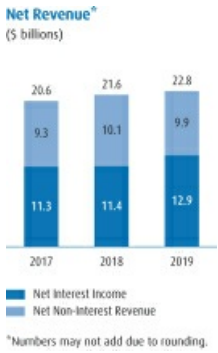
Adjusted results in this section are non-GAAP and are discussed in the Non-GAAP Measures section on page 17.

Net interest income is comprised of earnings on assets, such as loans and securities, including interest and certain dividend income, less interest expense paid on liabilities, such as deposits.

Net interest margin is the ratio of net interest income to average earning assets, expressed as a percentage or in basis points.

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





Change in Net Interest Income, Average Earning Assets and Net Interest Margin (1)

(Canadian $ in millions, except as noted) For the year ended October 31	Net interest income (teb)		Change	Average earning assets		Change	Net interest margin (in basis points)		
	2019	2018	**%**	**2019**	2018	**%**	**2019**	2018	**Change**
Canadian P&C	**5,878**	5,541	**6**	**222,513**	212,965	**4**	**264**	260	**4**
U.S. P&C	**4,218**	3,843	**10**	**119,640**	103,394	**16**	**353**	372	**(19)**
Personal and Commercial Banking (P&C)	**10,096**	9,384	**8**	**342,153**	316,359	**8**	**295**	297	**(2)**
All other operating groups and Corporate Services	**2,792**	2,054	**36**	**416,710**	366,586	**14**	**67**	56	**11**
Total BMO reported	**12,888**	11,438	**13**	**758,863**	682,945	**11**	**170**	167	**3**
U.S. P&C (US$ in millions)	**3,174**	2,983	**6**	**90,035**	80,255	**12**	**353**	372	**(19)**

(1) Effective the first quarter of 2019, certain dividend income in our Global Markets business has been reclassified from non-interest revenue to net interest income. Results for prior years and related ratios have been reclassified to conform with the current year's presentation.

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

Non-Interest Revenue

Non-interest revenue, which comprises all revenues other than net interest income, was $12,595 million, an increase of $1,128 million or 10%, or 9% excluding the impact of the stronger U.S. dollar. Non-interest revenue, net of insurance claims, commissions and changes in policy benefit liabilities (CCPB), was $9,886 million, compared with $10,115 million in the prior year.

Non-interest revenue, net of CCPB, decreased, as higher lending fee revenue, deposit and payment service revenue and underwriting and advisory fee revenue were more than offset by lower trading and mutual fund revenue, as well as lower revenue from foreign exchange, other than trading, and investments in associates and joint ventures. Trading revenue is discussed in the Trading-Related Revenue section that follows. On a basis that excludes trading revenue, non-interest revenue, net of CCPB, increased $178 million or 2%.

Gross insurance revenue increased from the prior year, primarily due to decreases in long-term interest rates that increased the fair value of insurance investments in the current year, compared with increases in long-term interest rates that decreased the fair value of insurance investments in the prior year, the impact of stronger equity markets and business growth. Insurance revenue can experience variability arising from fluctuations in the fair value of insurance assets, caused by movements in interest rates and equity markets. The investments that support policy benefit liabilities are predominantly fixed income and equity assets recorded at fair value, with changes in fair value recorded in insurance revenue in the Consolidated Statement of Income. The impact of these fair value changes was largely offset by changes in the fair value of policy benefit liabilities, which is reflected in CCPB, as discussed on page 28.

We generally focus on analyzing revenue net of CCPB, given the extent to which insurance revenue can vary and that this variability is largely offset in CCPB.

Table 3 on page 118 provides further details on revenue and revenue growth.

Adjusted results in this section are non-GAAP and are discussed in the Non-GAAP Measures section on page 17.

Non-Interest Revenue

(Canadian $ in millions) For the year ended October 31	2019	2018	2017	Change from 2018 (%)
Securities commissions and fees	**1,023**	1,025	964	**–**
Deposit and payment service charges	**1,204**	1,134	1,109	**6**
Trading revenue	**298**	705	84	**(58)**
Lending fees	**1,181**	997	917	**18**
Card fees	**437**	428	329	**2**
Investment management and custodial fees	**1,747**	1,749	1,627	**–**
Mutual fund revenue	**1,419**	1,473	1,411	**(4)**
Underwriting and advisory fees	**986**	943	1,044	**5**
Securities gains, other than trading	**249**	239	171	**4**
Foreign exchange, other than trading	**166**	182	191	**(9)**
Insurance revenue	**3,183**	1,879	2,070	**69**
Investments in associates and joint ventures	**151**	167	386	**(10)**
Other	**551**	546	529	**1**
Total reported	**12,595**	11,467	10,832	**10**
Reported, net of CCPB	**9,886**	10,115	9,294	**(2)**
Insurance revenue, net of CCPB	**474**	527	532	**(10)**
Insurance revenue, net of adjusted CCPB	**499**	527	532	**(5)**

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

Trading-Related Revenue

Trading-related revenue is dependent on, among other things, the volume of activities undertaken for clients who enter into transactions with BMO to mitigate their risks or to invest, and market conditions. BMO earns a spread or profit on the net sum of its client positions by profitably managing, within prescribed limits, the overall risk of its net positions. On a limited basis, BMO also earns revenue from principal trading positions.

Interest and non-interest trading-related revenue on a taxable equivalent basis (teb) increased $97 million or 6% to $1,778 million. Interest rate trading-related revenue increased $263 million or 60%, primarily due to a significant contribution from the acquisition of KGS-Alpha and a fair value gain. Foreign exchange trading-related revenue increased $24 million or 6%, driven by increased client activity. Equities trading-related revenue decreased $183 million or 26%, largely due to lower activity with corporate clients and a fair value loss. Commodities trading-related revenue increased $82 million or 130%, due to increased client hedging activity and an expansion of the business. Other trading-related revenue decreased $89 million or 94%, primarily due to fair value gains associated with hedging exposures on our structural balance sheet in the prior year.

The Market Risk section on page 86 provides more information on trading-related revenue.

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

Adjusted results in this section are non-GAAP and are discussed in the Non-GAAP Measures section on page 17.

Interest and Non-Interest Trading-Related Revenue (1) (2)

(Canadian $ in millions) (taxable equivalent basis) For the year ended October 31	**2019**	2018	2017	**Change from 2018 (%)**
Interest rates	**700**	437	480	**60**
Foreign exchange	**401**	377	369	**6**
Equities	**526**	709	727	**(26)**
Commodities	**145**	63	84	**+100**
Other	**6**	95	39	**(94)**
Total (teb)	**1,778**	1,681	1,699	**6**
Teb offset	**257**	260	488	**(1)**
Reported total	**1,521**	1,421	1,211	**7**
Reported as:				
Net interest income	**1,480**	976	1,615	**52**
Non-interest revenue – trading revenue	**298**	705	84	**(58)**
Total (teb)	**1,778**	1,681	1,699	**6**
Teb offset	**257**	260	488	**(1)**
Reported total, net of teb offset	**1,521**	1,421	1,211	**7**

(1) Trading-related revenue is presented on a taxable equivalent basis.
(2) Effective the first quarter of 2019, certain dividend income in our Global Markets business has been reclassified from non-interest revenue to net interest income. Results for prior years and related ratios have been reclassified to conform with the current year's presentation.

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

Adjusted results in this section are non-GAAP and are discussed in the Non-GAAP Measures section on page 17.

Insurance Claims, Commissions and Changes in Policy Benefit Liabilities

Reported insurance claims, commissions and changes in policy benefit liabilities (CCPB) were $2,709 million in 2019, an increase of $1,357 million from the prior year, and adjusted CCPB, which excludes the net impact of major reinsurance claims that were incurred after our announced decision to wind down our reinsurance business, was $2,684 million, an increase of $1,332 million. CCPB increased due to the impact of decreases in long-term interest rates that increased the fair value of policy benefit liabilities in the current year, compared with increases in long-term interest rates that decreased the fair value of policy benefit liabilities in the prior year, underlying business growth and stronger equity markets, which increase the fair value of policy benefit liabilities. The increase related to the fair value of policy benefit liabilities was largely offset in revenue, as discussed on page 26.

Adjusted results in this section are non-GAAP and are discussed in the Non-GAAP Measures section on page 17.

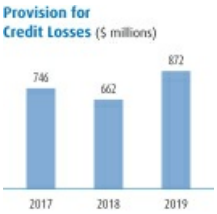
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Provision for Credit Losses

The total provision for credit losses (PCL) was $872 million, compared with $662 million in 2018. Total PCL as a percentage of average net loans and acceptances was 20 basis points in 2019, compared with 17 basis points in the prior year. The provision for credit losses on impaired loans was $751 million, compared with $700 million in the prior year, reflecting higher provisions in Canadian P&C, BMO Capital Markets and Corporate Services, partially offset by lower provisions in U.S. P&C, which had higher recoveries compared with the prior year. Total PCL on impaired loans as a percentage of average net loans and acceptances was 17 basis points in 2019, compared with 18 basis points in the prior year. There was a $121 million provision for credit losses on performing loans in the current year, with the increase primarily driven by balance growth and changes to our scenario weights. In the prior year, there was a $38 million recovery of credit losses on performing loans. A provision was recorded for performing loans in the current year, compared with a recovery in the prior year, reflecting higher loan growth in the current year, as well as higher provisions resulting from portfolio migration and changes in the economic outlook and scenario weights during 2019.

Total PCL in Canadian P&C increased $138 million to $607 million, due to higher consumer and commercial provisions on impaired loans, as well as an increase in PCL on performing loans. Total PCL in U.S. P&C was $197 million, a decrease of $23 million from the prior year, largely due to higher consumer and commercial recoveries on impaired loans, partially offset by an increase in PCL on performing loans. BMO Capital Markets PCL was $80 million, compared with net recoveries of $18 million in the prior year, reflecting increases in PCL on both impaired loans and performing loans. Corporate Services recoveries of credit losses was $12 million, compared with $15 million in the prior year.

On a geographic basis, the majority of our provisions relate to our Canadian loan portfolio, reflecting the larger size of this portfolio, compared with our loan portfolios in the United States and other countries. Total PCL in Canada was $564 million, compared with $443 million in 2018. Total PCL in the United States was $300 million, up from $238 million in 2018. Total PCL in other countries was $8 million, compared with a recovery of $19 million in the prior year. Note 4 on page 151 of the consolidated financial statements provides information on PCL on a geographic basis. Table 15 on page 128 provides further segmented PCL information.



Provision for Credit Losses by Operating Group (1)

(Canadian $ in millions)	Canadian P&C	U.S. P&C	Total P&C	BMO Wealth Management	BMO Capital Markets	Corporate Services (2)	Total Bank
2019							
Provision for (recovery of) credit losses on impaired loans	**544**	**160**	**704**	**2**	**52**	**(7)**	**751**
Provision for (recovery of) credit losses on performing loans	**63**	**37**	**100**	**(2)**	**28**	**(5)**	**121**
Total provision for (recovery of) credit losses	**607**	**197**	**804**	**–**	**80**	**(12)**	**872**
2018							
Provision for (recovery of) credit losses on impaired loans	466	258	724	6	(17)	(13)	700
Provision for (recovery of) credit losses on performing loans	3	(38)	(35)	–	(1)	(2)	(38)
Total provision for (recovery of) credit losses	469	220	689	6	(18)	(15)	662
2017							
Total specific and collective provision for (recovery of) credit losses	483	289	772	8	44	(78)	746

(1) Effective the first quarter of 2018, the bank prospectively adopted IFRS 9. Under IFRS 9, we record a provision for credit losses on impaired loans and a provision for credit losses on performing loans. The provision for credit losses on impaired loans under IFRS 9 is consistent with the specific provision under IAS 39 in prior years. The provision for credit losses on performing loans replaces the collective provision under IAS 39. Prior periods have not been restated. The provision for credit losses in periods prior to 2018 is comprised of specific provisions for operating groups and includes both specific and collective provisions for Corporate Services.

(2) Prior to 2018, the reduction in the collective provision for credit losses was recorded in Corporate Services.

Provision for Credit Losses Performance Ratios

	2019	2018	2017
Total PCL-to-average net loans and acceptances (annualized) (%)	**0.20**	0.17	0.20
PCL on impaired loans-to-average net loans and acceptances (annualized) (%)	**0.17**	0.18	0.22

Adjusted results in this section are non-GAAP and are discussed in the Non-GAAP Measures section on page 17.

MANAGEMENT'S DISCUSSION AND ANALYSIS

Non-Interest Expense

Non-interest expense was $14,630 million in 2019, an increase of $1,153 million or 9% from the prior year.

Adjusted non-interest expense in both years excludes restructuring costs, the amortization of acquisition-related intangible assets and acquisition integration costs. The prior year also excludes a $277 million benefit from the remeasurement of an employee benefit liability. Restructuring costs were $484 million in 2019 and $260 million in 2018, and related to bank-wide initiatives to improve efficiency. The amortization of acquisition-related intangible assets was $128 million and $116 million in 2019 and 2018, respectively. Acquisition integration costs were $13 million and $34 million in 2019 and 2018, respectively.

Adjusted non-interest expense was $14,005 million in 2019, an increase of $661 million or 5%, or 4% excluding the impact of the stronger U.S. dollar, largely reflecting higher employee-related costs, including severance expense in BMO Capital Markets in the second quarter of 2019 and the impact of the acquisition of KGS-Alpha, and higher technology costs, partially offset by lower other expenses. Reported non-interest expense was $14,630 million, an increase of $1,153 million or 9%, due to the drivers and adjusting items noted above.

The dollar and percentage changes in expense by category are outlined in the Non-Interest Expense and Adjusted Non-Interest Expense tables below. Table 4 on page 119 provides more detail on expenses and expense growth.

Performance-based compensation on a reported basis increased $100 million or 4%, or 3% excluding the impact of the stronger U.S. dollar, due in part to the impact of the acquisition of KGS-Alpha. On a reported basis, other employee compensation, which includes salaries, benefits and severance, increased $862 million or 17%, or 16% excluding the impact of the stronger U.S. dollar. On an adjusted basis, other employee compensation increased $365 million or 7%, or 6% excluding the impact of the stronger U.S. dollar. Severance expense and the impact of the KGS-Alpha acquisition, both recorded in BMO Capital Markets, accounted for approximately half of the year-over-year increase.

Premises and equipment costs on a reported basis increased $235 million or 9%, and on an adjusted basis increased $209 million or 8%, or 7% excluding the impact of the stronger U.S. dollar, primarily due to an increase in technology investments. Reported other expenses decreased $95 million or 3%, and adjusted other expenses decreased $51 million or 2%.

BMO's reported efficiency ratio improved 140 basis points to 57.4%, and the adjusted efficiency ratio improved 330 basis points to 55.0% in 2019. On a net revenue basis(1), the reported efficiency ratio was 64.2%, compared with 62.5% a year ago, and the adjusted efficiency ratio improved 50 basis points to 61.4% in 2019.

On a net revenue basis (1), reported operating leverage was negative 2.9%, and adjusted operating leverage was positive 0.8%.

(1) This ratio is calculated excluding insurance claims, commissions and changes in policy benefit liabilities (CCPB). For more information, refer to the Insurance Claims, Commissions and Changes in Policy Benefit Liabilities section on page 28.



The **efficiency ratio** (or **expense-to-revenue ratio**) is a measure of productivity. It is calculated as non-interest expense divided by total revenue (on a taxable equivalent basis in the operating groups), expressed as a percentage. The **adjusted efficiency ratio** is calculated in the same manner, utilizing adjusted revenue and adjusted non-interest expense.

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

Non-Interest Expense

(Canadian $ in millions) For the year ended October 31	2019	2018	2017	Change from 2018 (%)
Performance-based compensation	**2,610**	2,510	2,386	**4**
Other employee compensation	**5,813**	4,951	5,082	**17**
Total employee compensation	**8,423**	7,461	7,468	**13**
Premises and equipment	**2,988**	2,753	2,491	**9**
Other	**2,665**	2,760	2,748	**(3)**
Amortization of intangible assets	**554**	503	485	**10**
Total non-interest expense	**14,630**	13,477	13,192	**9**

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

Adjusted Non-Interest Expense (1)

(Canadian $ in millions) For the year ended October 31	2019	2018	2017	Change from 2018 (%)
Performance-based compensation	**2,607**	2,508	2,381	**4**
Other employee compensation	**5,361**	4,996	5,008	**7**
Total employee compensation	**7,968**	7,504	7,389	**6**
Premises and equipment	**2,947**	2,738	2,430	**8**
Other	**2,664**	2,715	2,742	**(2)**
Amortization of intangible assets	**426**	387	336	**10**
Total adjusted non-interest expense	**14,005**	13,344	12,897	**5**

(1) Adjusted non-interest expense excludes restructuring costs, the amortization of acquisition-related intangible assets, acquisition integration costs, and a benefit from the remeasurement of an employee future benefit liability.

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

Adjusted results in this section are non-GAAP and are discussed in the Non-GAAP Measures section on page 17.

Provision for Income Taxes

The provision for income taxes reflected in the Consolidated Statement of Income is based upon transactions recorded in income, regardless of when such transactions are subject to taxation by tax authorities, with the exception of the repatriation of retained earnings from subsidiaries, as outlined in Note 22 on page 194 of the consolidated financial statements.

Management assesses BMO's consolidated results and associated provision for income taxes on a GAAP basis. We assess the performance of the operating groups and associated income taxes on a taxable equivalent basis and report accordingly.

The provision for income taxes was $1,514 million in 2019, compared with $1,961 million in 2018. The reported effective tax rate in 2019 was 20.8%, compared with 26.5% in 2018. The higher reported effective tax rate in the prior year was due to the $425 million charge related to the revaluation of our U.S. net deferred tax asset as a result of U.S. tax reform. The adjusted provision for income taxes[1] was $1,673 million in 2019, compared with $1,565 million in 2018. The adjusted effective tax rate in 2019 was 21.1%, compared with 20.7% in 2018.

BMO partially hedges, for accounting purposes, the foreign exchange risk arising from its foreign operations by funding the investments in the corresponding foreign currency. A gain or loss on hedging and an unrealized gain or loss on translation of foreign operations are charged or credited to other comprehensive income. For income tax purposes, a gain or loss on hedging activities results in an income tax charge or credit in the current period that is charged or credited to other comprehensive income, while the associated unrealized gain or loss on the foreign operations does not incur income taxes until the investments are liquidated. The income tax charge/benefit arising from a hedging gain/loss is a function of the fluctuations in exchange rates from period to period. Hedging of foreign operations has given rise to an income tax recovery in other comprehensive income of $4 million in the current year, compared with a recovery of $56 million in 2018. Refer to the Consolidated Statement of Changes in Equity on page 140 of the consolidated financial statements for further details.

Legislative changes and changes in tax policy, including their interpretation by tax authorities and the courts, may impact our earnings. Refer to the discussion in the Critical Accounting Estimates section on page 107 for additional details.

Table 4 on page 119 details the $2,334 million of total government levies and taxes incurred by BMO in 2019. Of this amount, $1,434 million was incurred in Canada, with $830 million recorded in our provision for income taxes, while the remaining $604 million was recorded in total government levies other than income taxes. The decrease from $2,715 million in 2018 was primarily due to a lower provision for income taxes.

(1) The adjusted rate is computed using adjusted net income rather than reported net income in the determination of income subject to tax.

Adjusted results in this section are non-GAAP and are discussed in the Non-GAAP Measures section on page 17.

MANAGEMENT'S DISCUSSION AND ANALYSIS

2019 Operating Groups Performance Review

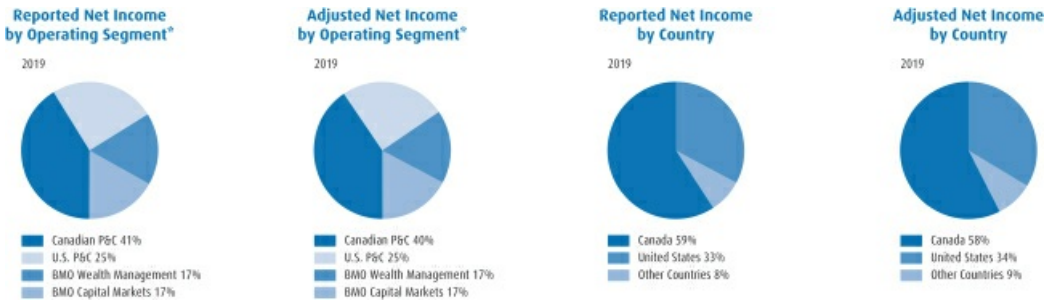
Summary

This section includes an analysis of the financial results of our operating groups and descriptions of their operating segments, businesses, strategies, challenges, achievements and outlooks.

	BMO Financial Group			
Operating Groups	**Personal and Commercial (P&C) Banking**		**BMO Wealth Management**	**BMO Capital Markets**
Operating Segments	**Canadian P&C**	**U.S. P&C**		
Lines of Business	• Personal Banking • Commercial Banking	• Personal Banking • Commercial Banking	• BMO Private Wealth • BMO InvestorLine • BMO Wealth Management U.S. • BMO Global Asset Management • BMO Insurance	• Investment and Corporate Banking • Global Markets*
	Corporate Services, including Technology and Operations			

*Previously known as Trading Products.

BMO's business mix is well diversified by operating segment and by geography, comprising the key geographies and customer segments that are critical to our strategic plans for sustaining growth and delivering value to our shareholders.



Numbers may not add due to rounding.
*Percentages determined excluding results in Corporate Services.

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How BMO Reports Operating Group Results

Periodically, certain business lines and units within the business lines are transferred between client and corporate support groups to more closely align BMO's organizational structure with its strategic priorities. In addition, allocations of revenue, provisions for credit losses and expenses are updated to better align with current experience. Results for prior periods are reclassified to conform with the current period's presentation.

Effective the first quarter of 2019, certain dividend income in our Global Markets business has been reclassified from non-interest revenue to net interest income. Results for prior periods and related ratios have been reclassified to conform with the current period's presentation.

The bank adopted IFRS 15, *Revenue from Contracts with Customers* (IFRS 15), effective the first quarter of 2019, and we elected to retrospectively present prior periods as if IFRS 15 had always been applied. As a result, loyalty rewards and cash promotion costs on cards previously recorded in non-interest expense are presented as a reduction in non-interest revenue. In addition, when customers reimburse us for certain out-of-pocket expenses incurred on their behalf, we record the reimbursement in revenue. Previously, these reimbursements were recorded as a reduction in the related expense.

BMO analyzes revenue at the consolidated level based on GAAP revenue as reported in the consolidated financial statements rather than on a taxable equivalent basis (teb), which is consistent with our Canadian peer group. Like many banks, we analyze revenue on a teb basis 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 group teb adjustments is reflected in Corporate Services revenue and provision for income taxes.

Personal and Commercial Banking

(Canadian $ in millions, except as noted)	Canadian P&C			U.S. P&C			Total P&C		
As at or for the year ended October 31	**2019**	2018	2017	**2019**	2018	2017	**2019**	2018	2017
Net interest income (teb)	**5,878**	5,541	5,261	**4,218**	3,843	3,551	**10,096**	9,384	8,812
Non-interest revenue (1)	**2,128**	2,069	2,079	**1,162**	1,096	1,005	**3,290**	3,165	3,084
Total revenue (teb) (1)	**8,006**	7,610	7,340	**5,380**	4,939	4,556	**13,386**	12,549	11,896
Provision for (recovery of) credit losses on impaired loans (2)	**544**	466	na	**160**	258	na	**704**	724	na
Provision for (recovery of) credit losses on performing loans (2)	**63**	3	na	**37**	(38)	na	**100**	(35)	na
Total provision for credit losses (2)	**607**	469	483	**197**	220	289	**804**	689	772
Non-interest expense (1)	**3,854**	3,710	3,534	**3,139**	2,968	2,891	**6,993**	6,678	6,425
Income before income taxes	**3,545**	3,431	3,323	**2,044**	1,751	1,376	**5,589**	5,182	4,699
Provision for income taxes (teb)	**919**	882	823	**433**	357	358	**1,352**	1,239	1,181
Reported net income	**2,626**	2,549	2,500	**1,611**	1,394	1,018	**4,237**	3,943	3,518
Amortization of acquisition-related intangible assets (3)	**2**	2	3	**43**	45	46	**45**	47	49
Adjusted net income	**2,628**	2,551	2,503	**1,654**	1,439	1,064	**4,282**	3,990	3,567
Key Performance Metrics and Drivers									
Net income growth (%)	**3.0**	2.0	13.2	**15.6**	36.9	(3.0)	**7.5**	12.1	7.9
Adjusted net income growth (%)	**3.0**	2.0	13.1	**15.0**	35.1	(3.2)	**7.3**	11.9	7.7
Revenue growth (%)	**5.2**	3.7	6.4	**8.9**	8.4	(0.2)	**6.7**	5.5	3.8
Non-interest expense growth (%)	**3.9**	5.0	3.3	**5.8**	2.7	0.9	**4.7**	3.9	2.2
Adjusted non-interest expense growth (%)	**3.9**	5.0	3.3	**5.9**	2.9	1.0	**4.8**	4.0	2.3
Return on equity (%)	**27.3**	30.5	29.8	**11.0**	10.8	7.9	**17.5**	18.5	16.6
Adjusted return on equity (%)	**27.3**	30.6	29.8	**11.3**	11.1	8.3	**17.7**	18.8	16.8
Operating leverage (teb) (%)	**1.3**	(1.3)	3.1	**3.1**	5.7	(1.1)	**2.0**	1.6	1.6
Adjusted operating leverage (teb) (%)	**1.3**	(1.3)	3.1	**3.0**	5.5	(1.2)	**1.9**	1.5	1.5
Efficiency ratio (teb) (%)	**48.1**	48.7	48.2	**58.3**	60.1	63.4	**52.2**	53.2	54.0
Adjusted efficiency ratio (teb) (%)	**48.1**	48.7	48.1	**57.3**	58.9	62.0	**51.8**	52.7	53.5
Net interest margin on average earning assets (teb) (%)	**2.64**	2.60	2.53	**3.53**	3.72	3.68	**2.95**	2.97	2.90
Average common equity	**9,545**	8,222	8,268	**14,418**	12,692	12,581	**23,963**	20,914	20,849
Average earning assets	**222,513**	212,965	207,815	**119,640**	103,394	96,363	**342,153**	316,359	304,178
Average gross loans and acceptances	**237,142**	223,536	215,848	**113,620**	98,001	90,533	**350,762**	321,537	306,381
Average net loans and acceptances	**236,253**	222,673	215,667	**112,904**	97,346	90,572	**349,157**	320,019	306,239
Average deposits	**175,125**	159,483	152,492	**106,733**	90,738	85,927	**281,858**	250,221	238,419
Full-time equivalent employees	**14,728**	14,740	14,648	**7,013**	7,248	7,197	**21,741**	21,988	21,845

(1) Effective the first quarter of 2019, the bank adopted IFRS 15, *Revenue from Contracts with Customers* (IFRS 15) and elected to retrospectively present prior periods as if IFRS 15 had always been applied. As a result, loyalty rewards and cash promotion costs on cards previously recorded in non-interest expense are presented as a reduction in non-interest revenue. Refer to the Changes in Accounting Policies in 2019 section on page 111 for further details.

(2) Effective the first quarter of 2018, the bank prospectively adopted IFRS 9, *Financial Instruments* (IFRS 9). Under IFRS 9, we record a provision for credit losses on impaired loans and a provision for credit losses on performing loans. Prior periods have not been restated. The total provision for credit losses in periods prior to 2018 is comprised of specific provisions.

(3) Total P&C before tax amounts of $59 million in 2019, $61 million in 2018 and $66 million in 2017 are included in non-interest expense.

Adjusted results in this table are non-GAAP amounts or non-GAAP measures. Please refer to the Non-GAAP Measures section.

na – not applicable

The Personal and Commercial Banking (P&C) operating group represents the sum of our two retail and commercial banking operating segments, Canadian Personal and Commercial Banking (Canadian P&C) and U.S. Personal and Commercial Banking (U.S. P&C). The combined P&C banking business net income was $4,237 million, an increase of $294 million or 7% from the prior year. Adjusted net income, which excludes the amortization of acquisition-related intangible assets, was $4,282 million, an increase of $292 million or 7%. These operating segments are reviewed separately in the sections that follow.

Adjusted results in this section are non-GAAP and are discussed in the Non-GAAP Measures section on page 17.

MANAGEMENT'S DISCUSSION AND ANALYSIS

Canadian Personal and Commercial Banking

Canadian Personal and Commercial Banking provides financial products and services to eight million customers. We're here to help our customers make the right financial decisions as they bank with us across our network of 900 branches, contact centres, digital banking platforms and over 3,300 automated teller machines. Our top-tier commercial franchise serves as an advisor and trusted partner to our clients across multiple industry sectors throughout Canada.

Lines of Business

Personal Banking provides customers with a wide range of products and services, including chequing and savings accounts, credit cards, mortgages, personal loans and everyday financial and investment advice. Our employees are focused on providing all of our customers with an exceptional experience every time they interact with us.

Commercial Banking serves businesses with a comprehensive suite of commercial products and services, including business deposit accounts, commercial credit cards, business loans and commercial mortgages, cash management solutions, foreign exchange services and specialized banking programs. Our commercial bankers partner with our customers to help them grow and manage their businesses.

Strategy and Key Priorities

2019 Priorities and Achievements

Key Priority: Continue our focus on customer loyalty and growth

Achievements

- Gained market share in personal deposits, credit cards, commercial loans and commercial deposits
- Achieved strong employee engagement survey results, above leading company benchmarks, demonstrating our employees' ongoing commitment to deliver a leading customer experience
- Ran effective campaigns in support of key offerings, ranging from home financing and credit cards to Everyday Banking, which helped to increase our new-to-BMO customer base and deepen existing relationships
- Continued to grow our mix of advice-based roles, strengthening our ability to engage with customers on the financial issues that are important to them, whenever and however they choose to interact with us
- Implemented a new measurement methodology, a customer insights platform and a disciplined customer callback program with robust training and coaching in order to understand and address customer concerns and continuously improve the customer experience
- Upgraded 50 branches across Canada and opened three new branches – including a flagship branch in Laval, a new concept branch at Stackt Market in downtown Toronto, and a new Smart Branch in Cochrane, Alberta
- Improved processes and increased efficiencies in our Business Banking Express platform, allowing our sales force to spend more time engaging directly with customers
- Created a new Technology and Innovation Banking Group to help companies compete and grow in Canada's burgeoning technology sector
- Proud to be named Best Commercial Bank in Canada for the fifth consecutive year by *World Finance Magazine* at its 2019 Banking Awards, in recognition of our strong regional and industry focus, as well as our commitment to building customer relationships and providing innovative solutions

Key Priority: Deliver a leading digital experience

Achievements

- Expanded lending account opening capabilities with the roll-out of a new mobile digital line of credit application and mobile pre-approved mortgage application
- Grew the total number of retail chequing, savings, credit card, home financing, loans and line of credit accounts acquired digitally by 6% in Canada
- First financial institution in Canada to launch a full range of biometric authenticators via our mobile app for commercial banking customers. Recognized with the Aite Group 2019 Cash Management & Payments Innovation Award for Digital Channel Capabilities for reimagining the online commercial customer experience
- Launched BMO InnoV8, a digital innovation program that fosters digital ideation and has generated two patent applications in its first year
- Continued to improve the mobile experience, which resulted in a 13% increase in the number of active mobile users and recognition as a Strong Performer in *The Forrester Banking Wave™: Canadian Mobile Apps* Q2 2019 report
- Recognized with the Celent Model Bank 2019 Award for Innovation Enablement and nominated as a finalist for PwC Canada's Vision to Reality Award

2020 Focus

- Continue to improve customer loyalty by deepening primary relationships
  - In Personal Banking, deliver a leading customer experience by leveraging new digital channels and enhancing existing networks
  - In Commercial Banking, focus on maintaining our core strengths, while targeting opportunities for growth and diversification across high-value sectors and businesses
- Continue to enhance the digital experience through sales and service transactions
- Continue to build efficiencies in our business by streamlining operations, investing in digital capabilities and through cross-bank collaboration

Canadian P&C

(Canadian $ in millions, except as noted) As at or for the year ended October 31	**2019**	2018	2017
Net interest income	**5,878**	5,541	5,261
Non-interest revenue (1)	**2,128**	2,069	2,079
Total revenue (1)	**8,006**	7,610	7,340
Provision for (recovery of) credit losses on impaired loans (2)	**544**	466	na
Provision for (recovery of) credit losses on performing loans (2)	**63**	3	na
Total provision for credit losses (2)	**607**	469	483
Non-interest expense (1)	**3,854**	3,710	3,534
Income before income taxes	**3,545**	3,431	3,323
Provision for income taxes	**919**	882	823
Reported net income	**2,626**	2,549	2,500
Amortization of acquisition-related intangible assets (3)	**2**	2	3
Adjusted net income	**2,628**	2,551	2,503
Key Performance Metrics and Drivers			
Personal revenue	**4,998**	4,921	4,625
Commercial revenue	**3,008**	2,689	2,715
Net income growth (%)	**3.0**	2.0	13.2
Revenue growth (%)	**5.2**	3.7	6.4
Non-interest expense growth (%)	**3.9**	5.0	3.3
Adjusted non-interest expense growth (%)	**3.9**	5.0	3.3
Return on equity (%)	**27.3**	30.5	29.8
Adjusted return on equity (%)	**27.3**	30.6	29.8
Operating leverage (%)	**1.3**	(1.3)	3.1
Adjusted operating leverage (%)	**1.3**	(1.3)	3.1
Efficiency ratio (%)	**48.1**	48.7	48.2
Net interest margin on average earning assets (%)	**2.64**	2.60	2.53
Average earning assets	**222,513**	212,965	207,815
Average gross loans and acceptances	**237,142**	223,536	215,848
Average net loans and acceptances	**236,253**	222,673	215,667
Average deposits	**175,125**	159,483	152,492
Full-time equivalent employees	**14,728**	14,740	14,648

(1) Effective the first quarter of 2019, the bank adopted IFRS 15, *Revenue from Contracts with Customers* (IFRS 15) and elected to retrospectively present prior periods as if IFRS 15 had always been applied. As a result, loyalty rewards and cash promotion costs on cards previously recorded in non-interest expense are presented as a reduction in non-interest revenue. Refer to the Changes in Accounting Policies in 2019 section on page 111 for further details.

(2) Effective the first quarter of 2018, the bank prospectively adopted IFRS 9, *Financial Instruments* (IFRS 9). Under IFRS 9, we record a provision for credit losses on impaired loans and a provision for credit losses on performing loans. Prior periods have not been restated. The total provision for credit losses in periods prior to 2018 is comprised of specific provisions.

(3) Before tax amounts of $2 million in each of 2019 and 2018, and $3 million in 2017 are included in non-interest expense.

Adjusted results in this table are non-GAAP amounts or non-GAAP measures. Please refer to the Non-GAAP Measures section.

na – not applicable



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Financial Review

Canadian P&C reported net income was $2,626 million and adjusted net income was $2,628 million, an increase of $77 million or 3% from the prior year for both reported and adjusted net income. Adjusted net income excludes the amortization of acquisition-related intangible assets. Higher revenue was partially offset by higher expenses and higher provisions for credit losses.

Revenue was $8,006 million, an increase of $396 million or 5% from the prior year. In our personal banking business, revenue increased $77 million or 2%, due to higher balances across most products and higher margins, partially offset by lower non-interest revenue. The prior year included a $39 million gain related to the restructuring of Interac Corporation, which impacted personal banking revenue growth by 1%. In our commercial banking business, revenue increased $319 million or 12%, due to higher balances across most products, increased non-interest revenue and higher margins.

Net interest margin was 2.64%, an increase of 4 basis points, due to a favourable product mix and the benefit of higher rates.

The total provision for credit losses was $607 million, an increase of $138 million from the prior year. The provision for credit losses on impaired loans increased $78 million, due to higher consumer and commercial provisions in the current year. There was a $63 million provision for credit losses on performing loans in the current year, compared with a $3 million provision for credit losses on performing loans in the prior year.

Non-interest expense was $3,854 million, an increase of $144 million or 4% from a year ago, largely reflecting continued investment in the business, including higher technology and sales force investments.

Average gross loans and acceptances increased $13.6 billion or 6% from a year ago to $237.1 billion. Total personal lending balances (excluding retail cards) increased $2.5 billion or 2% from the prior year, and included growth of 4% in proprietary mortgages and amortizing home equity line of credit loans. Commercial loan balances (excluding corporate cards) increased $10.7 billion or 15%, with good growth across a number of industry sectors.

Average deposits increased $15.6 billion or 10% to $175.1 billion. Personal deposit balances increased 10%. Commercial deposit balance growth was broad-based, with balances up 9% from the prior year.

Business Environment, Outlook and Challenges

The personal and commercial banking business in Canada is highly competitive in a rapidly changing environment. Traditional competitors continue to invest in innovative technologies that allow them to serve customers in new ways and focus more effectively on the customer experience.

Non-traditional competitors have continued to gain momentum and are deepening their connections with banks, in order to enhance their products and build customer relationships.

Growth in the Canadian economy slowed further in 2019, in part because high household debt levels restrained consumer spending, while business investment was impacted by trade-related uncertainties. Despite lower borrowing costs, growth in consumer loans, mortgages and credit cards is projected to be modest as a result of high debt levels. Business lending also faces downward pressure due to trade-related uncertainties and concerns over a potential economic slowdown. On the deposit side, growth in personal deposits is expected to rebound slightly given solid labour market conditions, while growth in personal term deposits is expected to decelerate from the strong growth recorded in 2019 given the lower interest rate environment. Growth in business deposits is projected to trend upwards.

We are committed to building out our commercial banking business by continuing to expand our advisory sales force and targeting commercial opportunities across geographic regions, market segments and industry sectors, especially in high-value sectors and businesses.

We continue to enhance our personal banking business by deepening primary customer relationships, while leveraging digital technologies to deliver an exceptional customer experience. We continue to position ourselves to thrive in a digital future by investing in new technologies and enhancing existing networks.

Technology will continue to play a leading role in delivering exceptional experiences for all our customers, while enhancing the efficiency of our operations.

The Canadian economic environment in 2019 and the outlook for 2020 are discussed in more detail in the Economic Developments and Outlook section on page 18.

Caution

This Canadian Personal and Commercial Banking section contains forward-looking statements. Please refer to the Caution Regarding Forward-Looking Statements.

Adjusted results in this section are non-GAAP and are discussed in the Non-GAAP Measures section on page 17.

MANAGEMENT'S DISCUSSION AND ANALYSIS

U.S. Personal and Commercial Banking

We serve more than two million customers by providing a banking experience with a human touch, while delivering a broad range of financial services. We serve our personal banking customers seamlessly across our extensive network of more than 560 branches, our dedicated contact centres, our digital banking platforms, and nationwide access to more than 40,000 automated teller machines. Our commercial bankers act as trusted advisors and partners for our commercial clients, delivering sector and industry expertise, local presence, and a full suite of commercial products and services.

Lines of Business

Personal Banking offers a variety of products and services, including deposits, home lending, consumer credit, small business lending, credit cards and other banking services. Our goal in everything we do is to help our customers make real financial progress.

Commercial Banking provides clients with a broad range of products and services, including multiple financing options and treasury solutions, as well as risk management products. Our commercial bankers partner with our clients, anticipating their financial needs and sharing our expertise and knowledge to help them grow and manage their businesses.

Strategy and Key Priorities

2019 Priorities and Achievements

Key Priority: Deliver a great experience for our customers and employees

Achievements

- Further improved customer loyalty in Personal Banking, as measured by Net Promoter Score, and continued to have best-in-class Net Promoter Score in Commercial Banking
- Maintained robust customer growth, continuing to lead in total household account origination for retail deposits, and increasing growth in commercial net customer acquisition
- Solidified our second-place ranking in deposit market share in our core Chicago and Wisconsin markets and our top-five ranking across our Midwest footprint
- For an unprecedented tenth consecutive year, recognized by *American Banker* for our team of women leaders as the "Most Powerful Women in Banking and Finance"
- Included in the Bloomberg Gender-Equality Index, which recognizes commitment to gender equality and inclusivity in the workplace, for the fourth consecutive year, and featured in *Forbes Magazine* as one of America's Best Employers for Diversity in 2019, based on an independent survey of more than 50,000 U.S.-based employees
- Recognized for the third consecutive year as a Best Place to Work for LGBTQ Equality by the Human Rights Campaign Foundation in its 2019 Corporate Equality Index

Key Priority: In Personal Banking, accelerate digitization and guidance delivery, drive deposit growth, and optimize our lending portfolio

Achievements

- Launched a new mobile banking platform to better enable our customers to bank whenever and however they want
- Delivered market-leading deposit growth, outpacing our peers, with our robust deposit product offering
- Advanced digital customer acquisition, with account opening capabilities now covering all 50 states and with a majority of digital deposits originating outside of our physical footprint
- Continued to enhance the customer and employee experience with a new digital home lending account application process, as well as through process simplification and centralization
- Strengthened our lending portfolio with a continued focus on non-real estate assets, such as credit card loans and other unsecured lending
- Invested in branch automation capabilities to allow a more proactive focus on customer conversations

Key Priority: In Commercial Banking, accelerate growth in high-potential geographies, invest in national specialty businesses, and increase deposit capture and share of wallet

Achievements

- Continued to expand our geographic footprint, opening our second office in North Texas and building out our team in Atlanta, with greater emphasis on going to market with BMO's full suite of products, solutions, and capabilities to drive organic growth
- Strengthened our presence in our core Illinois market by significantly expanding our middle-market team
- Enhanced our national franchise with new specialty businesses, including the addition of asset-based retail and health care lending platforms
- Delivered peer-leading deposit growth by launching new sales initiatives and further differentiating our product and service offering, such as our hybrid chequing account
- Launched new digital capabilities, including the Online Banking for Business mobile app with biometric authentication and a redesigned online Business Self-Service Centre
- Recognized with a Celent Model Bank 2019 Award for the launch of BMO Payment Hub, a cross-border initiative to modernize our payments infrastructure to deliver faster and more efficient payment experiences for our customers

2020 Focus

- Continue to strengthen our competitive position by investing in key capabilities, such as digital and talent, while leveraging BMO's full suite of products, solutions and capabilities, and our unique cross-border advantage to deliver a great customer experience
  - In Personal Banking, continue to drive strong deposit growth, new customer acquisition, and a larger share of wallet through more holistic customer conversations and digital engagement
  - In Commercial Banking, continue to build our national presence through growth in high-potential geographies and specialty businesses, invest in digital and payment capabilities, and strengthen cross-bank collaboration
- Continue to focus on managing structural costs and expenses to improve productivity and strengthen our operating position

U.S. P&C

(Canadian $ equivalent in millions, except as noted) As at or for the year ended October 31	**2019**	2018	2017
Reported net income	**1,611**	1,394	1,018
Adjusted net income	**1,654**	1,439	1,064
Net income growth (%)	**15.6**	36.9	(3.0)
Adjusted net income growth (%)	**15.0**	35.1	(3.2)
(US$ in millions, except as noted)			
Net interest income (teb)	**3,174**	2,983	2,718
Non-interest revenue (1)	**875**	851	770
Total revenue (teb) (1)	**4,049**	3,834	3,488
Provision for (recovery of) credit losses on impaired loans (2)	**121**	201	na
Provision for (recovery of) credit losses on performing loans (2)	**28**	(31)	na
Total provision for credit losses (2)	**149**	170	221
Non-interest expense (1)	**2,362**	2,303	2,213
Income before income taxes	**1,538**	1,361	1,054
Provision for income taxes (teb)	**326**	279	273
Reported net income	**1,212**	1,082	781
Amortization of acquisition-related intangible assets (3)	**32**	35	36
Adjusted net income	**1,244**	1,117	817
Key Performance Metrics and Drivers (US$ basis)			
Personal revenue	**1,362**	1,257	1,085
Commercial revenue	**2,687**	2,577	2,403
Net income growth (%)	**12.0**	38.7	(1.6)
Adjusted net income growth (%)	**11.4**	36.9	(1.7)
Revenue growth (%)	**5.6**	9.9	1.3
Non-interest expense growth (%)	**2.6**	4.1	2.3
Adjusted non-interest expense growth (%)	**2.7**	4.3	2.5
Return on equity (%)	**11.0**	10.8	7.9
Adjusted return on equity (%)	**11.3**	11.1	8.3
Operating leverage (teb) (%)	**3.0**	5.8	(1.0)
Adjusted operating leverage (teb) (%)	**2.9**	5.6	(1.2)
Efficiency ratio (teb) (%)	**58.3**	60.1	63.4
Adjusted efficiency ratio (teb) (%)	**57.3**	58.9	62.0
Net interest margin on average earning assets (teb) (%)	**3.53**	3.72	3.69
Average earning assets	**90,035**	80,255	73,752
Average gross loans and acceptances	**85,505**	76,067	69,294
Average net loans and acceptances	**84,966**	75,558	69,324
Average deposits	**80,316**	70,431	65,724
Full-time equivalent employees	**7,013**	7,248	7,197

(1) Effective the first quarter of 2019, the bank adopted IFRS 15, *Revenue from Contracts with Customers* (IFRS 15) and elected to retrospectively present prior periods as if IFRS 15 had always been applied. As a result, loyalty rewards and cash promotion costs on cards previously recorded in non-interest expense are presented as a reduction in non-interest revenue. Refer to the Changes in Accounting Policies in 2019 section on page 111 for further details.

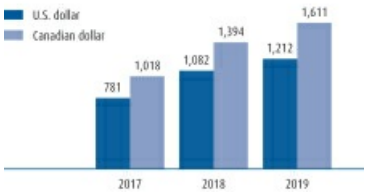
(2) Effective the first quarter of 2018, the bank prospectively adopted IFRS 9, *Financial Instruments* (IFRS 9). Under IFRS 9, we record a provision for credit losses on impaired loans and a provision for credit losses on performing loans. Prior periods have not been restated. The total provision for credit losses in periods prior to 2018 is comprised of specific provisions.

(3) Before tax amounts of US$43 million in 2019, US$45 million in 2018 and US$49 million in 2017 are included in non-interest expense.

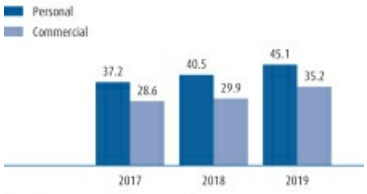
Adjusted results in this table are non-GAAP amounts or non-GAAP measures. Please refer to the Non-GAAP Measures section.

na – not applicable

Reported Net Income
($ millions)



Average Deposits*
(US$ billions)



*Numbers may not add due to rounding.

Average Gross Loans and Acceptances*
(US$ billions)



*Numbers may not add due to rounding.

Financial Review

U.S. P&C reported net income was $1,611 million, an increase of $217 million or 16%, and adjusted net income was $1,654 million, an increase of $215 million or 15% from the prior year. Adjusted net income excludes the amortization of acquisition-related intangible assets. All amounts in the remainder of this section are on a U.S. dollar basis.

Reported net income was $1,212 million, an increase of $130 million or 12%, and adjusted net income was $1,244 million, an increase of $127 million or 11%, primarily due to good revenue performance and lower provision for credit losses, partially offset by higher expense.

Revenue was $4,049 million, an increase of $215 million or 6%, primarily reflecting higher balances across most products and increased non-interest revenue, partially offset by a lower net interest margin. In our personal banking business, revenue increased $105 million or 8%, largely due to higher deposit revenue. In our commercial banking business, revenue increased $110 million or 4%, primarily due to higher loan balances and deposit revenue, net of loan margin compression.

Net interest margin was 3.53%, a decrease of 19 basis points, due to loan margin compression and changes in deposit product mix, net of improved deposit product margins and the impact of deposits growing faster than loans.

The total provision for credit losses was $149 million, a decrease of $21 million from the prior year. The provision for credit losses on impaired loans decreased $80 million, largely due to higher consumer and commercial recoveries in the current year. There was a $28 million provision for credit losses on performing loans in the current year, compared with a $31 million recovery of credit losses on performing loans in the prior year.

Non-interest expense was $2,362 million, an increase of $59 million or 3%, and adjusted non-interest expense was $2,319 million, an increase of $61 million or 3%, primarily due to continued investment in the business, including higher technology and employee-related costs, partially offset by lower Federal Deposit Insurance Corporation insurance expense and the impact of non-recurring items in the current and prior year.

Average gross loans and acceptances increased $9.4 billion or 12% from a year ago to $85.5 billion, driven by commercial loan growth of 14% and higher personal loan balances of 4%.

Average deposits increased $9.9 billion or 14% to $80.3 billion, with 18% growth in commercial balances and 11% growth in personal balances.

Business Environment, Outlook and Challenges

The U.S. P&C business operates in a rapidly changing environment and is primarily based in eight states (Illinois, Wisconsin, Missouri, Indiana, Minnesota, Kansas, Arizona and Florida). In addition, our commercial business provides targeted nationwide coverage for key specialty sectors and has offices in select regional markets.

The environment for growing our personal and commercial banking customer base remains highly competitive, and the declining interest rate environment will result in added pressure on both margins and customer acquisition. After weakening in 2019, the U.S. economy is expected to grow at a steadier rate in 2020, in response to recent declines in interest rates and a modest expansion of fiscal policy. The major risks affecting the U.S. economic outlook relate to an escalation in trade disputes, domestic political uncertainty and geopolitical tensions.

We continue to monitor the competitive landscape in order to effectively price our products and services and invest in building a seamless human-digital interface in banking, enabling our customers to bank whenever and however they want.

Peer-leading performance in our commercial lending business has allowed us to build a strong presence in our diversified and specialized sectors and establish a position of strength in our core footprint and chosen markets. In our personal lending business, we are focused on improving efficiency in order to create a better experience for our customers and bankers.

The personal and commercial businesses are well equipped and remain committed to pursuing a customer-focused growth strategy with an emphasis on high-growth sectors, increasing share in new markets and deepening our relationships with existing customers.

The U.S. economic environment in 2019 and the outlook for 2020 are discussed in more detail in the Economic Developments and Outlook section on page 18.

Caution

This U.S. Personal and Commercial Banking section contains forward-looking statements. Please refer to the Caution Regarding Forward-Looking Statements.

Adjusted results in this section are non-GAAP and are discussed in the Non-GAAP Measures section on page 17.

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BMO Wealth Management

BMO Wealth Management serves a full range of client segments, from mainstream to ultra-high net worth and institutional. Our businesses offer a broad range of wealth management products and services, including insurance, with an active presence in markets across Canada, the United States, EMEA and Asia.

Lines of Business

BMO Private Wealth offers client-focused investment, wealth management and financial services and solutions. In Canada, BMO Nesbitt Burns provides full-service investing and wealth advisory services, leveraging strong financial planning and high-quality solutions. BMO Private Banking Canada & Asia serves high net worth and ultra-high net worth clients and families through innovative advice-based solutions, including investment management, tax planning, business succession planning, trust and estate services, and philanthropy. Together as one team, we are helping clients grow, protect and transition their wealth.

BMO InvestorLine is a digital investing service that offers clients three ways to invest: our top-ranked self-directed service; adviceDirect™, which provides personalized advice and support from registered investment advisors while allowing clients to control trading; and SmartFolio™, a digital solution that matches a portfolio to a client's goals while our professional investment team handles day-to-day investment management.

BMO Wealth Management U.S. offers financial solutions to high net worth and ultra-high net worth families and businesses, and under BMO Harris Financial Advisors, to mass affluent clients.

BMO Global Asset Management is a global investment organization that provides investment management and trust and custody services to institutional, retail and high net worth investors around the world. Our BMO Mutual Funds and BMO Exchange Traded Funds offer our clients innovative investment solutions across a range of channels.

BMO Insurance provides insurance and wealth solutions. We manufacture life insurance, accident and sickness insurance, annuity products and segregated funds that are marketed to brokers and directly to individuals and group pension customers. We also offer group creditor and travel insurance to bank customers in Canada.

Strategy and Key Priorities

2019 Priorities and Achievements

Key Priority: Deliver on our clients' current and evolving personal wealth management and insurance needs, with an exceptional client experience

Achievements

- Continued to drive stronger client loyalty scores across all our businesses with our focus on delivering great client experiences and comprehensive wealth planning
- Strengthened our deposit and lending capabilities, including product development and expansion of tailored financing solutions for our ultra-high net worth clients
- Recognized in the 2019 Brokerage Report Card, issued by *Investment Executive*, which reported that over 90% of our BMO Nesbitt Burns investment advisors surveyed would recommend their firm
- Rebranded our U.S. ultra-high net worth business as BMO Family Office, providing integrated solutions and tailored advice designed to help meet the unique needs of ultra-affluent individuals and families
- Transformed the client onboarding journey, making it easier for new clients to open an account
- Continued to address the unique needs of women business owners and clients with our industry-leading BMO for Women program
- Maintained and reinforced our leading position in pension de-risking, supported by a prudent approach to underwriting

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Key Priority: Build on our leadership position in key asset management markets through enhanced investment and distribution capabilities

Achievements

- Further sharpened our focus on products, channels and markets where we have a competitive advantage, such as responsible investment, alternatives, and liability-driven investment
- Launched the BMO Sustainable Development Goal Engagement Global Equity Fund, combining expertise in active equity management with a deep commitment to responsible investing
- Maintained our exchange traded funds leadership position in Canada, ranking #1 in net new asset growth for the ninth consecutive year and #2 in market share
- Continued to successfully build out our strong real estate business, particularly in Europe

Key Priority: Bring the best of BMO to our clients through effective collaboration

Achievements

- Unified our BMO Nesbitt Burns and BMO Private Banking teams in Canada to become BMO Private Wealth, allowing us to take collaboration to the next level and bringing together the best of two strong businesses for our clients
- Continued to make progress toward our goal of building a world-class partnership for business owner clients with Business and Commercial banking by increasing the number of integrated deal teams across Canada to more than 70 and establishing three new integrated Wealth/Commercial teams in Chicago, Milwaukee and Dallas
- Introduced a holistic health care banking program, providing a full suite of tailored banking and wealth management services designed to support health care professionals through every stage of their life cycle

2020 Focus

- Deliver a differentiated client experience, providing outstanding support and working together to grow, protect and transition their wealth with confidence
- Extend our advantage as a solutions provider, delivering innovative asset management and insurance offerings that anticipate clients' evolving needs and exceed their expectations
- Build on our strong foundation and continue to evolve, simplify and streamline our businesses to drive value, efficiency and returns
- Continue to strengthen collaboration across BMO Wealth Management, the enterprise and borders to bring the best of BMO to all clients

BMO Wealth Management

(Canadian $ in millions, except as noted) As at or for the year ended October 31	2019	2018	2017
Net interest income	**935**	826	722
Non-interest revenue (1)	**6,727**	5,475	5,496
Total revenue (1)	**7,662**	6,301	6,218
Insurance claims, commissions and changes in policy benefit liabilities (CCPB)	**2,709**	1,352	1,538
Revenue, net of CCPB	**4,953**	4,949	4,680
Provision for (recovery of) credit losses on impaired loans (2)	**2**	6	na
Provision for (recovery of) credit losses on performing loans (2)	**(2)**	–	na
Total provision for credit losses (2)	**–**	6	8
Non-interest expense (1)	**3,522**	3,515	3,355
Income before income taxes	**1,431**	1,428	1,317
Provision for income taxes	**371**	356	350
Reported net income	**1,060**	1,072	967
Amortization of acquisition-related intangible assets (3)	**37**	41	65
Reinsurance adjustment (4)	**25**	–	–
Adjusted net income	**1,122**	1,113	1,032
Key Performance Metrics and Drivers			
Traditional Wealth businesses net income	**862**	805	729
Traditional Wealth businesses adjusted net income	**899**	846	794
Insurance net income	**198**	267	238
Insurance adjusted net income	**223**	267	238
Net income growth (%)	**(1.1)**	11.0	24.5
Adjusted net income growth (%)	**0.8**	8.0	17.6
Revenue growth (%)	**21.6**	1.3	5.1
Revenue growth, net of CCPB (%)	**0.1**	5.7	7.1
Adjusted CCPB	**2,684**	1,352	1,538
Revenue growth, net of adjusted CCPB (%)	**0.6**	5.7	7.1
Non-interest expense growth (%)	**0.2**	4.8	0.4
Adjusted non-interest expense growth (%)	**0.3**	5.8	1.9
Return on equity (%)	**16.7**	17.8	15.9
Adjusted return on equity (%)	**17.7**	18.5	17.0
Operating leverage, net of CCPB (%)	**(0.1)**	0.9	6.7
Adjusted operating leverage, net of CCPB (%)	**0.3**	(0.1)	5.2
Efficiency ratio, net of CCPB (%)	**71.1**	71.0	71.7
Adjusted efficiency ratio (%)	**45.3**	55.0	52.7
Adjusted efficiency ratio, net of CCPB (%)	**69.8**	70.0	70.0
Average common equity	**6,321**	5,989	6,040
Average assets	**40,951**	35,913	32,562
Average gross loans and acceptances	**23,519**	20,290	18,068
Average net loans and acceptances	**23,487**	20,260	18,063
Average deposits	**36,419**	34,251	33,289
Assets under administration (5)	**393,576**	382,839	359,773
Assets under management	**471,160**	438,274	429,448
Full-time equivalent employees	**6,459**	6,440	6,304
U.S. Business Select Financial Data (US$ in millions)			
Total revenue	**613**	600	650
Non-interest expense	**512**	532	546
Reported net income	**77**	50	76
Adjusted net income	**85**	60	88
Average net loans and acceptances	**4,156**	3,619	3,300
Average deposits	**5,794**	5,748	5,783

(1) Effective the first quarter of 2019, the bank adopted IFRS 15, *Revenue from Contracts with Customers* (IFRS 15) and elected to retrospectively present prior periods as if IFRS 15 had always been applied. As a result, certain out-of-pocket expenses reimbursed to BMO from customers have been reclassified from a reduction in non-interest expense to non-interest revenue. Refer to the Changes in Accounting Policies in 2019 section on page 111 for further details.

(2) Effective the first quarter of 2018, the bank prospectively adopted IFRS 9, *Financial Instruments* (IFRS 9). Under IFRS 9, we record a provision for credit losses on impaired loans and a provision for credit losses on performing loans. Prior periods have not been restated. The total provision for credit losses in periods prior to 2018 is comprised of specific provisions.

(3) Before tax amounts of $47 million in 2019, $52 million in 2018 and $80 million in 2017 are included in non-interest expense.

(4) Fiscal 2019 reported net income included a reinsurance adjustment of $25 million (pre-tax and after-tax) for the net impact of major reinsurance claims from Japanese typhoons that were incurred after our announced decision to wind down our reinsurance business. This reinsurance adjustment is included in CCPB.

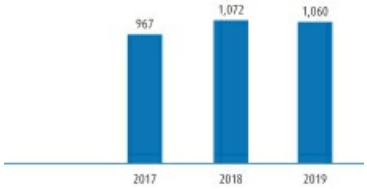
(5) Certain assets under management that are also administered by us are included in assets under administration.

Adjusted results in this table are non-GAAP amounts or non-GAAP measures. Please refer to the Non-GAAP Measures section.

na – not applicable

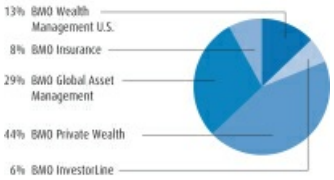
Reported Net Income

($ millions)



2019 Net Revenue by Line of Business

(%)



Financial Review

BMO Wealth Management reported net income was $1,060 million, compared with $1,072 million in the prior year. Adjusted net income of $1,122 million, which excludes the net impact of major reinsurance claims from Japanese typhoons that were incurred after our announced decision to wind down our reinsurance business and the amortization of acquisition-related intangible assets, increased $9 million or 1%. The performance of the reinsurance business did not meet our risk and return expectations, and we made the strategic decision to wind down the business during 2019.

Traditional Wealth reported net income was $862 million, an increase of $57 million or 7% from the prior year, and adjusted net income was $899 million, an increase of $53 million or 6%, primarily driven by higher deposit and loan revenue and the impact of a legal provision in the prior year, partially offset by lower fee-based revenue and higher expenses. Insurance reported net income was $198 million, compared with $267 million in the prior year, and adjusted net income was $223 million, compared with $267 million, primarily due to lower reinsurance revenue.

Revenue of $7,662 million increased $1,361 million or 22% from the prior year. Revenue, net of reported CCPB, was $4,953 million, relatively unchanged from the prior year. Revenue, net of adjusted CCPB, was $4,978 million, an increase of $29 million or 1%. Revenue in Traditional Wealth was $4,555 million, an increase of $85 million or 2%, primarily due to higher deposit and loan revenue and the impact of a legal provision in the prior year, partially offset by lower fee-based revenue, including lower performance fees from our asset management business. Insurance revenue, net of reported CCPB, was $398 million, compared with $479 million in the prior year. Insurance revenue, net of adjusted CCPB, was $423 million, compared with $479 million, primarily due to lower reinsurance revenue.

There was a decrease of $6 million from the prior year in the total provision for credit losses. The provision for credit losses on impaired loans decreased $4 million, reflecting lower consumer provisions. There was a $2 million recovery of credit losses on performing loans in the current year.

Non-interest expense was $3,522 million, an increase of $7 million from the prior year. Adjusted non-interest expense was $3,475 million, an increase of $12 million from the prior year, mainly due to select investments in the business.

Assets under management increased $32.9 billion or 8% from the prior year to $471.2 billion, primarily driven by stronger equity markets. Assets under administration increased $10.7 billion or 3% from the prior year to $393.6 billion, primarily driven by stronger equity markets and underlying business growth.

Business Environment, Outlook and Challenges

BMO Wealth Management is a global financial services provider. The operating environment within the wealth management industry, which includes major banks, insurance companies, brokers, and independent mutual fund and asset management companies, is highly competitive. All peer group competitors are focused on differentiating the customer experience by leveraging new technologies, products and services to meet their clients' evolving needs and goals.

Growth in the Canadian economy slowed in 2019 and is expected to pick up only modestly in 2020, while the U.S. economy is expected to experience lower growth, in part due to trade protectionism. However, we anticipate good growth in net new assets, while market appreciation is expected to be moderate in 2020. Short-term interest rates are expected to remain historically low in both Canada and the United States, and this will have a negative impact on our brokerage businesses. Long-term interest rates in Canada and the United States are expected to remain close to current levels. Ongoing changes in the competitive environment and client preferences will continue to exert downward pressure on fees for products and services. We expect to maintain our disciplined expense management approach by achieving efficiencies through digitization and by simplifying the way we work and serve our clients.

The Canadian and U.S. economic environment in 2019 and the outlook for 2020 are discussed in more detail in the Economic Developments and Outlook section on page 18.

Caution

This BMO Wealth Management section contains forward-looking statements. Please refer to the Caution Regarding Forward-Looking Statements.

Adjusted results in this section are non-GAAP and are discussed in the Non-GAAP Measures section on page 17.

MANAGEMENT'S DISCUSSION AND ANALYSIS

BMO Capital Markets

BMO Capital Markets is a North American-based financial services provider offering a complete range of products and services to corporate, institutional and government clients. BMO Capital Markets has approximately 2,800 professionals in 33 locations around the world, including 19 offices in North America.

Lines of Business

Investment and Corporate Banking offers debt and equity capital-raising services to clients, as well as loan origination and syndication, balance sheet management solutions and treasury management services. We provide strategic advice on mergers and acquisitions (M&A), restructurings and recapitalizations, as well as valuation and fairness opinions. We also offer trade finance and risk mitigation services to support the international business activities of our clients, and we provide a wide range of banking and other operating services tailored to North American and international financial institutions.

Global Markets offers research and access to financial markets for institutional, corporate and retail clients through an integrated suite of sales and trading solutions that include debt, foreign exchange, interest rate, credit, equity, securitization and commodities. We also offer new product development and origination services, as well as risk management advice and services to hedge against fluctuations in a variety of key inputs, including interest rates and commodities prices. In addition, we provide funding and liquidity management to our clients.

Strategy and Key Priorities

2019 Priorities and Achievements

Key Priority: Maintain our leadership position in Canada through ourtop-tier coverage team

Achievements

- Continued to support our clients and win notable mandates across a diverse set of industries, including: completing four transactions for Ensign Energy Services and acting as left-lead bookrunner in its acquisition of Trinidad Drilling; acting as lead underwriter, joint lead arranger and joint bookrunner for Searchlight Capital Partners in its $2 billion acquisition of Mitel Networks Corporation; and acting as exclusive financial advisor to Canada Pension Plan Investment Board in its equity private placement in Premium Brands Holdings Corporation
- Continued to drive strong and increasing client loyalty scores across our Corporate Banking business, resulting in new acquisitions of lead lending relationships and continued growth of our loan book to support our clients' goals
- Established an enterprise Sustainable Finance Group in BMO Capital Markets to raise capital and financing directed toward sustainable outcomes, provide advisory services and manage a new impact investment fund
- Acted as lead manager in the largest-ever supranational bond issue in the Canadian market with the World Bank's $1.5 billion Sustainable Development Bond, which raised awareness of the benefits of investing in the health and nutrition of women, children and adolescents around the world
- Invested strategically in technology in our Global Markets business to enhance the way we serve our clients; continued our partnership with Clearpool Group to help our clients execute customizable algorithmic trading strategies; launched an FX algorithm execution platform; digitized our Research and Analytics platform; and continued to invest in our machine learning and artificial intelligence capabilities
- Recognized as a Greenwich Quality and Share Leader in Canadian Fixed Income by Greenwich Associates: Quality Leader in Canadian Fixed Income Research and #3 Share Leader in Overall Canadian Fixed Income. We were also recognized as a leading dealer in Canadian Investment Grade Credit

Key Priority: Drive performance in our U.S. platform with a focused strategy and selectively expand our U.S. corporate bank where we are competitively advantaged

Achievements

- Successfully integrated KGS-Alpha Capital Markets, a New York-based fixed income broker-dealer specializing in U.S. mortgage-backed and asset-backed securities in the institutional investor market. The transaction aligns with our U.S. strategy and positions BMO as a top-tier dealer in securitized products with an emphasis on agency-backed residential and commercial mortgage-backed securities products
- Acted as financial advisor to Newmont Goldcorp Corporation in two key transactions: as a financial advisor to Newmont Mining Corporation in connection with its acquisition of Goldcorp Inc., which created the world's leading gold company; and in its subsequent joint venture with Barrick Gold Corporation to combine their respective operations in Nevada, resulting in the world's largest gold producing complex
- Continued to build on our collaboration with our U.S. P&C business to deliver for our clients in key middle-market M&A transactions, including our exclusive financial advisory role with Mar-Cone Appliance Parts in its recapitalization by Sterling Investment Partners
- Executed one of our largest financing commitments while also acting as financial advisor to Brookfield Asset Management in its US$13.2 billion acquisition of Johnson Controls International's Power Solutions business
- Completed our inaugural Sustainability Bond issuance of US$500 million to support the bank's commitment to sustainable finance
- Ranked #1 in the *Institutional Investor* 2019 Global Fixed Income Research Team Survey for U.S. Rates Strategy, Technical Analysis, and Federal Agency Debt Strategy

Key Priority: Leverage our strong North American capabilities and presence in select international markets

Achievements

- Named World's Best Metals & Mining Investment Bank for the tenth consecutive year by *Global Finance*, and hosted the 28th Annual Global Metals & Mining Conference, with nearly 2,000 attendees from 38 countries
- Won notable mandates for our international clients, including: acting as left-lead joint arranger, joint bookrunner and administrative agent on senior credit facilities for Nuvei Technologies in its US$889 million acquisition of U.K.-based SafeCharge International; and advised and financed the Chrysaor group of companies in its US$2.7 billion acquisition of the ConocoPhillips U.K. oil and gas business
- Launched infrastructure sector coverage in London, providing a third vertical to complement our existing metals and mining and energy platforms in this key market
- Awarded the Lead Manager Sustainability Bond Award by *Environmental Finance* for our influential role in the supranational, sub-sovereigns and agency sector and our industry-defining sustainability bonds
- Simplified our structure by establishing a single International Capital Markets division and announced Bank of Montreal Europe as our new European hub, to better align our operations within our global footprint and enable us to operate more efficiently across our network of international offices

2020 Focus

- Continue to earn leading market share in Canada by strengthening our client relationships and driving incremental market share growth
- Continue to leverage our key strategic investment to accelerate growth from our U.S. platform, and selectively expand our U.S. corporate bank where we are competitively advantaged
- Continue to leverage our strong North American and global capabilities to grow our contribution from international markets
- Continue to focus on working smarter and simplifying how we do business to enhance overall efficiency

BMO Capital Markets

(Canadian $ in millions, except as noted) As at or for the year ended October 31	2019	2018	2017
Net interest income (teb) (1)	**2,394**	1,784	2,501
Non-interest revenue (1)(2)	**2,340**	2,579	2,075
Total revenue (teb) (1)(2)	**4,734**	4,363	4,576
Provision for (recovery of) credit losses on impaired loans (3)	**52**	(17)	na
Provision for (recovery of) credit losses on performing loans (3)	**28**	(1)	na
Total provision for (recovery of) credit losses (3)	**80**	(18)	44
Non-interest expense (2)	**3,261**	2,859	2,786
Income before income taxes	**1,393**	1,522	1,746
Provision for income taxes (teb)	**307**	366	471
Reported net income	**1,086**	1,156	1,275
Acquisition integration costs (4)	**10**	11	–
Amortization of acquisition-related intangible assets (5)	**17**	2	2
Adjusted net income	**1,113**	1,169	1,277
Key Performance Metrics and Drivers			
Global Markets revenue (6)	**2,704**	2,541	2,696
Investment and Corporate Banking revenue	**2,030**	1,822	1,880
Net income growth (%)	**(6.0)**	(9.4)	3.2
Adjusted net income growth (%)	**(4.8)**	(8.5)	3.3
Revenue growth (%)	**8.5**	(4.7)	6.0
Non-interest expense growth (%)	**14.1**	2.6	8.0
Adjusted non-interest expense growth (%)	**13.5**	2.1	8.0
Return on equity (%)	**9.8**	12.8	15.3
Adjusted return on equity (%)	**10.1**	13.0	15.4
Operating leverage (teb) (%)	**(5.6)**	(7.3)	(2.0)
Adjusted operating leverage (teb) (%)	**(5.0)**	(6.8)	(2.0)
Efficiency ratio (teb) (%)	**68.9**	65.5	60.9
Adjusted efficiency ratio (teb) (%)	**68.2**	65.1	60.8
Average common equity	**10,430**	8,464	7,900
Average assets	**342,347**	307,087	302,518
Average gross loans and acceptances	**60,034**	46,724	48,217
Average net loans and acceptances	**59,946**	46,658	48,191
Full-time equivalent employees	**2,776**	2,714	2,502
U.S. Business Select Financial Data (US$ in millions)			
Total revenue (teb)	**1,609**	1,252	1,320
Non-interest expense	**1,197**	987	929
Reported net income	**292**	196	267
Adjusted net income	**312**	205	268
Average assets	**107,185**	98,265	93,253
Average net loans and acceptances	**21,260**	15,249	15,359

(1) Effective the first quarter of 2019, certain dividend income in our Global Markets business has been reclassified from non-interest revenue to net interest income. Results for prior years and related ratios have been reclassified to conform with the current year's presentation.

(2) Effective the first quarter of 2019, the bank adopted IFRS 15, *Revenue from Contracts with Customers* (IFRS 15) and elected to retrospectively present prior periods as if IFRS 15 had always been applied. As a result, certain out-of-pocket expenses reimbursed to BMO from customers have been reclassified from a reduction in non-interest expense to non-interest revenue. Refer to the Changes in Accounting Policies in 2019 section on page 111 for further details.

(3) Effective the first quarter of 2018, the bank prospectively adopted IFRS 9, *Financial Instruments* (IFRS 9). Under IFRS 9, we record a provision for credit losses on impaired loans and a provision for credit losses on performing loans. Prior periods have not been restated. The total provision for credit losses in periods prior to 2018 is comprised of specific provisions.

(4) KGS-Alpha acquisition integration costs before tax amounts of $13 million in 2019 and $14 million in 2018 are included in non-interest expense.

(5) Before tax amounts of $22 million in 2019 and $3 million in both 2018 and 2017 are included in non-interest expense.

(6) Global Markets was previously known as Trading Products.

Adjusted results in this table are non-GAAP amounts or non-GAAP measures. Please refer to the Non-GAAP Measures section.

na – not applicable



Financial Review

BMO Capital Markets reported net income was $1,086 million, compared with $1,156 million in the prior year, and adjusted net income was $1,113 million, compared with $1,169 million. Adjusted net income excludes the amortization of acquisition-related intangible assets and acquisition integration costs. Higher revenue was more than offset by higher expenses, including a severance expense in the second quarter of 2019, and higher provisions for credit losses.

Revenue was $4,734 million, an increase of $371 million or 9% from the prior year, or 7% excluding the impact of the stronger U.S. dollar. Investment and Corporate Banking revenue increased $208 million to $2,030 million or 11% from the prior year, primarily due to higher corporate banking-related revenue and higher underwriting and advisory revenue. Global Markets revenue increased $163 million to $2,704 million or 6%, primarily due to higher interest rate trading revenue and higher commodities trading revenue, partially offset by lower equities trading revenue. Global Markets revenue growth benefited from a significant contribution from the acquisition of KGS-Alpha and a fair value gain in the current year.

The total provision for credit losses was $80 million, compared with an $18 million recovery of credit losses in the prior year. The provision for credit losses on impaired loans was $52 million, compared with a $17 million recovery on impaired loans in the prior year. There was a $28 million provision for credit losses on performing loans in the current year, compared with a $1 million recovery of credit losses on performing loans in the prior year.

Non-interest expense was $3,261 million, an increase of $402 million or 14%, and adjusted non-interest expense was $3,226 million, an increase of $384 million or 14%, or 12% excluding the impact of the stronger U.S. dollar, largely due to higher employee-related costs, including the impact of a severance expense in the second quarter of 2019 and the acquisition of KGS-Alpha. The severance expense and the KGS-Alpha acquisition accounted for approximately two-thirds of the full-year increase.

Average assets increased $35.3 billion or 11% to $342.3 billion from the prior year. Excluding the impact of the stronger U.S. dollar, average assets increased $31.0 billion, primarily due to higher net loans and acceptances, higher levels of securities and higher reverse repos.

Business Environment, Outlook and Challenges

In fiscal 2019, the global operating landscape was characterized by uncertainty, which reflected escalating trade tensions, an unsettled interest rate environment and a slower global economy. BMO Capital Markets navigated these challenging market conditions by continuing to execute on a strategy that leveraged our balanced, diversified and client-focused business model.

Looking ahead to fiscal 2020, we will continue to strive to be a top 10 North American investment bank with a global reach. The United States is our largest market opportunity, and we expect our business to benefit from the investments made in our U.S. platform, as well as our overall franchise and capital position. In Canada, we expect our established business to maintain leading market share positions across all products and sectors while providing a strong foundation for future growth. We continue to selectively expand our capabilities and product offerings to better serve North American-based clients that have a global presence. Our disciplined and integrated approach to risk management, along with our continued investments in regulatory technology infrastructure, will enable us to meet risk management requirements in the coming years. Stability in the markets could be challenged by macroeconomic concerns, such as protracted trade tensions, an uncertain interest rate environment and slower global economic growth. Assuming little further deterioration in the macroeconomic environment, we are confident that we will be able to maintain our strong market position and achieve our strategic objectives.

The Canadian and U.S. economic environment in 2019 and the outlook for 2020 are discussed in more detail in the Economic Developments and Outlook section on page 18.

Caution

This BMO Capital Markets section contains forward-looking statements. Please refer to the Caution Regarding Forward-Looking Statements.

Adjusted results in this section are non-GAAP and are discussed in the Non-GAAP Measures section on page 17.

Corporate Services, including Technology and Operations

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, procurement, data and analytics, and innovation. T&O develops, monitors, manages and maintains governance of information technology, and also provides cyber security and operations services.

The costs of these Corporate Units and T&O services are largely transferred to the three operating groups (Personal and Commercial Banking, BMO Wealth Management and BMO Capital Markets), 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.

Corporate Services focuses on enterprise-wide priorities related to maintaining a sound risk and control environment and efficiency, while supporting our businesses in meeting their customer experience objectives. Notable achievements during the year included:

- Established the Chief Information and Operations Officer role, in a new operating model that aligns technology and operations with business groups across the enterprise. This dual reporting structure allows for end-to-end accountability to ensure integrated business technology solutions, which are facilitated by integrated teams.
- Launched the Financial Crimes Unit (FCU) to enhance security capabilities across the bank. The FCU represents evolving best practice in Canada, bringing together cyber, fraud and physical security functions, as well as subject matter experts across the lines of business and business functional groups. The FCU capabilities are complemented by advanced analytics and methodologies, including artificial intelligence (AI), to enable accelerated detection, prevention, response and recovery capabilities to safeguard customer, employee and bank data.
- Continued to accelerate the deployment of digital technology to transform our business, including the launch of BMO Digital Banking for the Personal and Business Banking business, Wealth operations digitization, expansion of BMO Capital Markets' international capabilities and digitization of Corporate and Commercial Banking operations, in line with the bank's stated priorities.
- Advanced our data and analytics platform to build out analytics and robotics capabilities, supporting business initiatives and enabling further gains in efficiency. Solidified cloud partnerships, driving innovative technology capabilities in the areas of robotics and AI, and continued to explore opportunities to leverage quantum computing through the execution of proofs of concept with third-party providers and research institutions.
- Delivered a Technology Critical Service focus across the enterprise, to ensure resilience, scale and integration capabilities to reduce risk and costs, and enhance technology-enabled experiences for our customers and employees.

Financial Review

Corporate Services reported net loss for the year was $625 million, compared with a reported net loss of $718 million in the prior year. Adjusted net loss for the year was $268 million, compared with an adjusted net loss of $290 million in the prior year. Adjusted results in both the current and prior year exclude restructuring charges of $357 million in 2019 and $192 million in 2018. The prior year also excludes a $425 million one-time non-cash charge due to a revaluation of our U.S. net deferred tax asset, a $203 million benefit from the remeasurement of an employee benefit liability and acquisition integration costs of $14 million. The adjusted net loss improved, primarily due to lower expenses, while revenue excluding teb was relatively unchanged. Reported results increased, primarily due to the impact of the adjusting items noted above.

Corporate Services, including Technology and Operations

(Canadian $ in millions, except as noted) As at or for the year ended October 31	**2019**	2018	2017
Net interest income before group teb offset	**(241)**	(243)	(193)
Group teb offset	**(296)**	(313)	(567)
Net interest income (teb)	**(537)**	(556)	(760)
Non-interest revenue	**238**	248	177
Total revenue (teb)	**(299)**	(308)	(583)
Provision for (recovery of) credit losses on impaired loans (1)	**(7)**	(13)	na
Provision for (recovery of) credit losses on performing loans (1)	**(5)**	(2)	na
Total provision for (recovery of) credit losses (1)	**(12)**	(15)	(78)
Non-interest expense	**854**	425	626
Income (loss) before income taxes	**(1,141)**	(718)	(1,131)
Recovery of income taxes (teb)	**(516)**	–	(710)
Reported net loss	**(625)**	(718)	(421)
Acquisition integration costs (2)	**–**	14	55
Restructuring costs (3)	**357**	192	41
Decrease in the collective allowance for credit losses (4)	**–**	–	(54)
U.S. net deferred tax asset revaluation (5)	**–**	425	–
Benefit from the remeasurement of an employee benefit liability (6)	**–**	(203)	–
Adjusted net loss	**(268)**	(290)	(379)
Adjusted total revenue (teb)	**(299)**	(308)	(583)
Total adjusted provision for (recovery of) credit losses (1)	**(12)**	(15)	(2)
Adjusted non-interest expense	**370**	422	480
Adjusted net loss	**(268)**	(290)	(379)
Full-time equivalent employees	**14,537**	14,312	14,549
U.S. Business Select Financial Data (US$ in millions)			
Total revenue (teb)	**(38)**	(40)	(90)
Recovery of credit losses (1)	**(4)**	(12)	(23)
Non-interest expense	**190**	193	245
Provision for (recovery of) income taxes (teb)	**(75)**	263	(108)
Reported net loss	**(149)**	(484)	(204)
Adjusted total revenue (teb)	**(38)**	(40)	(90)
Adjusted recovery of credit losses (1)	**(4)**	(12)	(2)
Adjusted non-interest expense	**74**	138	171
Adjusted net loss	**(63)**	(104)	(171)

(1) Effective the first quarter of 2018, the bank prospectively adopted IFRS 9, *Financial Instruments* (IFRS 9). Under IFRS 9, we record a provision for credit losses on impaired loans and a provision for credit losses on performing loans. Prior periods have not been restated. The total provision for credit losses in the periods prior to 2018 is comprised of both specific and collective provisions. Changes in the provision for credit losses on performing loans under this methodology will not be considered an adjusting item.
(2) Acquisition integration costs related to the acquired BMO Transportation Finance business are included in non-interest expense.
(3) Restructuring charges before tax amounts of $484 million in 2019, $260 million in 2018 and $59 million in 2017. Restructuring costs are included in non-interest expense.
(4) Decrease in the collective allowance for credit losses before tax amount of $76 million in 2017.
(5) Charge due to the revaluation of our U.S. net deferred tax asset as a result of the enactment of the U.S. *Tax Cuts and Jobs Act*. For more information, refer to the Critical Accounting Estimates – Income Taxes and Deferred Tax Assets section on page 119 of BMO's 2018 Annual Report.
(6) Results for 2018 included a benefit of $203 million after tax ($277 million pre-tax) from the remeasurement of an employee benefit liability as a result of an amendment to our other employee future benefits plan for certain employees that was announced in the fourth quarter of 2018. This amount has been included in Corporate Services in non-interest expense.

Adjusted results in this table are non-GAAP amounts or non-GAAP measures. Please refer to the Non-GAAP Measures section.

na – not applicable

MANAGEMENT'S DISCUSSION AND ANALYSIS

Summary Quarterly Earnings Trends

BMO's underlying results have generally trended upwards over the past eight quarters, largely reflecting continued growth in the P&C businesses, while market-sensitive businesses have been impacted by market variability.

Reported results were impacted by a restructuring charge, primarily related to severance, and a reinsurance adjustment, both in the fourth quarter of 2019, a benefit from the remeasurement of an employee benefit liability in the fourth quarter of 2018, a restructuring charge in the second quarter of 2018, and a charge related to a revaluation of our U.S. net deferred tax asset in the first quarter of 2018. In the third quarter of 2019, BMO Wealth Management announced its decision to wind down its reinsurance business.

Canadian P&C delivered positive net income growth in seven of the past eight quarters, largely reflecting revenue growth driven by higher balances and increases in non-interest revenue. U.S. P&C net income reflected good revenue growth over the past eight quarters, due to steady growth in loans and deposits, partially offset by a declining net interest margin beginning in the fourth quarter of 2018, as well as good expense management. Traditional Wealth results in BMO Wealth Management have generally seen moderate increases, largely due to growth in its diversified businesses, including higher loan and deposit revenue. Results over the course of the past eight quarters were also impacted by market variability. Insurance results are subject to variability resulting from the impact of changes in interest rates, equity markets and reinsurance claims, and were also affected by elevated reinsurance claims in four of the past eight quarters. BMO Capital Markets recorded relatively solid revenue performance, with year-over-year growth in the most recent six quarters, reflecting strong U.S. segment performance and benefits from our diversified businesses, including the acquisition of KGS-Alpha. Quarterly net income has experienced variability due to market conditions. Results in the second quarter of 2019 included a severance expense. Corporate Services results can vary from quarter to quarter, in large part due to the inclusion of adjusting items, which are largely recorded in Corporate Services.

The bank's results reflect the impact of IFRS 15, *Revenue from Contracts with Customers* (IFRS 15), which was adopted retrospectively in the first quarter of 2019 as though IFRS 15 had always been applied. As a result, loyalty rewards and cash promotion costs on cards previously recorded in non-interest expense, as well as reimbursements from customers for certain expenses incurred on their behalf, are presented as non-interest revenue.

BMO's total provision for credit losses measured as a percentage of net loans and acceptances has ranged between 13 basis points and 28 basis points since the first quarter of 2018, and was 20 basis points in 2019. The bank prospectively adopted IFRS 9, *Financial Instruments* (IFRS 9) in the first quarter of 2018, and as a result of the forward-looking nature of IFRS 9, we anticipate there will be increased variability in the bank's provision for credit losses on performing loans, over time.

The effective income tax rate has varied, as it depends on legislative changes; changes in tax policy, including their interpretation by tax authorities and the courts; earnings mix, including the relative proportion of earnings attributable to the different jurisdictions in which we operate; and the amount of tax-exempt income from securities.

Adjusted results in this Summary Quarterly Earnings Trends section are non-GAAP and are discussed in the Non-GAAP Measures section on page 17.

Summarized Statement of Income and Quarterly Financial Measures

(Canadian $ in millions, except as noted)	Q4-2019	Q3-2019	Q2-2019	Q1-2019	Q4-2018	Q3-2018	Q2-2018	Q1-2018
Net interest income (1)	**3,364**	**3,217**	**3,135**	**3,172**	3,015	2,882	2,666	2,875
Non-interest revenue (1)(2)	**2,723**	**3,449**	**3,078**	**3,345**	2,878	2,912	2,914	2,763
Revenue (1)(2)	**6,087**	**6,666**	**6,213**	**6,517**	5,893	5,794	5,580	5,638
Insurance claims, commissions and changes in policy benefit liabilities (CCPB)	**335**	**887**	**561**	**926**	390	269	332	361
Revenue, net of CCPB (1)	**5,752**	**5,779**	**5,652**	**5,591**	5,503	5,525	5,248	5,277
Provision for (recovery of) credit losses on impaired loans (3)	**231**	**243**	**150**	**127**	177	177	172	174
Provision for (recovery of) credit losses on performing loans (3)	**22**	**63**	**26**	**10**	(2)	9	(12)	(33)
Total provision for credit losses (3)	**253**	**306**	**176**	**137**	175	186	160	141
Non-interest expense (2)	**3,987**	**3,491**	**3,595**	**3,557**	3,193	3,359	3,525	3,400
Income before provision for income taxes	**1,512**	**1,982**	**1,881**	**1,897**	2,135	1,980	1,563	1,736
Provision for income taxes	**318**	**425**	**384**	**387**	438	443	317	763
Reported net income (see below)	**1,194**	**1,557**	**1,497**	**1,510**	1,697	1,537	1,246	973
Acquisition integration costs (4)	**2**	**2**	**2**	**4**	13	7	2	3
Amortization of acquisition-related intangible assets (5)	**29**	**23**	**23**	**24**	24	22	23	21
Restructuring costs (6)	**357**	**–**	**–**	**–**	–	–	192	–
Reinsurance adjustment (7)	**25**	**–**	**–**	**–**	–	–	–	–
U.S. net deferred tax asset revaluation (8)	**–**	**–**	**–**	**–**	–	–	–	425
Benefit from the remeasurement of an employee benefit liability (9)	**–**	**–**	**–**	**–**	(203)	–	–	–
Adjusted net income (see below)	**1,607**	**1,582**	**1,522**	**1,538**	1,531	1,566	1,463	1,422
Operating group reported net income								
Canadian P&C reported net income	**716**	**648**	**615**	**647**	674	641	588	646
Amortization of acquisition-related intangible assets (5)	**–**	**1**	**–**	**1**	1	–	1	–
Canadian P&C adjusted net income	**716**	**649**	**615**	**648**	675	641	589	646
U.S. P&C reported net income	**393**	**368**	**406**	**444**	372	364	348	310
Amortization of acquisition-related intangible assets (5)	**11**	**11**	**11**	**10**	11	12	11	11
U.S. P&C adjusted net income	**404**	**379**	**417**	**454**	383	376	359	321
BMO Wealth Management reported net income	**267**	**249**	**305**	**239**	219	291	296	266
Amortization of acquisition-related intangible assets (5)	**9**	**8**	**10**	**10**	10	10	11	10
Reinsurance adjustment (7)	**25**	**–**	**–**	**–**	–	–	–	–
BMO Wealth Management adjusted net income	**301**	**257**	**315**	**249**	229	301	307	276
BMO Capital Markets reported net income	**269**	**313**	**249**	**255**	298	301	286	271
Acquisition integration costs (4)	**2**	**2**	**2**	**4**	9	2	–	–
Amortization of acquisition-related intangible assets (5)	**9**	**3**	**2**	**3**	2	–	–	–
BMO Capital Markets adjusted net income	**280**	**318**	**253**	**262**	309	303	286	271
Corporate Services reported net income	**(451)**	**(21)**	**(78)**	**(75)**	134	(60)	(272)	(520)
Acquisition integration costs (4)	**–**	**–**	**–**	**–**	4	5	2	3
Restructuring costs (6)	**357**	**–**	**–**	**–**	–	–	192	–
U.S. net deferred tax asset revaluation (8)	**–**	**–**	**–**	**–**	–	–	–	425
Benefit from the remeasurement of an employee benefit liability (9)	**–**	**–**	**–**	**–**	(203)	–	–	–
Corporate Services adjusted net income	**(94)**	**(21)**	**(78)**	**(75)**	(65)	(55)	(78)	(92)
Basic earnings per share ($) (10)	**1.79**	**2.34**	**2.27**	**2.28**	2.58	2.32	1.87	1.43
Diluted earnings per share ($) (10)	**1.78**	**2.34**	**2.26**	**2.28**	2.58	2.31	1.86	1.43
Adjusted diluted earnings per share ($) (10)	**2.43**	**2.38**	**2.30**	**2.32**	2.32	2.36	2.20	2.12
Net interest margin on average earning assets (%)	**1.71**	**1.67**	**1.72**	**1.69**	1.68	1.65	1.63	1.74
PCL-to-average net loans and acceptances (annualized) (%)	**0.23**	**0.28**	**0.16**	**0.13**	0.18	0.19	0.17	0.15
PCL on impaired loans-to-average net loans and acceptances (annualized) (%)	**0.21**	**0.22**	**0.14**	**0.12**	0.18	0.18	0.18	0.19
Effective tax rate (%)	**21.0**	**21.5**	**20.4**	**20.4**	20.6	22.4	20.3	43.9
Adjusted effective tax rate (%)	**22.0**	**21.5**	**20.5**	**20.4**	19.7	22.4	21.2	19.5
Canadian/U.S. dollar average exchange rate ($)	**1.3240**	**1.3270**	**1.3299**	**1.3351**	1.3047	1.3032	1.2858	1.2575

(1) Effective the first quarter of 2019, certain dividend income in our Global Markets business has been reclassified from non-interest revenue to net interest income. Results for prior periods and related ratios have been reclassified to conform with the current period's presentation.

(2) Effective the first quarter of 2019, the bank adopted IFRS 15, *Revenue from Contracts with Customers* (IFRS 15) and elected to retrospectively present prior periods as if IFRS 15 had always been applied. As a result, loyalty rewards and cash promotion costs on cards previously recorded in non-interest expense are presented as a reduction in non-interest revenue. In addition, certain out-of-pocket expenses reimbursed to BMO from customers have been reclassified from a reduction in non-interest expense to non-interest revenue. Refer to the Changes in Accounting Policies in 2019 section on page 111 for further details.

(3) Effective the first quarter of 2018, the bank prospectively adopted IFRS 9, *Financial Instruments* (IFRS 9). Under IFRS 9, we record a provision for credit losses on impaired loans and a provision for credit losses on performing loans. Changes in the provision for credit losses on performing loans under this methodology will not be considered an adjusting item. The provision for credit losses in periods prior to the first quarter of 2018 is comprised of both specific and collective provisions.

(4) Acquisition integration costs are included in non-interest expense. BMO Capital Markets amounts of $2 million in Q4-2019, $3 million in Q3-2019, $2 million in Q2-2019, $6 million in Q1-2019, $12 million in Q4-2018, and $2 million in Q3-2018. Corporate Services amounts of $6 million in each of Q4-2018 and Q3-2018, and $4 million in each of Q2-2018 and Q1-2018.

(5) Amortization of acquisition-related intangible assets before tax is charged to the non-interest expense of the operating groups. Canadian P&C amounts of $nil in Q4-2019, $1 million in Q3-2019, $nil in Q2-2019, $1 million in each of Q1-2019 and Q4-2018, $nil in Q3-2018, $1 million in Q2-2018, and $nil in Q1-2018. U.S. P&C amounts of $15 million in Q4-2019, $14 million in each of Q3-2019, Q2-2019 and Q1-2019, $15 million in each of Q4-2018 and Q3-2018, $14 million in Q2-2018, and $15 million in Q1-2018. BMO Wealth Management amounts of $11 million in each of Q4-2019 and Q3-2019, $12 million in Q2-2019, $13 million in Q1-2019, and $13 million in each of Q4-2018, Q3-2018, Q2-2018 and Q1-2018. BMO Capital Markets amounts of $12 million in Q4-2019, $3 million in Q3-2019, $4 million in Q2-2019, $3 million in Q1-2019, $2 million in Q4-2018, $nil in Q3-2018, $1 million in Q2-2018, and $nil in Q1-2018.

(6) Q4-2019 reported net income included a $357 million after-tax ($484 million pre-tax) restructuring charge, related to severance and a small amount of real estate-related costs, to improve our efficiency, including accelerating delivery against key bank-wide initiatives focused on digitization, organizational redesign and simplification of the way we do business, and Q2-18 included a $260 million pre-tax ($192 million after-tax) restructuring charge. Restructuring charges are included in non-interest expense in Corporate Services.

(7) Q4-2019 reported net income included a reinsurance adjustment of $25 million (pre-tax and after-tax) in CCPB, related to the net impact of major reinsurance claims from Japanese typhoons that were incurred after our announced decision to wind down our reinsurance business. This reinsurance adjustment is included in CCPB in BMO Wealth Management.

(8) Q1-2018 reported net income included a charge due to the revaluation of our U.S. net deferred tax asset as a result of the enactment of the U.S. *Tax Cuts and Jobs Act*. For more information, refer to the Critical Accounting Estimates – Income Taxes and Deferred Tax Assets section on page 119 of BMO's 2018 Annual Report.

(9) Q4-2018 reported net income included a benefit of $203 million after tax ($277 million pre-tax) from the remeasurement of an employee benefit liability as a result of an amendment to our other employee future benefits plan for certain employees that was announced in the fourth quarter of 2018. This amount has been included in non-interest expense in Corporate Services.

(10) Earnings per share (EPS) is calculated using net income after deducting total dividends on preferred shares and distributions on other equity instruments. For more information on EPS, refer to Note 23 on page 197 of the consolidated financial statements.

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

Adjusted results in this section are non-GAAP and are discussed in the Non-GAAP Measures section on page 17.

na – not applicable

Caution

This Summary Quarterly Earnings Trends section contains forward-looking statements. Please refer to the Caution Regarding Forward-Looking Statements.

In the opinion of Bank of Montreal management, information that is derived from unaudited financial information, including information as at and for the interim periods, includes all adjustments necessary for a fair presentation of such information. All such adjustments are of a normal and recurring nature. Financial ratios for interim periods are stated on an annualized basis, where appropriate, and the ratios, as well as interim operating results, are not necessarily indicative of actual results for the full fiscal year.

MANAGEMENT'S DISCUSSION AND ANALYSIS

Review of Fourth Quarter 2019 Performance

Reported net income was $1,194 million for the fourth quarter of 2019, compared with $1,697 million in the prior year, and adjusted net income was $1,607 million, an increase of $76 million or 5% from the prior year. Adjusted net income excludes a $357 million restructuring charge, related to severance and a small amount of real estate-related costs, to continue to improve our efficiency, including accelerating delivery against key bank-wide initiatives focused on digitization, organizational redesign and simplification of the way we do business, as well as a $25 million reinsurance adjustment for the net impact of major reinsurance claims from Japanese typhoons that were incurred after our announced decision to wind down our reinsurance business in the current quarter, the amortization of acquisition-related intangible assets and acquisition integration costs in both periods, and a $203 million benefit from the remeasurement of an employee benefit liability in the prior year. Results reflect good performance in our P&C businesses and higher net income in BMO Wealth Management, partially offset by a decrease in BMO Capital Markets and a higher net loss in Corporate Services. Prior year results included a favourable tax item in our U.S. segment. A full list of adjusting items is disclosed in the Non-GAAP Measures section on page 17.

Reported EPS of $1.78 decreased $0.80 or 31% and adjusted EPS of $2.43 increased $0.11 or 5% from the prior year.

Summary income statements and data for the quarter and comparative quarters are outlined on page 53.

The combined Personal and Commercial Banking business reported net income was $1,109 million and adjusted net income was $1,120 million, and both increased 6% from the fourth quarter in the prior year, or 5% excluding the impact of the stronger U.S. dollar. Canadian P&C reported net income was $716 million, an increase of $42 million, and adjusted net income was $716 million, an increase of $41 million or 6% from the prior year. Results reflect strong revenue growth, partially offset by higher provisions for credit losses and higher expenses. On a Canadian dollar basis, U.S. P&C reported net income was $393 million, an increase of $21 million or 6%, and adjusted net income was $404 million, an increase of $21 million or 5% from the prior year. On a U.S. dollar basis, U.S. P&C reported net income was US$297 million, an increase of US$12 million or 4%, and adjusted net income was US$305 million, an increase of US$11 million or 4%, primarily due to higher revenue and lower provisions for credit losses, partially offset by a favourable U.S. tax item in the prior year and higher expenses. BMO Wealth Management reported net income was $267 million, an increase of $48 million or 22%, and adjusted net income was $301 million, an increase of $72 million or 31% from the prior year. Adjusted net income in the current quarter excludes the net impact of major reinsurance claims. Traditional Wealth reported net income was $237 million, an increase of $45 million or 24%, and adjusted net income was $246 million, an increase of $44 million or 22%, due to the impact of a legal provision in the prior year, higher deposit and loan revenue and higher fee-based revenue. Insurance reported net income was $30 million, an increase of $3 million or 9%, and adjusted net income was $55 million, an increase of $28 million, primarily due to changes in investments to improve asset-liability management. BMO Capital Markets reported net income was $269 million, compared with $298 million, and adjusted net income was $280 million, compared with $309 million in the prior year. Higher revenue was more than offset by higher provisions for credit losses and higher expenses. Corporate Services reported net loss was $451 million, compared with reported net income of $134 million in the fourth quarter of the prior year. Adjusted net loss was $94 million, compared with an adjusted net loss of $65 million. Adjusted results in the current quarter exclude the restructuring charge of $357 million and adjusted results in the prior year exclude the $203 million after-tax benefit from the remeasurement of an employee benefit liability. Adjusted results decreased, primarily due to lower revenue excluding taxable equivalent basis (teb) adjustments, partially offset by lower expenses.

Total revenue was $6,087 million, an increase of $194 million or 3% from the fourth quarter a year ago. Total revenue, net of insurance claims, commissions and changes in policy benefit liabilities (CCPB), was $5,752 million, an increase of $249 million or 5%. Canadian P&C revenue increased 7%, due to higher balances across all products, higher margins and increased non-interest revenue. U.S. P&C revenue increased 6% on a Canadian dollar basis and increased 4% on a U.S. dollar basis, with higher loan and deposit balances, partially offset by lower net interest margin. BMO Wealth Management revenue was relatively unchanged compared with the prior year. Revenue, net of reported CCPB, increased 4%. Revenue in Traditional Wealth increased 5%, due to the impact of a legal provision in the prior year, higher deposit and loan, and fee-based revenue. Insurance revenue, net of reported CCPB, was relatively unchanged, compared with the prior year. Insurance revenue, net of adjusted CCPB, increased $24 million, due to changes in investments to improve asset-liability management. BMO Capital Markets revenue increased 4%. Global Markets revenue increased, while Investment and Corporate Banking revenue decreased slightly from the prior year. Corporate Services revenue decreased, primarily due to below trend revenue excluding teb adjustments.

Net interest income was $3,364 million, an increase of $349 million or 12%, or 11% excluding the impact of the stronger U.S. dollar. On an excluding trading basis, net interest income was $2,979 million, an increase of $210 million or 8%, or 7% excluding the impact of the stronger U.S. dollar, largely due to higher loan and deposit balances across all operating groups, partially offset by lower loan margins.

Average earning assets were $778.4 billion, an increase of $66.7 billion or 9%, or $62.7 billion or 9% excluding the impact of the stronger U.S. dollar, due to loan growth, higher securities and higher securities borrowed or purchased under resale agreements. BMO's overall net interest margin increased 3 basis points, primarily due to higher net interest income from trading activities and higher margin in Canadian P&C, partially offset by a higher volume of assets in BMO Capital Markets and Corporate Services, which have a lower spread than the bank, as well as a lower margin in U.S. P&C. On an excluding trading basis, net interest margin decreased 5 basis points, primarily due to a higher volume of assets in BMO Capital Markets and Corporate Services, which have a lower spread than the bank, and a lower margin in U.S. P&C, partially offset by a higher margin in Canadian P&C.

Non-interest revenue, net of CCPB, was $2,388 million, a decrease of $100 million or 4%, or 5% excluding the impact of the stronger U.S. dollar, largely due to lower trading non-interest revenue, partially offset by higher lending revenue. Non-interest revenue, net of adjusted CCPB, was $2,413 million, a decrease of $75 million or 3%, and also 3% excluding the impact of the stronger U.S. dollar. On an excluding trading basis, net of adjusted CCPB, non-interest revenue was $2,434 million, an increase of $77 million or 3%, and also 3% excluding the impact of the stronger U.S. dollar.

Gross insurance revenue decreased $50 million from the fourth quarter in the prior year, due to lower annuity sales, offset by relatively unchanged long-term interest rates in the current quarter, compared with increases in long-term interest rates that decreased the fair value of investments in the prior year and stronger equity markets in the current quarter. These changes relate to annuity sales and fair value investments, which are largely offset by changes in policy benefit liabilities, the impact of which is reflected in CCPB, as discussed below.

The total provision for credit losses was $253 million, an increase of $78 million from the fourth quarter a year ago. The provision for credit losses ratio was 23 basis points, compared with 18 basis points in the prior year. The provision for credit losses on impaired loans of $231 million increased $54 million from $177 million in the prior year, primarily due to higher provisions in BMO Capital Markets and our P&C businesses. The provision for credit losses on impaired loans ratio was 21 basis points, compared with 18 basis points in the prior year. There was a $22 million provision for credit losses on performing loans in the current quarter, compared with a $2 million recovery of credit losses on performing loans in the prior year. The $22 million provision for credit losses on performing loans in the current quarter was due to portfolio growth, a moderating economic outlook and negative migration. The year-over-year increase in the provision for credit losses on performing loans was a result of negative migration in the

current quarter, compared with positive migration in the prior year, and higher provisions in the current quarter from changes in scenario weights, partially offset by lower provisions in the current quarter from changes in the economic outlook.

Reported CCPB was $335 million in the fourth quarter of 2019, a decrease of $55 million from $390 million in the prior year, and adjusted CCPB, which excludes the net impact of major reinsurance claims, was $310 million, a decrease of $80 million. Adjusted CCPB decreased, due to the impact of lower annuity sales, offset by relatively unchanged long-term interest rates in the current year, compared with increases in long-term interest rates that decreased the fair value of policy benefit liabilities in the prior year and the impact of stronger equity markets in the current year.

Reported non-interest expense was $3,987 million, an increase of $794 million or 25% from the fourth quarter in the prior year, and adjusted non-interest expense was $3,463 million, an increase of $42 million or 1%, and also 1% excluding the impact of the stronger U.S. dollar. Adjusted non-interest expense excludes the restructuring charge in the current quarter, the amortization of acquisition-related intangible assets and acquisition integration costs in both periods, as well as a benefit from the remeasurement of an employee benefit liability in the prior year. The increase largely reflected higher technology and employee-related costs, partially offset by lower premises costs.

The provision for income taxes was $318 million, a decrease of $120 million from the fourth quarter of 2018. The effective tax rate for the current quarter was 21.0%, compared with 20.6% a year ago. The adjusted provision for income taxes was $454 million, an increase of $78 million from the fourth quarter of 2018. The adjusted effective tax rate was 22.0% in the current quarter, compared with 19.7% in the fourth quarter of 2018. The higher reported and adjusted effective tax rate in the current quarter relative to the fourth quarter of 2018 was primarily due to a favourable U.S. tax item in the prior year.

Adjusted results in this Review of Fourth Quarter 2019 Performance section are non-GAAP and are discussed in the Non-GAAP Measures section on page 17.

2018 Financial Performance Review

The preceding discussions in the MD&A focused on our performance in fiscal 2019. This section summarizes our performance in fiscal 2018 relative to fiscal 2017. As noted on page 13, certain prior-year data has been reclassified to conform with the presentation in 2019, including restatements resulting from transfers between operating groups. Further information on these restatements is provided on page 33.

Net Income

Net income of $5,453 million increased $114 million or 2% from 2017, and adjusted net income of $5,982 million increased $485 million or 9% from the prior year. Adjusted net income excludes a $425 million one-time non-cash charge related to the revaluation of our U.S. net deferred tax asset due to U.S. tax reform and a $203 million benefit from the remeasurement of an employee benefit liability in 2018, restructuring costs and acquisition integration costs and the amortization of acquisition-related intangible assets in both years, and a decrease in the collective allowance in 2017. The impact of the weaker U.S. dollar on net income was not significant. Reported and adjusted net income growth largely reflected the benefit of good performance in U.S. P&C, BMO Wealth Management and Canadian P&C. BMO Capital Markets results declined, while Corporate Services net loss was higher on a reported basis, but lower on an adjusted basis.

Return on Equity

Return on equity (ROE) was 13.3% and adjusted ROE was 14.6% in 2018, compared with 13.2% and 13.6%, respectively, in 2017. ROE increased in 2018, primarily due to growth in net income exceeding growth in common equity. Reported results in 2018 included the impact of the one-time non-cash charge related to the revaluation of our U.S. net deferred tax asset on net income in 2018. There was an increase of $116 million or 2% from the prior year in net income available to common shareholders in 2018, and an increase of $487 million or 9% in adjusted net income available to common shareholders. Average common shareholders' equity increased $792 million or 2% from 2017, primarily due to increased retained earnings, partially offset by lower accumulated other comprehensive income. The reported return on tangible common equity (ROTCE) was 16.2% in 2018, compared with 16.3% in 2017, and adjusted ROTCE was 17.5% in 2018, compared with 16.4% in 2017.

Revenue

Revenue of $22,905 million increased $798 million or 4% from the prior year. Revenue, net of insurance claims, commissions and changes in policy benefit liabilities (CCPB), increased $984 million or 5% to $21,553 million in 2018, driven by good performance in U.S. P&C, Canadian P&C and BMO Wealth Management, and higher Corporate Services revenue, partially offset by a decrease in revenue in BMO Capital Markets. The impact of the weaker U.S. dollar on revenue growth was not significant.

Insurance Claims, Commissions and Changes in Policy Benefit Liabilities

Insurance claims, commissions and changes in policy benefit liabilities were $1,352 million in 2018, a decrease of $186 million from $1,538 million in 2017, due to the impact of higher increases in long-term interest rates decreasing the fair value of policy benefit liabilities in 2018, stronger equity markets in 2017 and less elevated reinsurance claims in 2018, partially offset by higher annuity sales and underlying business growth in 2018. The decrease related to the fair value of policy benefit liabilities and the increase related to annuity sales were largely offset in revenue.

Provision for Credit Losses

In 2018, we prospectively adopted IFRS 9. Under IFRS 9, we record a provision for credit losses on impaired loans and a provision for credit losses on performing loans. The provision for credit losses on impaired loans under IFRS 9 is consistent with the specific provision under IAS 39 in prior years, and the provision for credit losses on performing loans replaces the collective provision for credit losses under IAS 39. The provision for credit losses (PCL) was $662 million in 2018, a decrease from $746 million in 2017. The PCL on impaired loans of $700 million decreased from $822 million in 2017, reflecting a net recovery of credit losses in BMO Capital Markets in 2018, compared with net provisions in 2017, lower provisions in Canadian and U.S. P&C and BMO Wealth Management, and higher recoveries in Corporate Services. There was a $38 million net recovery of credit losses on performing loans in 2018, primarily in U.S. P&C, compared with a $76 million pre-tax decrease in the collective allowance in 2017. Adjustments to the collective allowance for credit losses were recorded in Corporate Services reported results in 2017. Prior periods under IAS 39 have not been restated.

Non-Interest Expense

Non-interest expense increased $285 million or 2% to $13,477 million in 2018, and adjusted non-interest expense increased $447 million or 3% to $13,344 million. Adjusted non-interest expense excludes a $277 million benefit from the remeasurement of an employee benefit liability in 2018, as

well as restructuring costs, the amortization of acquisition-related intangible assets and acquisition integration costs in both years. Reported and adjusted expenses increased, primarily due to increases in technology investments and higher employee-related expenses, partially offset by the benefits of disciplined expense management.

Provision for Income Taxes

The provision for income taxes was $1,961 million in 2018, compared with $1,292 million in 2017. The reported effective tax rate in 2018 was 26.5%, compared with 19.5% in 2017. The adjusted provision for income taxes was $1,565 million in 2018, compared with $1,353 million in 2017. The adjusted effective tax rate in 2018 was 20.7%, compared with 19.8% in 2017. The higher reported tax rate in 2018 was due to the $425 million one-time non-cash charge related to the revaluation of our U.S. net deferred tax asset as a result of U.S. tax reform.

Canadian P&C

Reported net income of $2,549 million increased $49 million or 2% during the year, and adjusted net income of $2,551 million, which excludes the amortization of acquisition-related intangible assets, increased $48 million or 2% from 2017. Revenue increased $270 million or 4% to $7,610 million, due to higher balances across most products and higher margins. In our personal banking business, revenue increased due to an increase in non-interest revenue, including a $39 million gain related to the restructuring of Interac Corporation, higher margins and higher balances across most products. In our commercial banking business, revenue decreased, as the benefit from higher balances and higher margins was more than offset by lower non-interest revenue, due to the $187 million gain on the sale of Moneris US in 2017. The gain on the sale of Moneris US had a negative impact of approximately 7% on net income growth and 3% on revenue growth in 2018. The provision for credit losses decreased $14 million or 3% to $469 million. The provision for credit losses on impaired loans decreased $17 million in 2018, due to lower commercial provisions, partially offset by higher consumer provisions. There was a $3 million provision for credit losses on performing loans in 2018. Non-interest expense was $3,710 million, an increase of $176 million or 5% from 2017, largely reflecting continued investment in the business, including increases in technology and sales force investments.

U.S. P&C

Reported net income of $1,394 million increased $376 million or 37% from the prior year, and adjusted net income of $1,439 million increased $375 million or 35%. Adjusted net income excludes the amortization of acquisition-related intangible assets. All amounts in the remainder of this section are on a U.S. dollar basis.

Reported net income of $1,082 million increased $301 million or 39%, and adjusted net income of $1,117 million increased $300 million or 37%, due to higher revenue, the benefit of U.S. tax reform in 2018 and lower provisions for credit losses, partially offset by higher expenses. The benefit of U.S. tax reform added $91 million to reported net income and $95 million to adjusted net income. Results in 2017 included a $27 million after-tax ($43 million pre-tax) loss on a loan sale, which had a favourable impact of approximately 4% on reported net income growth, and 3% on an adjusted basis. Revenue of $3,834 million increased $346 million or 10%, mainly due to higher deposit revenue and loan balances in 2018, and the impact of the loss on a loan sale in 2017, net of loan margin compression. The provision for credit losses decreased $51 million or 23% to $170 million in 2018. The provision for credit losses on impaired loans decreased $20 million in 2018, reflecting lower consumer and commercial provisions. There was a $31 million net recovery of credit losses on performing loans in 2018. Non-interest expense of $2,303 million and adjusted non-interest expense of $2,258 million both increased 4%, primarily due to investments in technology and other investments in the business.

BMO Wealth Management

Reported net income of $1,072 million increased $105 million or 11% from 2017. Adjusted net income, which excludes the amortization of acquisition-related intangible assets, was $1,113 million, an increase of $81 million or 8% from the prior year. Traditional Wealth reported net income of $805 million increased $76 million or 10% from 2017. Adjusted net income in Traditional Wealth of $846 million increased $52 million or 7%, primarily due to growth from our diversified businesses and higher equity markets on average, partially offset by higher expenses and a legal provision. Insurance net income was $267 million, an increase of $29 million or 12%, primarily driven by less elevated reinsurance claims in 2018 and business growth, partially offset by unfavourable market movements in 2018 relative to favourable market movements in 2017. Revenue of $6,301 million increased $83 million or 1% from 2017. Revenue, net of CCPB, of $4,949 million increased $269 million or 6%. Revenue in Traditional Wealth of $4,470 million increased $260 million or 6%, due to growth in client assets, including a benefit from higher equity markets on average, and higher deposit and loan revenue, partially offset by the impact of the divestiture of a non-core business in 2017. Insurance revenue, net of CCPB, of $479 million increased $9 million or 2%, due to less elevated reinsurance claims in 2018 and business growth, partially offset by market movements as noted above. The provision for credit losses was $6 million, compared with $8 million in 2017. The provision for credit losses on impaired loans decreased $2 million, reflecting lower consumer provisions. There was no provision for credit losses on performing loans in 2018. Non-interest expense was $3,515 million, an increase of $160 million or 5%. Adjusted non-interest expense was $3,463 million, an increase of $188 million or 6% from 2017, reflecting higher revenue-based costs, technology investments and strategic growth in the sales force, partially offset by the impact of the divestiture.

BMO Capital Markets

Reported net income of $1,156 million decreased $119 million or 9% from 2017. Adjusted net income, which excludes the amortization of acquisition-related intangible assets and acquisition integration costs, was $1,169 million, a decrease of $108 million or 8%, primarily due to lower revenue. Revenue of $4,363 million decreased $213 million or 5% from 2017. Excluding the impact of the weaker U.S. dollar, revenue decreased $188 million or 4%. Global Markets revenue decreased $155 million or 6% from 2017, due to lower interest rate trading revenues, lower equity-related activity with corporate clients and lower net securities gains. Investment and Corporate Banking revenue decreased $58 million or 3% from 2017, primarily due to lower underwriting and advisory revenue, partially offset by higher corporate banking-related revenue. Total net recovery of credit losses was $18 million, compared with net provisions of $44 million in 2017. The net recovery of credit losses on impaired loans was $17 million, and there was a $1 million net recovery of credit losses on performing loans in 2018. Non-interest expense of $2,859 million increased $73 million or 3%, and adjusted non-interest expense of $2,842 million increased $59 million or 2%, or 3% excluding the impact of the weaker U.S. dollar, mainly driven by continued investment in the business.

Corporate Services

Corporate Services reported net loss was $718 million in 2018, compared with a reported net loss of $421 million in 2017, and adjusted net loss was $290 million, compared with an adjusted net loss of $379 million in 2017. Adjusted net loss excludes the one-time non-cash charge related to the revaluation of our U.S. net deferred tax asset and the benefit resulting from the remeasurement of an employee benefit liability in 2018, restructuring costs and acquisition integration costs in both years, with higher costs incurred in 2018, and a $54 million decrease in the collective allowance for credit losses in 2017. The adjusted net loss improved, primarily due to lower expenses and higher revenue, excluding the taxable equivalent basis adjustment. The reported net loss increased $297 million from 2017 due to the impact of the adjusting items and other drivers noted above.

Adjusted results in this 2018 Financial Performance Review section are non-GAAP and are discussed in the Non-GAAP Measures section on page 17.

Financial Condition Review

Summary Balance Sheet

(Canadian $ in millions) As at October 31	2019	2018	2017
Assets			
Cash and interest bearing deposits with banks	**56,790**	50,447	39,089
Securities	**189,438**	180,935	163,198
Securities borrowed or purchased under resale agreements	**104,004**	85,051	75,047
Net loans	**426,094**	383,991	358,507
Derivative instruments	**22,144**	25,422	28,951
Other assets	**53,725**	47,447	44,812
Total assets	**852,195**	773,293	709,604
Liabilities and Equity			
Deposits	**568,143**	520,928	479,792
Derivative instruments	**23,598**	23,629	27,804
Securities lent or sold under repurchase agreements	**86,656**	66,684	55,119
Other liabilities	**115,727**	109,549	97,515
Subordinated debt	**6,995**	6,782	5,029
Equity	**51,076**	45,721	44,345
Total liabilities and equity	**852,195**	773,293	709,604

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

Overview

Total assets of $852.2 billion increased $78.9 billion from October 31, 2018. Total liabilities of $801.1 billion increased $73.5 billion from October 31, 2018. Total equity of $51.1 billion increased $5.4 billion from October 31, 2018. The U.S. dollar at October 31, 2019 was largely unchanged from the prior year and did not meaningfully impact balance sheet growth.

Cash and Interest Bearing Deposits with Banks

Cash and interest bearing deposits with banks increased $6.3 billion, due to higher balances held with central banks.

Securities

(Canadian $ in millions) As at October 31	2019	2018	2017
Trading	**85,903**	99,697	99,069
Fair value through profit or loss (1)	**13,704**	11,611	na
Fair value through other comprehensive income – Debt and equity (2)	**64,515**	62,440	na
Available-for-sale	**na**	na	54,075
Amortized cost (3)	**24,472**	6,485	na
Held-to-maturity	**na**	na	9,094
Other	**844**	702	960
Total securities	**189,438**	180,935	163,198

(1) Comprised of $2,899 million mandatorily measured at fair value and $10,805 million designated at fair value.
(2) Includes allowances for credit losses on fair value through other comprehensive income debt securities of $2 million as at October 31, 2019 ($2 million as at October 31, 2018 and na as at October 31, 2017).
(3) Net of allowances for credit losses of $1 million ($1 million as at October 31, 2018 and na as at October 31, 2017).

na – Not applicable due to IFRS 9 adoption.

Securities increased $8.5 billion, primarily due to liquidity management activities in Corporate Services and an increase in our insurance business, partially offset by lower balances in BMO Capital Markets.

Securities Borrowed or Purchased Under Resale Agreements

Securities borrowed or purchased under resale agreements increased $19.0 billion, driven by higher client activity in BMO Capital Markets, partially offset by lower balances in Corporate Services.

Net Loans

(Canadian $ in millions) As at October 31	2019	2018	2017
Residential mortgages	**123,740**	119,620	115,258
Non-residential mortgages	**15,731**	14,017	11,744
Consumer instalment and other personal	**67,736**	63,225	61,944
Credit cards	**8,859**	8,329	8,071
Businesses and governments	**211,878**	180,439	163,323
Gross loans	**427,944**	385,630	360,340
Allowance for credit losses	**(1,850)**	(1,639)	(1,833)
Total net loans	**426,094**	383,991	358,507

Net loans increased $42.1 billion, largely driven by an increase of $31.4 billion in business and government loans, primarily due to growth in our P&C businesses and BMO Capital Markets. Consumer instalment and other personal loans increased $4.5 billion, due to growth in our P&C businesses and BMO Wealth Management. Residential mortgages increased $4.1 billion, mainly due to growth in Canadian P&C, and non-residential mortgages increased $1.7 billion, mainly due to growth in U.S. P&C.

Table 7 on page 122 of the Supplemental Information section provides a comparative summary of loans by geographic location and product. Table 9 on page 123 provides a comparative summary of net loans in Canada by province and industry. Loan quality is discussed on page 81, and further details on loans are provided in Notes 4, 6 and 24 on pages 151, 159 and 197 of the consolidated financial statements.

Derivative Financial Assets

Derivative financial assets decreased $3.3 billion, primarily due to a decrease in the fair value of foreign exchange, equity and commodity contracts, partially offset by an increase in the fair value of interest rate contracts.

Other Assets

Other assets include customers' liability under acceptances, goodwill and intangible assets, premises and equipment, current and deferred tax assets, accounts receivable and prepaid expenses. Other assets increased $6.3 billion, primarily due to a $5.0 billion increase in customers' liability under acceptances, mainly in Canadian P&C.

Deposits

(Canadian $ in millions) As at October 31	**2019**	2018	2017
Banks	**23,816**	27,907	28,205
Businesses and governments	**343,157**	312,177	283,276
Individuals	**201,170**	180,844	168,311
Total deposits	**568,143**	520,928	479,792

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

Deposits increased $47.2 billion, reflecting higher levels of customer deposits across the operating groups. Deposits by businesses and governments increased $31.0 billion, reflecting growth in customer balances and higher wholesale funding for loan and liquid asset growth. Deposits by individuals increased $20.3 billion, due to growth in the P&C businesses and BMO Wealth Management. Deposits by banks decreased $4.1 billion. Further details on the composition of deposits are provided in Note 13 on page 174 of the consolidated financial statements and in the Liquidity and Funding Risk section on page 91.

Derivative Financial Liabilities

Derivative financial liabilities were relatively unchanged. A decrease in the fair value of foreign exchange contracts was largely offset by an increase in the fair value of equity, commodity and interest rate contracts.

Securities Lent or Sold Under Repurchase Agreements

Securities lent or sold under repurchase agreements increased $20.0 billion, driven by client activity in BMO Capital Markets.

Other Liabilities

Other liabilities primarily include securities sold but not yet purchased, securitization and structured entities liabilities, acceptances, insurance-related liabilities and Federal Home Loan Bank (FHLB) advances. Other liabilities increased $6.2 billion, primarily reflecting a $5.0 billion increase in acceptances, mainly in Canadian P&C. Securitization and structured entities liabilities increased $2.1 billion to fund loan and liquid asset growth. Insurance liabilities increased $2.0 billion, primarily due to the impact of lower interest rates and annuity sales. Securities sold but not yet purchased decreased $2.6 billion, due to lower levels of client activity in BMO Capital Markets. Further details on the composition of other liabilities are provided in Note 14 on page 175 of the consolidated financial statements.

Subordinated Debt

Subordinated debt increased $0.2 billion from the prior year. A new issuance was offset by a redemption in 2019. Further details on the composition of subordinated debt are provided in Note 15 on page 176 of the consolidated financial statements.

Equity

(Canadian $ in millions) As at October 31	**2019**	2018	2017
Share capital			
Preferred shares and other equity instruments	**5,348**	4,340	4,240
Common shares	**12,971**	12,929	13,032
Contributed surplus	**303**	300	307
Retained earnings	**28,725**	25,850	23,700
Accumulated other comprehensive income	**3,729**	2,302	3,066
Total equity	**51,076**	45,721	44,345

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

Total equity increased $5.4 billion, due to a $2.9 billion increase in retained earnings, a $1.4 billion increase in accumulated other comprehensive income and a $1.0 billion increase in preferred shares and other equity instruments. Retained earnings increased as a result of net income earned in the year, partially offset by dividends and common shares repurchased for cancellation. Accumulated other comprehensive income increased, primarily due to the impact of lower interest rates on both cash flow hedges and fair value through other comprehensive income debt securities, net of a decrease in accumulated other comprehensive income on pension and other employee future benefit plans. Preferred shares and other equity instruments increased due to new issuances in 2019.

Our Consolidated Statement of Changes in Equity on page 140 of the consolidated financial statements provides a summary of items that increase or reduce total equity, while Note 16 on page 177 of the consolidated financial statements provides details on the components of, and changes in, share capital. Details on our enterprise-wide capital management practices and strategies can be found on the following page.

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Enterprise-Wide Capital Management

Capital Management

Objective

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

- is appropriate given 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.

Capital Management Framework



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

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

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

Refer to the Enterprise-Wide Risk Management section on page 68 for further discussion of the risks underlying our business activities.

Governance

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

Regulatory Capital Requirements

Regulatory capital requirements for BMO are determined in accordance with guidelines issued by the Office of the Superintendent of Financial Institutions Canada (OSFI), which are based on the capital standards developed by the Basel Committee on Banking Supervision (BCBS). The minimum risk-based capital ratios set out in OSFI's Capital Adequacy Requirements Guideline are a 4.5% Common Equity Tier 1 (CET1) Ratio, 6% Tier 1 Capital Ratio and 8% Total Capital Ratio. In addition to the minimum capital requirements, OSFI also expects domestic systemically important banks (D-SIBs), including BMO, to hold Pillar 1 and Pillar 2 buffers, which are meant to be used as a normal first step in periods of stress. The Pillar 1 buffers include a Capital Conservation Buffer of 2.5%, a D-SIB Common Equity Tier 1 surcharge of 1%, and the Countercyclical Buffer (which can range from 0% to 2.5%, depending on the bank's exposure to jurisdictions that have activated the buffer). The Domestic Stability Buffer (DSB) is a Pillar 2 buffer that can range from 0% to 2.5% and is set at 2.0% as of the fourth quarter of fiscal 2019. The minimum leverage ratio set out in OSFI's Leverage Requirements Guideline is 3%. OSFI's capital requirements are summarized in the following table.

(% of risk-weighted assets)	Minimum capital requirements	Pillar 1 Capital Buffers (1)	Domestic Stability Buffer (2)	OSFI capital requirements including capital buffers	BMO Capital and Leverage Ratios as at October 31, 2019
Common Equity Tier 1 Ratio	4.5%	3.5%	2.0%	10.0%	11.4%
Tier 1 Capital Ratio	6.0%	3.5%	2.0%	11.5%	13.0%
Total Capital Ratio	8.0%	3.5%	2.0%	13.5%	15.2%
Leverage Ratio	3.0%	na	na	3.0%	4.3%

(1) The minimum 4.5% CET1 Ratio requirement is augmented by 3.5% in Pillar 1 Capital Buffers, which can absorb losses during periods of stress. The Pillar 1 Capital Buffers include a 2.5% Capital Conservation Buffer, a 1.0% Common Equity Tier 1 Surcharge for D-SIBs and a Countercyclical Buffer, as prescribed by OSFI (immaterial for the fourth quarter of 2019). If a bank's capital ratios fall within the range of this combined buffer, restrictions on discretionary distributions of earnings (such as dividends, share repurchases and discretionary compensation) would ensue, with the degree of such restrictions varying according to the position of the bank's ratios within the buffer range.

(2) OSFI requires all D-SIBs to maintain a Domestic Stability Buffer (DSB) against Pillar 2 risks associated with systemic vulnerabilities. The DSB can range from 0% to 2.5% of total RWA and is set at 2.0% effective October 31, 2019. Breaches of the DSB will not result in a bank being subject to automatic constraints on capital distributions.

na – not applicable

Regulatory Capital Ratios

The **Common Equity Tier 1 Ratio** reflects CET1 capital divided by Risk-Weighted Assets (RWA).

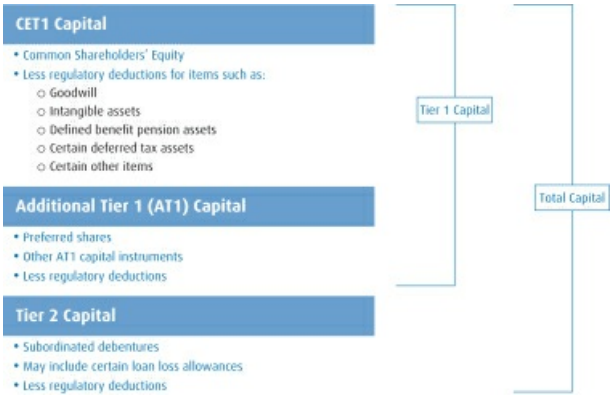
The **Tier 1 Capital Ratio** reflects Tier 1 capital divided by RWA.

The **Total Capital Ratio** reflects Total capital divided by RWA.

The **Leverage Ratio** reflects Tier 1 capital divided by the sum of on-balance sheet items and specified off-balance sheet items, net of specified adjustments.

Regulatory Capital Elements

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



OSFI's Capital Adequacy Requirements (CAR) Guideline also requires the implementation of BCBS guidance on non-viability contingent capital (NVCC). NVCC provisions require the conversion of certain capital instruments into a variable number of common shares in the event that OSFI announces that a 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.

Under OSFI's CAR Guideline, non-common share capital instruments that do not meet Basel III requirements, including NVCC requirements, will be fully phased out by 2022.

Under Canada's Bank Recapitalization (Bail-In) Regime, eligible senior debt issued on or after September 23, 2018 is subject to statutory conversion requirements. Canada Deposit Insurance Corporation has the power to trigger the conversion of bail-in debt into common shares. This statutory conversion supplements NVCC securities, which must be converted, in full, prior to the conversion of bail-in debt. As of the fourth quarter of fiscal 2019, the minimum requirements for Total Loss Absorbing Capacity (TLAC) were set at a risk-based TLAC ratio of 23.5% RWA, including a 2.0% DSB, and a TLAC leverage ratio of 6.75%, which we expect to meet when the minimum requirements come into effect on November 1, 2021. At October 31, 2019, our risk-based TLAC ratio was 20.4% and our TLAC leverage ratio was 6.75%.

Risk-Weighted Assets

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

BMO primarily uses the Advanced Internal Ratings Based (AIRB) Approach to determine credit RWA in our portfolio. The AIRB Approach utilizes sophisticated techniques to measure RWA at the exposure level based on sound risk management principles, including estimates of the probability of default, the downturn loss given default and exposure at default risk parameters, term to maturity and asset class type, as prescribed by the OSFI rules.

These risk parameters are determined using historical portfolio data supplemented by benchmarking and are updated periodically. Validation procedures related to these parameters are in place and are enhanced periodically in order to quantify and differentiate risks appropriately to reflect changes in economic and credit conditions. Credit RWA related to certain Canadian and U.S. portfolios are determined under the Standardized Approach using prescribed risk weights based on external ratings, counterparty type or product type.

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

BMO uses the Advanced Measurement Approach, a risk-sensitive capital model, along with the Standardized Approach in certain areas permitted under OSFI rules, to determine capital requirements for operational risk.

For institutions using advanced approaches for credit risk or operational risk, there is a capital floor as prescribed in OSFI's CAR Guideline. In calculating regulatory capital ratios, there is a requirement to increase RWA when an amount calculated under the Standardized Approach (covering RWA and allowances) is higher than the result of a similar calculation under the more risk-sensitive modelled approach. The capital floor was not operative for the bank in fiscal 2019.

Capital Regulatory Developments

A number of regulatory capital changes, some finalized and some under development, are expected to put upward pressure on the amount of capital BMO is required to hold over time. The nature of these changes is outlined below.

In December 2017, the BCBS finalized the Basel III reforms to be implemented on January 1, 2022. The reforms included: revised standardized and internal ratings-based approaches for credit risk; revisions to the credit valuation adjustment (CVA) framework; a revised standardized approach for operational risk, which replaces the existing standardized and advanced measurement approaches; a revised leverage ratio framework; and an output floor for RWA, to be phased in over a five-year period. In July 2018, OSFI issued for consultation a discussion paper on the proposed domestic implementation of the final Basel III reforms. The discussion paper set out OSFI's preliminary views on the scope and timing of the implementation of the final Basel III reforms in Canada. While the BCBS outlined a five-year transition period for the RWA output floor from 50% in 2022 to 72.5% in 2027, OSFI's discussion paper proposes to set the output floor at 72.5% upon implementation of the reforms in the first quarter of fiscal 2022.

In January 2019, the BCBS issued final standards on the Minimum Capital Requirements for Market Risk (the Final Market Risk Framework), part of the Basel III reforms, to address the outstanding design and calibration issues of the 2016 framework and to provide further clarity that will facilitate its implementation. The proposed implementation date is January 1, 2022.

The Basel III reforms are expected to increase the amount of capital we are required to hold. We continue to engage with OSFI as it works to finalize the timing and approach to domestic implementation.

In June 2019, OSFI set the level of the Domestic Stability Buffer (DSB), a Pillar 2 buffer applicable to D-SIBs, at 2.0%, up from 1.75%, effective October 31, 2019. The increase reflects OSFI's assessment of identified systemic vulnerabilities, including Canadian consumer indebtedness, asset imbalances in the Canadian market, and Canadian institutional indebtedness. The DSB, which is met with CET1 capital, can be set between 0% and 2.5% of total RWA.

In April 2019, OSFI released the final version of the Large Exposure Limits Guideline for implementation by Canadian D-SIBs in the first quarter of fiscal 2020, which is not expected to have a significant impact on our operations.

In November 2018, OSFI implemented its revised CAR Guideline. The main revisions included the domestic implementation of the standardized approach for counterparty credit risk (SA-CCR) and the revised capital requirements for bank exposures to central counterparties, as well as a revised securitization framework. These changes resulted in a modest increase in the amount of capital we are required to hold due to transitional arrangements provided by OSFI for fiscal 2019. In November 2018, OSFI also implemented the revised Leverage Requirements Guideline to align with the changes related to counterparty credit risk and the securitization framework in the revised CAR Guideline.

IFRS 16, *Leases* is effective November 1, 2019 and will result in a downward adjustment to opening retained earnings on adoption. The main impact on BMO will be recording real estate leases on the balance sheet. Refer to Future Changes in Accounting Policies on page 111 and Note 1 of the consolidated financial statements for further information.

We expect a combined impact of approximately 15 to 20 basis points on our CET1 Ratio in the first quarter of fiscal 2020 from the adoption of IFRS 16 and the expiry of transitional arrangements for SA-CCR and the revised securitization framework.

In October 2019, the U.S. Federal Reserve Board issued final rules on tailoring the prudential standards for foreign banking organizations (FBOs), which establish four categories of capital and liquidity requirements based on an individual firm's risk profile. The rules are expected to have a neutral to a slightly positive impact on our subsidiary BMO Financial Corp. (BFC).

2019 Regulatory Capital Review

BMO is well capitalized, with capital ratios that exceed OSFI's published requirements for large Canadian banks, including the 2.0% DSB. Our CET1 Ratio was 11.4% as at October 31, 2019, compared with 11.3% as at October 31, 2018. The CET1 Ratio increased from the end of fiscal 2018, as higher CET1 capital, primarily from retained earnings growth, more than offset higher RWA, which was driven by business growth.

Our Tier 1 Capital and Total Capital Ratios were 13.0% and 15.2%, respectively, as at October 31, 2019, compared with 12.9% and 15.2%, respectively, as at October 31, 2018. The Tier 1 Capital Ratio was higher mainly due to the factors impacting the CET1 Ratio discussed above and the net increase in Additional Tier 1 (AT1) capital from issuances, net of the redemption of a non-NVCC instrument. The Total Capital Ratio was consistent with the prior year, as higher total capital, mainly from higher Tier 1 capital, was offset by higher RWA.

The impact of foreign exchange rate movements on capital ratios was largely offset. BMO's investments in foreign operations are primarily denominated in U.S. dollars, and the foreign exchange impact of U.S.-dollar-denominated RWA and capital deductions may result in variability in the bank's capital ratios. BMO may manage the impact of foreign exchange rate movements on its capital ratios, and did so during 2019. Any such activities could also impact our book value and return on equity.

BMO's Leverage Ratio was 4.3% as at October 31, 2019, up from 4.2% as at October 31, 2018, due to higher Tier 1 capital, mainly from retained earnings growth and the net new issuance of AT1 capital discussed above, partially offset by higher leverage exposures, which were driven by strong business growth.

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

As a U.S. bank holding company with total consolidated assets less than US$250 billion, our subsidiary BFC continues to be subject to the Federal Reserve Board's (FRB) Comprehensive Capital Analysis and Review (CCAR) and Dodd-Frank Act Stress Test (DFAST) requirements, on a biennial basis beginning with CCAR 2020, although it will not be required to conduct any company-run stress tests. CCAR is an exercise conducted by the FRB to assess whether the largest bank holding companies and FBOs operating in the United States have sufficient capital to support their operations throughout periods of economic and financial stress and have robust, forward-looking capital planning processes that address their unique risks. DFAST is a forward-looking exercise complementary to CCAR and conducted by the FRB to assess whether the financial companies that it supervises have sufficient capital to absorb losses and support operations during adverse economic conditions. BFC will continue to be required to create and maintain a capital plan, which indicates that its capital ratios, under the firm severely adverse scenario, will remain above well-capitalized levels.

Regulatory Capital (1)

(Canadian $ in millions, except as noted)

As at October 31	2019	2018
Common Equity Tier 1 capital: instruments and reserves		
Directly issued qualifying common share capital plus related stock surplus	**13,274**	13,229
Retained earnings	**28,725**	25,856
Accumulated other comprehensive income (and other reserves)	**3,729**	2,302
Goodwill and other intangibles (net of related tax liability)	**(8,331)**	(8,261)
Other common equity Tier 1 capital deductions	**(1,326)**	(405)
Common Equity Tier 1 capital (CET1)	**36,071**	32,721
Additional Tier 1 capital: instruments		
Directly issued qualifying Additional Tier 1 instruments plus related stock surplus	**5,058**	4,050
Directly issued capital instruments subject to phase-out from Additional Tier 1	**290**	740
Additional Tier 1 instruments (and CET1 instruments not otherwise included) issued by subsidiaries and held by third parties (amount allowed in group AT1)	**–**	–
of which: instruments issued by subsidiaries subject to phase-out	**–**	–
Total regulatory adjustments applied to Additional Tier 1 capital	**(218)**	(291)
Additional Tier 1 capital (AT1)	**5,130**	4,499
Tier 1 capital (T1 = CET1 + AT1)	**41,201**	37,220
Tier 2 capital: instruments and provisions		
Directly issued qualifying Tier 2 instruments plus related stock surplus	**6,850**	6,639
Directly issued capital instruments subject to phase-out from Tier 2 capital	**145**	143
Tier 2 instruments (and CET1 and AT1 instruments not otherwise included) issued by subsidiaries and held by third parties (amount allowed in group Tier 2)	**–**	–
of which: instruments issued by subsidiaries subject to phase-out	**–**	–
General allowance	**194**	235
Total regulatory adjustments to Tier 2 capital	**(50)**	(121)
Tier 2 capital (T2)	**7,139**	6,896
Total capital (TC = T1 + T2)	**48,340**	44,116
Risk-Weighted Assets and Leverage Ratio exposures		
CET1 Capital Risk-Weighted Assets	**317,029**	289,237
Tier 1 Capital Risk-Weighted Assets	**317,029**	289,420
Total Capital Risk-Weighted Assets	**317,029**	289,604
Leverage Exposures	**956,493**	876,106
Capital ratios (%)		
Common Equity Tier 1 Ratio	**11.4**	11.3
Tier 1 Capital Ratio	**13.0**	12.9
Total Capital Ratio	**15.2**	15.2
Leverage Ratio	**4.3**	4.2

(1) Non-qualifying Additional Tier 1 and Tier 2 capital instruments are being phased out at a rate of 10% per year from January 1, 2013 to January 1, 2022.

Our CET1 capital and Tier 1 capital levels were $36.1 billion and $41.2 billion, respectively, as at October 31, 2019, up from $32.7 billion and $37.2 billion, respectively, as at October 31, 2018. CET1 capital increased, mainly driven by retained earnings growth, and to a lesser degree from a lower deduction for deferred tax assets and higher unrealized gains from securities fair valued through other comprehensive income, partially offset by an increase in the deduction for a shortfall of provisions to expected losses and the net impact of higher pension and other post-employment benefit obligations due to lower discount rates. The increase in Tier 1 capital was mainly due to CET1 capital growth and the net new issuances of AT1 capital discussed above.

Total capital was $48.3 billion as at October 31, 2019, up from $44.1 billion as at October 31, 2018, mainly attributable to the growth in Tier 1 capital discussed above.

Changes in Risk-Weighted Assets

Total CET1 Capital RWA were $317.0 billion as at October 31, 2019, up from $289.2 billion as at October 31, 2018. Credit Risk RWA were $269.3 billion as at October 31, 2019, up from $240.5 billion as at October 31, 2018, due to strong business growth, partially offset by lower RWA from changes in book quality and methodology, net of the impact of regulatory changes. As noted above, the impact of foreign exchange rate movements is largely offset in the CET1 Ratio. Market Risk RWA were $11.2 billion as at October 31, 2019, down from $13.5 billion as at October 31, 2018, attributable to broadly lower general market risk levels and methodology changes. Operational Risk RWA were $36.6 billion as at October 31, 2019, up from $35.2 billion as at October 31, 2018, primarily due to growth in the bank's average gross income. There was no capital floor RWA adjustment as at October 31, 2019, and October 31, 2018.

(Canadian $ in millions)

As at October 31	**2019**	2018
Credit Risk		
Wholesale		
Corporate, including specialized lending	**127,355**	112,394
Corporate small and medium-sized enterprises	**42,981**	39,496
Sovereign	**4,552**	3,323
Bank	**3,928**	4,790
Retail		
Residential mortgages, excluding home equity line of credit	**9,512**	9,527
Home equity line of credit	**5,605**	4,846
Qualifying revolving retail	**6,482**	5,452
Other retail, excluding small and medium-sized enterprises	**14,163**	12,078
Retail small and medium-sized enterprises	**8,063**	7,264
Equity	**2,407**	1,971
Trading book	**12,410**	9,693
Securitization	**2,722**	2,295
Other credit risk assets – non-counterparty managed assets	**17,210**	16,776
Scaling factor for credit risk assets under AIRB Approach (1)	**11,891**	10,595
Total Credit Risk	**269,281**	240,500
Market Risk	**11,183**	13,532
Operational Risk	**36,565**	35,205
CET1 Capital Risk-Weighted Assets	**317,029**	289,237
Additional CVA adjustment, prescribed by OSFI, for Tier 1 capital	**–**	183
Tier 1 Capital Risk-Weighted Assets	**317,029**	289,420
Additional CVA adjustment, prescribed by OSFI, for Total capital	**–**	184
Total Capital Risk-Weighted Assets	**317,029**	289,604

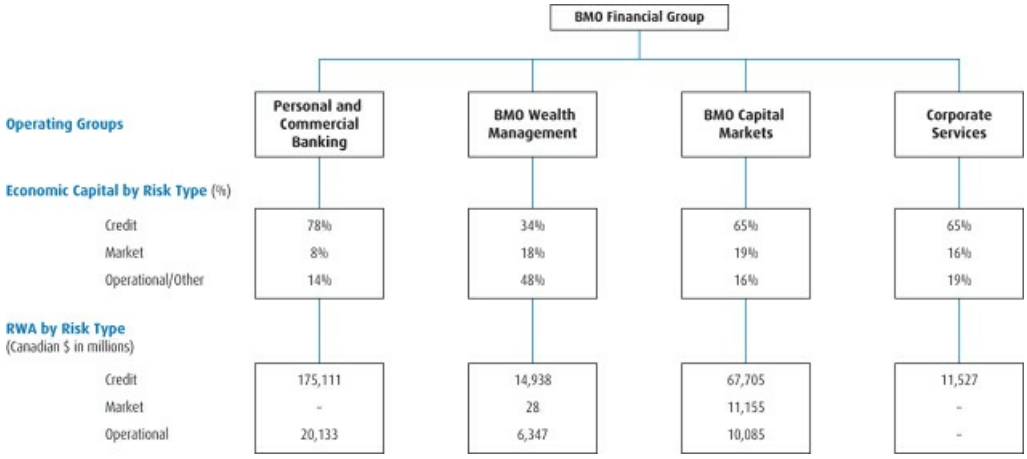
(1) The scaling factor is applied to RWA amounts for credit risk under the Advanced Internal Ratings Based (AIRB) Approach.

Economic Capital

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

Economic Capital and RWA by Operating Group and Risk Type

(As at October 31, 2019)



Capital Management Activities

On June 3, 2019, we renewed our normal course issuer bid (NCIB) effective for one year. Under this NCIB, we may purchase up to 15 million of our common shares for cancellation. The NCIB is a regular component of BMO's capital management strategy. The timing and amount of purchases under the NCIB are subject to management discretion based on factors such as market conditions and capital levels. The bank will consult with OSFI before making purchases under the NCIB. During 2019, we repurchased and cancelled 1 million of our common shares as part of the NCIB at an average cost of $90.00 per share, totalling $90 million. During 2018, we repurchased and cancelled 10 million of our common shares as part of the NCIB, totalling $991 million.

During 2019, BMO issued approximately 0.9 million common shares through the exercise of stock options.

During 2019, BMO completed Tier 1 and Tier 2 capital instrument issuances, redemptions and resets, as outlined in the table below.

Share Issuances, Redemptions, Resets and Conversions

(in millions) As at October 31, 2019	Issuance, redemption or reset date	Number of shares	Amount
Common shares issued			
Stock options exercised		0.9	$ 62
Tier 1 Capital			
Issuance of Non-Cumulative 5-Year Rate Reset Class B Preferred Shares, Series 46	April 17, 2019	14.0	$ 350
Rate reset of Non-Cumulative 5-Year Rate Reset Class B Preferred Shares, Series 27	May 25, 2019	20.0	$ 500
Rate reset of Non-Cumulative 5-Year Rate Reset Class B Preferred Shares, Series 29	August 25, 2019	16.0	$ 400
Redemption of BMO Capital Trust II Tier 1 Notes – Series A	December 31, 2018		$ (450)
Issuance of 4.800% Additional Tier 1 Capital Notes	July 30, 2019		US$ 500
Tier 2 Capital			
Redemption of Series H Medium-Term Notes, First Tranche	September 19, 2019		$ (1,000)
Issuance of Series J Medium-Term Notes, First Tranche	September 16, 2019		$ 1,000

If an NVCC trigger event were to occur, our NVCC capital instruments would be converted into BMO common shares pursuant to automatic conversion formulas, with 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 at the time of the trigger event (calculated using a 10-day weighted average). Based on a floor price of $5.00, these NVCC capital instruments would be converted into approximately 3.07 billion BMO common shares, assuming no accrued interest and no declared and unpaid dividends.

On November 14, 2019, BMO announced the conversion results of its Non-Cumulative 5-Year Rate Reset Class B Preferred Shares, Series 31 (Preferred Shares Series 31). During the conversion period, which ran from October 28, 2019 to November 12, 2019, 69,570 Preferred Shares Series 31 were tendered for conversion into Non-Cumulative 5-Year Rate Reset Class B Preferred Shares, Series 32 (Preferred Shares Series 32), which is less than the minimum 1,000,000 required to give effect to the conversion, as described in the Preferred Shares Series 31 prospectus supplement dated July 23, 2014. As a result, no Preferred Shares Series 32 will be issued and holders of Preferred Shares Series 31 will retain their shares; the dividend rate for the Preferred Shares Series 31 will be 3.851% for the five-year period commencing on November 25, 2019 and ending on November 24, 2024.

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

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Outstanding Shares and NVCC Capital Instruments

As at October 31, 2019		Number of shares or dollar amount (in millions)	Dividends declared per share 2019	2018	2017
Common shares		639	**$ 4.06**	$ 3.78	$ 3.56
Class B Preferred shares					
Series 14 (1)		–	**–**	–	$ 0.66
Series 15 (1)		–	**–**	–	$ 0.73
Series 16 (2)		–	**–**	$ 0.64	$ 0.85
Series 17 (2)		–	**–**	$ 0.52	$ 0.55
Series 25 (3)	$	236	**$ 0.45**	$ 0.45	$ 0.45
Series 26 (3)	$	54	**$ 0.70**	$ 0.59	$ 0.43
Series 27*	$	500	**$ 0.98**	$ 1.00	$ 1.00
Series 29*	$	400	**$ 0.96**	$ 0.98	$ 0.98
Series 31*	$	300	**$ 0.95**	$ 0.95	$ 0.95
Series 33*	$	200	**$ 0.95**	$ 0.95	$ 0.95
Series 35*	$	150	**$ 1.25**	$ 1.25	$ 1.25
Series 36*	$	600	**$58.50**	$58.50	$58.50
Series 38*	$	600	**$ 1.21**	$ 1.21	$ 1.33
Series 40*	$	500	**$ 1.13**	$ 1.13	$ 0.80
Series 42*	$	400	**$ 1.10**	$ 1.10	$ 0.45
Series 44*	$	400	**$ 1.44**	–	–
Series 46*	$	350	**$ 0.77**	–	–
Additional Tier 1 Capital Notes					
4.800% Additional Tier 1 Capital Notes	US$	500	**na**	na	na
Medium-Term Notes* (4)					
Series H – Second Tranche	$	1,000	**na**	na	na
Series I – First Tranche	$	1,250	**na**	na	na
Series I – Second Tranche	$	850	**na**	na	na
3.803% Subordinated Notes	US$	1,250	**na**	na	na
4.338% Subordinated Notes	US$	850	**na**	na	na
Series J – First Tranche	$	1,000	**na**	na	na
Stock options					
Vested		3.5			
Non-vested		2.6			

* Convertible into common shares

(1) Redeemed in May 2017.

(2) Redeemed in August 2018.

(3) In August 2016, approximately 2.2 million Series 25 Preferred Shares were converted into Series 26 Preferred Shares on a one-for-one basis.

(4) Note 15 of the consolidated financial statements includes details on the Series H Medium-Term Notes, Second Tranche, Series I Medium-Term Notes, First Tranche and Second Tranche, USD 3.803% Subordinated Notes, USD 4.338% Subordinated Notes and Series J Medium-Term Notes, First Tranche.

na – not applicable

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

Dividends

Dividends declared per common share in fiscal 2019 totalled $4.06, up 7% from the prior year. Annual dividends declared represented 46.8% of reported net income and 43.0% of adjusted net income available to common shareholders on a last twelve months basis.

Our target dividend payout range (common share dividends as a percentage of net income available to shareholders, less preferred share dividends, based on earnings over the last twelve months) is 40% to 50%, providing shareholders with a competitive dividend yield. BMO's target dividend payout range seeks to provide shareholders with stable income while ensuring sufficient earnings are retained to support anticipated business growth, fund strategic investments and support capital adequacy.

At year end, BMO's common shares provided a 4.2% annualized dividend yield based on year-end closing share price. On December 3, 2019, BMO announced that the Board of Directors had declared a quarterly dividend on common shares of $1.06 per share, up $0.03 per share or 3% from the prior quarter and up $0.06 per share or 6% from a year ago. The dividend is payable on February 26, 2020 to shareholders of record on February 3, 2020.

Common shareholders may elect to have their cash dividends reinvested in common shares of BMO in accordance with the Shareholder Dividend Reinvestment and Share Purchase Plan (DRIP). In fiscal 2019, common shares to supply the DRIP were purchased on the open market.

Eligible Dividends Designation

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

Caution

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

Select Financial Instruments and Off-Balance Sheet Arrangements

The Financial Stability Board (FSB) issued a report in 2012 encouraging enhanced disclosure related to financial instruments that market participants had come to regard as carrying higher risk. As such, we have included discussion below on our consumer loans portfolio, leveraged finance and our BMO-sponsored securitization vehicles. An index of the disclosures recommended by the Enhanced Disclosure Task Force of the FSB and the pages on which these disclosures appear in our Annual Report or Supplementary Financial Information is provided on page 116. We also enter into a number of off-balance sheet arrangements in the normal course of operations, which are discussed further below, and include Credit Instruments, Structured Entities and Guarantees.

Consumer Loans

In Canada, our Consumer Lending portfolio is comprised of three main asset classes: real estate secured lending (including residential mortgages and home equity products), instalment and other personal loans (including indirect automobile loans) and credit card loans. We do not have any subprime or Alt-A mortgage or home equity loan programs, nor do we purchase subprime or Alt-A loans from third-party lenders.

In the United States (U.S.), our Consumer Lending portfolio is primarily comprised of three asset classes: residential first mortgages, home equity products and indirect automobile loans.

In both Canada and the U.S., consumer lending products are underwritten to prudent standards relative to credit scores, loan-to-value ratios and capacity assessment. Our lending practices consider the ability of our borrowers to repay and the underlying collateral value.

Further discussion of the Consumer Lending portfolio related to the Canadian housing market is provided in the Top and Emerging Risks That May Affect Future Results section on page 68.

Leveraged Finance

Leveraged finance loans are defined by BMO as loans and mezzanine financing provided to private equity-owned businesses for which our assessment indicates a higher level of credit risk. BMO has some exposure to leveraged finance loans, which represented 1.8% of total assets, with $15.1 billion outstanding as at October 31, 2019 (1.7% and $13.5 billion, respectively, in 2018). Of this amount, 27% of leveraged finance loans, with $4.1 billion outstanding as at October 31, 2019 (30% and $4.0 billion, respectively, in 2018), are well secured by high-quality assets. In addition, $207 million or 1.4% of all leveraged finance loans were classified as impaired as at October 31, 2019 ($129 million or 1.0% in 2018).

BMO-Sponsored Securitization Vehicles

BMO sponsors various vehicles that fund assets originated by either BMO (which are then securitized through a bank securitization vehicle) or its customers (which are then securitized through three Canadian customer securitization vehicles and one U.S. customer securitization vehicle). We earn fees for providing services related to these customer securitization vehicles, including liquidity, distribution and financial arrangement fees for supporting the ongoing operations of the vehicles. These fees totalled approximately $113 million in 2019 ($97 million in 2018).

Canadian Customer Securitization Vehicles

The customer securitization vehicles we sponsor in Canada provide our customers with access to financing either from BMO or in the asset-backed commercial paper (ABCP) markets. Customers sell their assets either directly into these vehicles, or indirectly by selling an interest in the securitized assets into these vehicles, which then issue ABCP to either investors or BMO in order to fund the purchases. In all cases, the sellers remain responsible for servicing the transferred assets and are first to absorb any losses realized on those assets. None of the sellers are affiliated with BMO.

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

Two of these customer securitization vehicles are market-funded, while the third is funded directly by BMO. BMO does not control these entities and therefore they are not consolidated. Further information on the consolidation of customer securitization vehicles is provided in Note 7 on page 160 of the consolidated financial statements. No losses were recorded on any of BMO's exposures to these vehicles in 2019 and 2018.

The market-funded vehicles had a total of $3.5 billion of ABCP outstanding as at October 31, 2019 ($4.1 billion in 2018). The ABCP issued by the market-funded vehicles is rated R-1(high) by DBRS and P1 by Moody's. BMO's purchases of ABCP, as distributing agent of ABCP issued by the market-funded vehicles, totalled $8 million as at October 31, 2019 ($12 million in 2018).

BMO provides committed liquidity support facilities for the market-funded vehicles totalling $5.5 billion as at October 31, 2019 ($5.6 billion in 2018). This amount comprised part of our commitments outlined in Note 24 on page 197 of the consolidated financial statements. All of these facilities remain undrawn. The assets of each of these market-funded vehicles consist primarily of exposure to diversified pools of Canadian automobile-related receivables and Canadian insured and conventional residential mortgages. These two asset classes represent 79% (82% in 2018) of the aggregate assets of these vehicles.

U.S. Customer Securitization Vehicle

We sponsor one customer securitization vehicle in the U.S. that we consolidate under IFRS. Further information on the consolidation of customer securitization vehicles is provided in Note 7 on page 160 of the consolidated financial statements. This market-funded customer securitization vehicle provides our customers, the sellers of the assets, with access to financing in the U.S. ABCP markets. The sellers remain responsible for servicing the assets involved in the related financing and are first to absorb any losses realized on those assets. None of the sellers are affiliated with BMO.

Our exposure to potential losses arises from our purchase of ABCP issued by the vehicle, any related derivative contracts we have entered into with the vehicle, and the liquidity support we provide to the vehicle. We use our credit adjudication process in deciding whether to enter into these arrangements, just as we do when extending credit in the form of a loan. No losses were recorded on any of BMO's exposures to the vehicle in 2019 and 2018.

The vehicle had US$2.6 billion of ABCP outstanding as at October 31, 2019 (US$2.9 billion in 2018). The ABCP issued by the vehicle is rated A1 by S&P and P1 by Moody's. In order to comply with U.S. risk retention rules that came into effect in 2017, BMO held US$145 million of the vehicle's ABCP as at October 31, 2019 (US$159 million in 2018).

BMO provides a committed liquidity support facility to the vehicle, with the undrawn amount totalling US$5.1 billion as at October 31, 2019 (US$5.4 billion in 2018). This amount comprised part of our commitments outlined in Note 24 on page 197 of the consolidated financial statements. The assets of this customer securitization vehicle consist primarily of exposure to diversified pools of U.S. automobile-related receivables and U.S. government-guaranteed Federal Family Education Loan Program loans. These two asset classes represent 74% (74% in 2018) of the aggregate assets of the vehicle.

Credit Instruments

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

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

The maximum amount payable by BMO in relation to these credit instruments was approximately $185 billion as at October 31, 2019 ($163 billion in 2018). However, this amount is not representative of our likely credit exposure or the liquidity requirements for these instruments, as it does not take into account customer behaviour, which suggests that only a portion of our customers would utilize the facilities related to these instruments, nor does it take into account any amounts that could be recovered under recourse and collateral provisions.

Further information on these instruments can be found in Note 24 on page 197 of the consolidated financial statements.

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

Structured Entities (SEs)

We carry out certain business activities through arrangements involving SEs, using them to secure customer transactions, obtain sources of liquidity by securitizing certain of our financial assets or pass our credit risk to securities holders of the vehicles. Note 6 on page 159 of the consolidated financial statements describes our loan securitization activities carried out through third-party programs. Under IFRS, we consolidate SEs if we control the entity.

Our interests in SEs are discussed in detail in the BMO-Sponsored Securitization Vehicles section above and in Note 7 on page 160 of the consolidated financial statements, which discusses our interests in both consolidated and unconsolidated SEs. We consolidate the bank's securitization vehicles, our U.S. customer securitization vehicle, and certain capital and funding vehicles. We do not consolidate our Canadian customer securitization vehicles, certain capital vehicles, various BMO managed funds and various other structured entities where we hold investments.

Guarantees

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

The maximum amount payable by BMO in relation to these guarantees was approximately $29 billion as at October 31, 2019 ($25 billion in 2018). However, this amount is not representative of our likely exposure, as it does not take into account customer behaviour, which suggests that only a portion of the guarantees would require us to make any payments, nor does it take into account any amounts that could be recovered under recourse and collateral provisions.

For a more detailed discussion of these arrangements, refer to Note 24 on page 197 of the consolidated financial statements.

Caution

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

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MANAGEMENT'S DISCUSSION AND ANALYSIS

Enterprise-Wide Risk Management

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

Enterprise-Wide Risk Management outlines our approach to managing the key financial risks and other related risks that we face, as discussed in the following sections:

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Text and tables presented in a blue-tinted font in the Enterprise-Wide Risk Management section of the MD&A form an integral part of the 2019 audited annual consolidated financial statements. They present required disclosures as set out by the International Accounting Standards Board in IFRS 7, *Financial Instruments – Disclosures*, which permits cross-referencing between the notes to the consolidated financial statements and the MD&A. Refer to Note 1 on page 142 and Note 5 on page 158 of the consolidated financial statements.

Risks That May Affect Future Results

Top and Emerging Risks That May Affect Future Results

BMO is exposed to a variety of evolving risks that have the potential to affect our business, the results of our operations and our financial condition. The integral tasks in our risk management process are to proactively identify, assess, monitor and manage a broad spectrum of top and emerging risks. Our top and emerging risk identification process involves several forums for discussion with the Board, senior management and business thought leaders, and combines both bottom-up and top-down approaches in considering risk. Our assessment of top and emerging risks informs the development of action plans and stress tests related to our exposure to certain events.

Particular attention has been given to the following:

General Economic Conditions

Our earnings are affected by the general economic conditions prevailing in Canada, the United States and other jurisdictions in which we conduct business. In the past year, growth in real gross domestic product in both Canada and the United States has slowed. In addition, parts of the yield curves in both countries were inverted at various times during the year and the U.S. Federal Reserve lowered the target range of the federal funds rate three times. These events, as well as rising global trade protectionism (described in Escalating Trade Disputes below), point to the risk that growth in the two countries will slow further in the coming year or that they may enter an economic recession.

Management continually reviews the economic environment in which the bank operates, looking for any indication of significant changes in key economic variables. In the event of a significant change in economic conditions, management assesses its portfolio and business strategies and develops contingency plans to address any adverse developments.

Cyber Security, Information Security and Privacy Risk

The pervasive use of the internet and the reliance on advanced digital technologies by the bank, by our suppliers and by our customers expose us to a heightened risk of service interruptions, digital fraud and breaches of privacy. The evolving cyber threat landscape and increasing sophistication of attackers using artificial intelligence have been significant concerns across all industries, including banking, making this a top risk for BMO. Information security is integral to BMO's business activities, brand and reputation. We face common banking information security risks, including the threat of hacking, loss or exposure of customer or employee information, identity theft and corporate espionage, as well as the possibility of denial of service resulting from efforts targeted at causing system failure and service disruption. We continue to evolve our capabilities and invest in our Financial Crimes Unit, which is the first of its kind among our Canadian peers, bringing together cyber defences, fraud and physical security functions, as well as subject matter experts across the lines of business and business functional groups. This will enhance our ability to prevent, detect and manage cyber security threats. In addition, we continue to benchmark and review best practices across the banking and cyber security industries, conduct external reviews of incidents related to cyber security, evaluate the effectiveness of our key controls and develop new controls, and invest in both technology and human resources. BMO performs assessments of our third-party service providers to monitor their alignment with standards, and we actively participate in thought leadership forums to learn about emerging threats. We also work with information security and industry groups to bolster our internal resources and technology capabilities in order to improve our ability to remain resilient in a rapidly evolving threat landscape.

Escalating Trade Disputes
Rising protectionism and anti-globalization sentiment in the United States and other countries may lead to slower global growth. In particular, a protracted and wide-ranging trade dispute between the United States and China could adversely affect business investment, and could be especially problematic for commodity-producing countries, such as Canada. Trade disputes also arose between Canada and China over the course of the year, with China banning the importation of Canadian canola and temporarily banning certain meat products. In addition, there remains some uncertainty with respect to ratification of the United States-Mexico-Canada Agreement (USMCA) in the U.S. Congress.

Although it is difficult to predict and mitigate the potential economic and financial consequences of trade-related events on the Canadian and U.S. economies, we actively monitor global and North American trends and continually assess our portfolio and business strategies in the context of these trends. We stress test our portfolios, business plans and capital adequacy against severely adverse scenarios arising from trade-related shocks, and we establish contingency plans and mitigation strategies to address and offset the consequences of possible adverse political and/or economic developments.

Our credit exposure by geographic region is set out in Tables 7, 8 and 11 to 13 on pages 122 and 124 to 127 and in Note 4 on page 151 of the consolidated financial statements.

Technology Disruption, Competition and Resiliency
The financial services industry continues to undergo rapid change, as technology enables new non-traditional entrants to compete in certain segments of banking, including retail payments, consumer and commercial lending, foreign exchange and investment advisory services. New entrants may leverage new technologies, advanced data and analytical tools, and in some cases, less stringent regulatory requirements and oversight, allowing them to provide services to their customers more quickly and at a lower cost. Failure to keep pace with these new technologies and the competition they enable could impact our revenues and earnings over time, if customers choose the services of these new market entrants. While we closely monitor technology disruptors and regulatory changes that may impact the competitive landscape, including potential new regulations related to open banking, we are also making further investments in technology and innovation in order to keep pace with evolving customer expectations. Given the extent to which our operations rely on technology and technology vendors, it is important to maintain a technology platform that provides a high level of operational reliability and resilience. We have processes and initiatives in place to ensure an appropriate level of resiliency in our technology platform, particularly with respect to critical systems.

Geopolitical Risk
Geopolitical risk remains elevated as a result of strained relations among many countries, including between the United States and China and Iran. Heightened geopolitical risk can give rise to shifts in global capital flows, which may lead to market disruptions and a decrease in investment, trade and global economic growth. Our core banking portfolio has limited direct exposure outside North America; however, our core customers and our international strategy depend on continued growth and trade. To mitigate our exposure to geopolitical risk, we maintain a diversified portfolio that we continually monitor and test, in addition to contingency plans that we may establish to address any possible adverse developments.

Low or Negative Interest Rates
In the second half of 2019, the U.S. Federal Reserve lowered its target range for the U.S. federal funds rate three times. In the event of a recession, the Bank of Canada and the U.S. Federal Reserve will likely continue to reduce rates and, depending on the depth and length of the recession, may consider using negative rates to stimulate their respective economies.

Low or negative interest rates could expose the bank to a number of financial, operational and technology risks. The most significant financial impact would result from compression of the bank's net interest margin and likely lower net interest income. In terms of operational and technology risks in a negative interest rate environment, the bank may need to adapt its operations to fully accommodate the assessment of negative rates on its loans and deposits.

In the event of low or negative interest rates, the bank would look to other sources of income in order to offset the likely decrease in net interest income.

Canadian Housing Market and Consumer Leverage
While recent data indicates that Canadian housing market activity has rebounded from its low in early 2019, in part due to the decrease in market interest rates over the past year, there are a range of factors that could potentially weigh on sales activity and home prices in the near future. These factors include historically elevated levels of household debt and an associated slower pace of mortgage credit growth, low housing affordability in the Greater Toronto Area (GTA) and Greater Vancouver Area (GVA), and the possibility of a broader economic downturn, although the latter is not expected in the near term. Although the Canadian household debt-to-disposable income ratio has been relatively stable over the past few years, it remains near record highs. If households were to place a greater emphasis on reducing debt, it could be expected to weigh broadly on consumer spending and housing market activity. Further reductions in home sales activity, particularly in the GTA and GVA, would impact mortgage origination volumes and, if property values were to decline, would reduce the value of collateral backing of our loans and could result in higher provisions for credit losses. It is not possible to accurately predict the full impact of recent economic and policy changes or any potential future changes, but robust economic conditions in these regions, including sustained economic growth, low unemployment and ongoing population growth, support our expectation of continued low delinquency rates for real estate loans. Our prudent lending practices, which include the application of additional underwriting scrutiny on higher-value and higher loan-to-value transactions and the setting and close monitoring of regional, property type and customer segment concentration limits, support the soundness of our Canadian real estate lending portfolio. Further, our stress test analysis suggests that even significant price declines and recessionary economic conditions would result in manageable losses, mainly due to insurance coverage and the significant level of equity built up in seasoned loans.

Oil and Gas Industry Outlook

Oil and gas prices decreased over the course of the year, reflecting increased supply and moderating economic conditions. Should these factors deteriorate further, leading to oil and gas prices moving to a new lower range, this will pose a challenge for exploration and production companies. In addition, exploration companies that are able to generate positive cash flows in this low-price environment may further reduce servicing costs and instead focus on strengthening their balance sheet and/or increasing returns to shareholders, which would impact the oil and gas services sector.

The bank remains focused on taking risks within its approved risk appetite, while seeking appropriate returns on those risks. In the exploration and production sector, we have maintained our focus on borrowers with high-quality assets and enhanced our analysis of the potential volatility of cash flows and market values. We also maintain an internal limit that caps our exposure to this sector. In the oil and gas services sector, we are focused on borrowers that are heavily weighted to providing maintenance and servicing to the largest producers.

Other Factors That May Affect Future Results

Fiscal and Monetary Policies and Other Economic Conditions in the Countries in which We Conduct Business

Our earnings are affected by the fiscal and monetary policies and other economic conditions prevailing in Canada, the United States and other jurisdictions in which we conduct business. These policies and conditions may have the effect of reducing competition, profitability and certainty in some specific businesses and markets, which may affect our customers and counterparties, potentially contributing to a greater risk of default. Changes in fiscal and monetary policies are difficult to anticipate. Fluctuations in interest rates can have an impact on our earnings, the value of our investments, the credit quality of lending to our customers and counterparty exposure, and the capital markets that we access.

Changes in the value of the Canadian dollar relative to the U.S. dollar have affected, and could in future affect, the results of our clients with significant foreign earnings or input costs in either Canadian dollars or U.S. dollars. BMO's investments in foreign operations are primarily denominated in U.S. dollars, and the foreign exchange impact of U.S.-dollar-denominated risk-weighted assets and capital deductions may result in variability in the bank's capital ratios. BMO may take steps to manage the impact of foreign exchange rate movements on its capital ratios, and did so during 2019. Refer to the Enterprise-Wide Capital Management section on page 59. The value of the Canadian dollar relative to the U.S. dollar will also affect the contribution of our U.S. operations to our Canadian-dollar profitability.

Hedging positions may be taken to manage interest rate exposures and partially offset the effects of Canadian dollar/U.S. dollar exchange rate fluctuations on our financial results. Refer to the Foreign Exchange section on page 23 and the Market Risk section on page 86 for a more complete discussion of our foreign exchange and interest rate risk exposures.

Environmental Risks

We face risks arising from environmental events, such as drought, floods, wildfires, earthquakes, and hurricanes and other storms. These events could potentially disrupt our operations, impact our customers and counterparties, and result in lower earnings and higher losses. Factors contributing to heightened environmental risks include the impacts of climate change and the continued intensification of development in areas of greater environmental sensitivity. Our business continuity management preparations provide us with the capability to restore, maintain and manage critical operations and processes in the event of a business disruption.

BMO also faces risks in relation to borrowers that experience losses or increases in their operating costs as a result of climate-related policies, such as carbon emissions pricing, or that experience lower revenue as new and emerging technologies displace or disrupt demand for certain commodities, products and services.

Legal, regulatory, business or reputation risks could arise from BMO's actual or perceived actions, or inaction, in relation to climate change and other environmental and social risk issues, or our disclosures on these matters. Legal, regulatory or reputation risks related to environmental matters could also impact our customers, suppliers or other stakeholders, giving rise to business or reputation risks for BMO. We monitor environmental, legal and regulatory developments on an ongoing basis as part of our overall assessment of operational, business and reputation risks.

We support the recommendations of the Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD), and we employ the TCFD framework to enhance our understanding of the evolving impact of risks associated with climate change, together with possible mitigation strategies. We are building an internal capacity at BMO to conduct climate change scenario analysis, in line with the TCFD recommendations, and we will apply these results across the enterprise. These efforts will help us to identify potential material financial risks, and will inform our business strategy in relation to climate change going forward.

Refer to the Environmental and Social Risk section on page 105 for further discussion of these risks.

Regulatory Requirements

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

Failure to comply with applicable legal and regulatory requirements could result in legal proceedings, financial losses, regulatory sanctions, enforcement actions, an inability to execute our business strategies, a decline in investor and customer confidence, and damage to our reputation. Refer to the Legal and Regulatory Risk and Enterprise-Wide Capital Management sections on pages 103 and 59, respectively, for a more complete discussion of our exposure to legal and regulatory risk.

Tax Legislation and Interpretations
Legislative changes and changes in tax policy, including their interpretation by tax authorities and the courts, may impact our earnings. Tax laws, as well as interpretations of tax laws and policy by tax authorities, may change as a result of efforts by the G20 and the Organisation for Economic Co-operation and Development to broaden the tax base globally and improve tax-related reporting. Refer to the Critical Accounting Estimates section on page 107 for further discussion of income taxes and deferred tax assets.

Acquisitions
We conduct thorough due diligence before completing business or portfolio acquisitions. However, it is possible that we could complete an acquisition that subsequently does not perform in line with our financial or strategic objectives or expectations. Our ability to successfully complete an acquisition may be subject to regulatory and shareholder approvals, and we may not be able to determine when, if or on what terms the necessary approvals will be granted. Changes in the competitive and economic environment, as well as other factors, may result in reductions in revenue, while higher than anticipated integration costs and failure to realize expected cost savings after an acquisition could also adversely affect our earnings. Integration costs may increase as a result of regulatory costs related to an acquisition, other unanticipated costs that were not identified in the due diligence process or demands on management time that are more significant than anticipated, as well as unexpected delays in implementing certain plans that in turn lead to delays in achieving full integration. Successful post-acquisition performance depends on retaining the clients and key employees of acquired companies and on integrating key systems and processes without disruption, and there can be no assurance that we will always succeed in doing so.

Brexit
Negotiations regarding the exit of the United Kingdom (U.K.) from the European Union (EU) (Brexit) are ongoing, with continued uncertainty about whether the U.K. will be able to negotiate a smooth transition out of the EU, or whether there will be a no-deal Brexit. A no-deal Brexit would impact the ability of U.K. financial institutions to provide services within the EU, as well as the ability of EU financial institutions to provide services within the U.K. BMO has operations and clients across the EU, including in the U.K. We are prepared to serve our clients, counterparties, employees and suppliers under any scenario, including a no-deal Brexit.

Benchmark Interest Rate Reform
Interbank offered rates (IBORs) have been the subject of numerous global regulatory proposals and reforms over the past few years. Most significantly, the U.K. Financial Conduct Authority has announced that it would no longer compel banks to submit to the London Interbank Offered Rate (LIBOR) after 2021. As a result, the industry must transition from LIBOR and other IBORs to alternative rates in multiple jurisdictions, a shift that will impact financial market participants globally, across many products and asset classes.

Transition efforts in connection with these reforms are complex, with significant risks and challenges. The transition from IBORs to alternative rates could result in increased volatility, pricing changes and/or illiquidity in markets for instruments that currently rely on IBORs. The transition could have adverse consequences for all market participants, including BMO as both holder and issuer of IBOR-based instruments, such as the potential for increased financial, operational, legal, reputational and/or compliance risks. We have established an enterprise-wide IBOR Transition Office to oversee our transition from IBORs to alternative rates. The Transition Office, which includes sponsorship and involvement from BMO's senior leadership, has a global mandate spanning all of BMO's lines of business, and oversees multiple different work streams, including all of our corporate function areas. We are evaluating potential changes to market infrastructures on our risk framework, models, systems and processes, as well as reviewing legal documents and establishing a risk framework, to ensure that BMO, as well as our clients, are prepared through education and outreach prior to the cessation of LIBOR and/or other IBORs.

Critical Accounting Estimates and Accounting Standards
We prepare our consolidated financial statements in accordance with IFRS. Changes that the International Accounting Standards Board makes from time to time to these standards can be difficult to anticipate and may materially affect how we record and report our financial results. Significant accounting policies and future changes in accounting policies are discussed on page 111, as well as in Note 1 on page 142 of the consolidated financial statements.

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

Our financial results could be affected for the period during which any such new information or change in circumstances becomes apparent, and the extent of the impact could be significant. More information is included in the Critical Accounting Estimates section on page 107.

Caution
The Risks That May Affect Future Results section and the remainder of this Enterprise-Wide Risk Management section contain forward-looking statements. Please refer to the Caution Regarding Forward-Looking Statements.

Other factors beyond our control that may affect our future results are noted in the Caution Regarding Forward-Looking Statements on page 14. We caution that the preceding discussion of risks that may affect future results is not exhaustive.

Material presented in a blue-tinted font above is an integral part of the 2019 audited annual consolidated financial statements (refer to page 68).

MANAGEMENT'S DISCUSSION AND ANALYSIS

Risk Management Overview

At BMO, we believe that risk management is every employee's responsibility. We are guided by five key principles on risk that drive our approach to managing risk across the enterprise and comprise our Enterprise Risk Appetite Statement.

Understand and Manage Risk

- We will only take those risks that are transparent and understood, and can be measured, monitored and managed, supported by effective information systems, processes, governance and controls
- We will embrace a culture of constructive challenge, personal accountability, and timely and transparent information-sharing at all levels of the enterprise, with rapid escalation of threats and concerns
- We will incorporate risk measures into our performance management system and compensation decisions will include performance assessment against risk appetite
- We will protect customer and enterprise assets, including data and systems, and manage any exposures by maintaining an effective system of limits and controls to manage all risks

Protect our Reputation

- Everything we do will be guided by principles of honesty, integrity and respect, and high ethical standards in alignment with our Code of Conduct
- We will protect the enterprise's reputation, and strive to adhere to all regulatory and legal obligations by maintaining effective policies, procedures, guidelines, compliance standards and controls, and by providing training and management oversight to guide the business practices and risk-taking activities of all employees
- We will establish frameworks to identify, assess and manage the potential loss or damage resulting from environmental and social issues, including climate change

Diversify. Limit Tail Risk

- We will target a business mix that limits earnings volatility to acceptable levels throughout the business cycle, and limits exposure to low-probability, high-impact events that could jeopardize the enterprise's debt rating, capital position or reputation
- We will use risk measurement and stress testing methodologies in the assessment of risk, risk-taking capacity and sustainable risk-adjusted returns to guide management action and to prepare for extreme events

Maintain Strong Capital and Liquidity

- We will maintain a strong capital position and a sound liquidity and funding position, which meet or exceed regulatory requirements and the expectations of the market (rating agencies, investors and depositors)
- We will maintain an investment grade debt rating at a level that allows competitive access to funding
- We will maintain a robust recovery and resolution framework that enables an effective and efficient response in an extreme crisis

Optimize Risk Return

- We will set capital limits and manage our exposures based on our risk appetite and strategy and require our businesses to optimize risk-adjusted returns
- We will target new products, initiatives and acquisition opportunities that provide a good strategic and cultural fit, and a high likelihood of creating value for our shareholders

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

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Framework and Risks

Enterprise-Wide Risk Management Framework

BMO's Risk Management Framework (RMF) guides our risk-taking activities in order to align them with our risk appetite, client needs, shareholder expectations and regulatory requirements. The RMF provides for not only the direct management of each individual risk type, but also the management of risks on an integrated basis, with three lines of defence in the management of risk.



Risk Appetite Framework

Our Risk Appetite Framework consists of our Risk Appetite Statement and key risk metrics, and is supported by corporate policies, standards and guidelines, including the related limits, concentration levels and controls defined therein. Our risk appetite defines the amount of risk that BMO is willing to assume given our guiding principles and capital capacity, thereby supporting sound business initiatives, appropriate returns and targeted growth. Our risk appetite is integrated into our strategic and capital planning processes and performance management system. On an annual basis, senior management recommends our Risk Appetite Statement and key risk metrics to the Risk Management Committee (RMC), the Risk Review Committee of the Board of Directors (RRC) and the Board of Directors for approval. Our Risk Appetite Statement is articulated and applied consistently across the enterprise, with key businesses and entities developing their own respective risk appetite statements within this framework.

Risk Governance

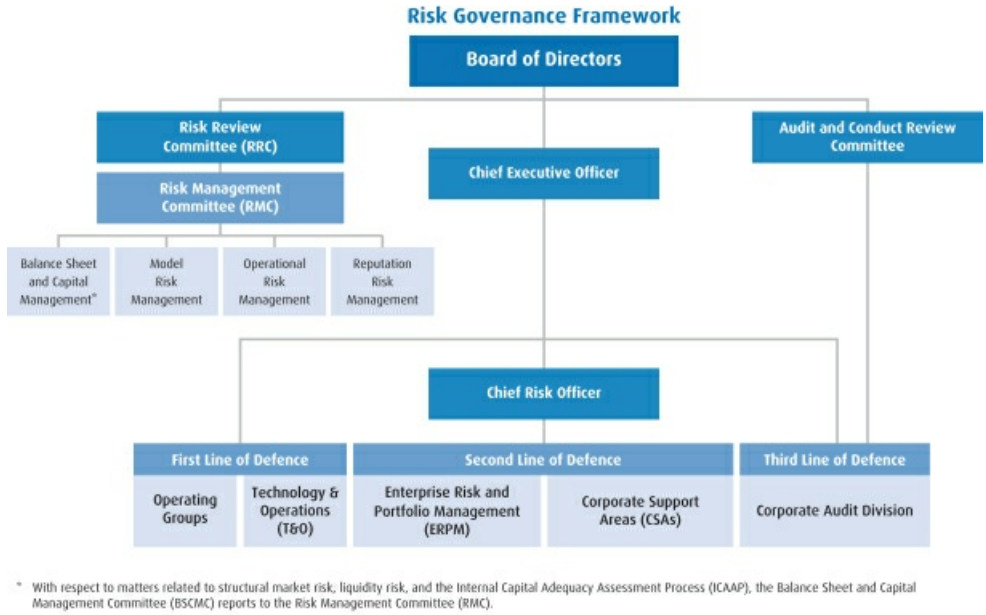
Our enterprise-wide RMF is founded on a governance approach that includes a robust committee structure and a comprehensive set of corporate policies and limits, each of which is approved by the Board of Directors or its committees, as well as specific corporate standards and operating procedures. Our corporate policies outline frameworks and objectives for each significant risk type, so that risks to which the enterprise is exposed are appropriately identified, measured, managed, monitored, mitigated and reported. A Risk Taxonomy is maintained to comprehensively identify and manage key risks. The Risk Taxonomy reflects the bank's Tier 1 risks, as set out in the diagram below.



Specific Board-approved policies govern our key risks, such as credit and counterparty, market, insurance, liquidity and funding, and operational risks. This enterprise-wide RMF is governed at all levels through a hierarchy of committees and individual responsibilities, as outlined in the following diagram. The Board oversees that the bank's corporate objectives are supported by a sound risk strategy and an effective risk management framework that is appropriate to the nature, scale, complexity and risk profile of the bank's activities. The Board also has overall responsibility for the bank's governance framework and corporate culture.

Our RMF is reviewed on a regular basis by the RRC, in order to provide oversight and guide our risk-taking activities. In each of our operating groups, management, as the first line of defence, is responsible for governance activities and controls, and the implementation and operation of risk management processes and procedures that provide effective risk management. ERPM, as the primary second line of defence, oversees the implementation and operation of our risk management processes and procedures, and aligns, monitors and tests risk outcomes against our risk appetite and management expectations, ensuring that risk outcomes are consistent with return expectations. Individual governance committees establish and monitor further risk limits, consistent with Board-approved limits.

The diagram below outlines our risk governance framework, including both the direct and administrative reporting lines.



* With respect to matters related to structural market risk, liquidity risk, and the Internal Capital Adequacy Assessment Process (ICAAP), the Balance Sheet and Capital Management Committee (BSCMC) reports to the Risk Management Committee (RMC).

In addition to the enterprise-level risk governance framework, appropriate risk governance frameworks, supported by our three lines of defence, are in place in all of our material businesses and entities.

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

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

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

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

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

Risk Management Committee (RMC) is BMO management's senior risk committee. RMC reviews and discusses significant risk issues and action plans that arise in executing the enterprise-wide strategy. RMC provides risk oversight and governance at the highest levels of management. This committee is chaired by the CRO and its members include the heads of our operating groups, the CEO and the Chief Financial Officer (CFO).

RMC Sub-Committees have oversight responsibility for the risk implications and balance sheet impacts of management strategies, governance practices, risk measurement, model risk management and contingency planning. RMC and its sub-committees provide oversight of the processes whereby the risks undertaken across the enterprise are identified, measured, managed, monitored, mitigated and reported in accordance with policy guidelines, and are held within limits and risk tolerances.

Enterprise Risk and Portfolio Management (ERPM), as the risk management second line of defence, provides comprehensive risk management oversight. It promotes consistency in risk management practices and standards across the enterprise. ERPM supports a disciplined approach to risk-taking in fulfilling its responsibilities for independent transactional approval and portfolio management, policy formulation, risk reporting, stress testing, modelling and risk education. This approach seeks to meet enterprise objectives and to verify that any accepted risks are consistent with BMO's risk appetite.

Operating Groups are responsible for effectively managing risk by identifying, measuring, managing, monitoring, mitigating and reporting risk within their respective lines of business. They exercise business judgment and seek to ensure that effective policies, processes and internal controls are in place and that significant risk issues are reviewed with ERPM. Individual governance committees and ERPM establish and monitor further risk limits that are consistent with and subordinate to the Board-approved limits.

Three-Lines-of-Defence Operating Model

Our risk management framework is anchored in the three-lines-of-defence approach to managing risk, which is fundamental to our operating model, as described below:

- Our operating groups are the bank's **first line of defence**. They are accountable for the risks arising from their businesses, activities and exposures. They are expected to pursue business opportunities within our established risk appetite and to identify, measure, manage, monitor, mitigate and report all risks in or arising from their businesses, activities and exposures. The first line discharges its responsibilities by using risk management and reporting methodologies and processes developed by the business and by the ERPM group and other Corporate Support Areas, and may call on corporate functions or other service providers to help discharge these responsibilities. Businesses are responsible for establishing appropriate internal controls in accordance with our risk management framework and for monitoring the effectiveness of such controls. These processes and controls help ensure businesses act within their delegated risk-taking authority and risk limits as set out in corporate policies and our Risk Appetite Framework.
- The **second line of defence** is comprised of the ERPM group and, in certain targeted areas, Corporate Support Areas. The second line provides independent oversight, effective challenge and independent assessment of risks and risk management practices, including transaction, product and portfolio risk management decisions, processes and controls in the first line of defence. The second line establishes enterprise-wide risk management policies, infrastructure, processes, methodologies and practices that the first and second lines use to identify, assess, manage and monitor risks across the enterprise.
- Corporate Audit Division is the **third line of defence**. It provides an independent assessment of the effectiveness of internal controls across the enterprise, including controls that support our risk management and governance processes.

Risk Culture

At BMO, we believe that risk management is the responsibility of every employee within the organization. This key tenet shapes and influences our corporate culture and is evident in the actions and behaviours of our employees and leaders as they identify, interpret and discuss risks, and make decisions that seek to balance risks and opportunities and optimize risk-adjusted returns. Each member of our senior management plays a critical role in fostering a strong risk culture among all employees, by effectively communicating this responsibility, by the example of their own actions, and by establishing and maintaining compensation plans and other incentives that are designed to encourage and reward appropriate behaviours. Our Compensation Oversight Committee reviews and assesses risk events, such as violations of BMO's Code of Conduct, inappropriate risk-taking and breaches of our risk appetite, and recommends changes in compensation, if necessary. Our risk culture is deeply embedded within our policies, business processes, risk management framework, risk appetite, limits and tolerances, capital management and compensation practices, and is evident in every aspect of the way we operate across the enterprise. We actively solicit feedback on the effectiveness of our risk culture, including through standardized and anonymous employee surveys.

Our risk culture is grounded in a "Being BMO" approach to risk management that encourages openness, constructive challenge and personal accountability. "Being BMO" values include integrity and a responsibility to make tomorrow better, and "Being BMO" behaviours include balancing risk and opportunity, taking ownership, following through on commitments, speaking up and being candid. Timely and transparent sharing of information is also integral in engaging stakeholders in key decisions and strategy discussions, thereby bringing added rigour and discipline to our decision-making. This not only leads to the timely identification, escalation and resolution of issues, but also encourages open communication, independent challenge and an understanding of the key risks faced by our organization, so that our employees are equipped and empowered to make decisions and take action in a coordinated and consistent manner, supported by a strong monitoring and control framework. Our governance and leadership forums, committee structures, learning curriculums and proactive communication also reinforce and support our risk culture.

Certain elements of our risk culture are embedded across the enterprise, and these include:

- **Risk appetite** – promotes a clear understanding of the most prevalent risks that our businesses face, shapes and informs business strategies to align them with our risk appetite, and provides a control and early warning framework through our key risk metrics, thereby enabling sound business decision-making and execution, supported by a strong monitoring framework.
- **Communication and escalation channels** – encourage engagement and sharing of information between ERPM and the operating groups, leading to greater transparency and open and effective communication. Our risk culture also encourages the escalation of concerns associated with potential or emerging risks to senior management, so that they can be evaluated and appropriately addressed.
- **Compensation philosophy** – pay is aligned with prudent risk-taking, so that compensation and other incentives reward the appropriate use of capital and respect for the rules and principles of our enterprise-wide risk management framework and do not encourage excessive risk-taking. Our risk managers have input into the design of incentive programs that may have an effect on risk-taking, and provide input into the performance assessment of employees who take material risks or who are responsible for losses or events that give rise to an unexpected risk of loss.
- **Training and education** – our programs are designed to foster a deep understanding of BMO's capital and risk management frameworks across the enterprise, providing employees and management with the tools and awareness they need to fulfill their responsibilities for independent oversight, regardless of their role in the organization. Our education strategy has been developed in partnership with BMO's Institute for Learning, our risk management professionals, external risk experts and teaching professionals.
- **Rotation programs** – two-way rotation allows employees to transfer between ERPM and the operating groups, effectively embedding our strong risk culture across the enterprise and ensuring that many of our risk management professionals have a practical grounding in our business activities.

Enterprise Culture and Conduct Framework

Our strong culture supports us as we deliver positive outcomes for our customers and contribute to the orderly operation of financial markets. Our Enterprise Culture and Conduct Framework sets out our approach to managing and mitigating potential misconduct. Misconduct is behaviour that falls short of legal, professional, internal conduct and ethical standards. Similar to our approach to other non-financial risks, this framework is supported by our enterprise Risk Management Framework and our focus on maintaining a strong risk culture. We report on various metrics related to culture and conduct and we engage with other control frameworks across the enterprise and in all of the jurisdictions in which we operate.

Risk Limits

We set our risk limits so that our risk-taking activities remain within our risk appetite, and these limits inform our business strategies and decisions. In particular, we consider risk diversification, exposure to loss and risk-adjusted returns when setting limits. These limits are reviewed and approved by the Board of Directors and/or management committees, as appropriate, based on the level and granularity of the limits, and include:

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

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

Risk Identification, Review and Approval

Risk identification is an integral step in recognizing the key inherent risks that we face, understanding the potential for loss and then acting to mitigate this potential. As noted above, a Risk Taxonomy is maintained to comprehensively identify and manage key risks, supporting the implementation of the bank's Risk Appetite Framework and assisting in identifying the primary risk categories for which stress capital consumption is estimated. Our enterprise-wide and targeted (industry/portfolio-specific or ad hoc) stress testing processes have been developed to assist in identifying and evaluating these risks. Risk review and approval processes are established based on the nature, size and complexity of the risks involved. Generally, this involves a formal review and approval by either an individual or a committee that is independent of the originator. Delegated authorities and approvals by category are outlined below.

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

Risk Monitoring

Enterprise-level risk transparency and monitoring and associated reporting are critical components of our risk management framework and corporate culture that allow senior management, committees and the Board of Directors to exercise their business management, risk management and oversight responsibilities at the enterprise, operating group and key legal entity levels. Internal reporting includes a synthesis of the key risks that the enterprise currently faces, along with associated metrics. Our reporting highlights our most significant risks, including assessments of our top and emerging risks, to provide the Board of Directors, its committees and any other appropriate executive and senior management committees with timely, actionable and forward-looking risk reporting. This reporting includes supporting metrics and materials to facilitate assessment of these risks relative to our risk appetite and the relevant limits established within our Risk Appetite Framework.

Risk-Based Capital Assessment

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

Stress Testing

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

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

Enterprise Stress Testing

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

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

Targeted Portfolio and Ad Hoc Stress Testing

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

MANAGEMENT'S DISCUSSION AND ANALYSIS

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

Credit and Counterparty Risk Governance

The objective of our credit risk management framework is to ensure that all material credit risks to which the enterprise is exposed are identified, measured, managed, monitored and reported. The RRC has oversight of the management of all material risks that we face, including the credit risk management framework. BMO's credit risk management framework incorporates governing principles that are defined in a series of corporate policies and standards and are applied to specific operating procedures. These policies and standards are reviewed on a regular basis and modified when necessary to keep them current and consistent with BMO's risk appetite. The structure, limits (both notional and capital-based), collateral requirements, monitoring, reporting and ongoing management of our credit exposures are all governed by these credit risk management principles.

Lending officers in the operating groups are responsible for recommending credit decisions based on the completion of appropriate due diligence, and they assume accountability for the related risks. With limited exceptions, credit officers in ERPM approve all credit transactions and are accountable for providing an objective independent assessment of the lending recommendations and risks assumed by the lending officers. All of these skilled and experienced individuals in the first and second lines of defence are subject to a rigorous lending qualification process and operate in a disciplined environment with clear delegation of decision-making authority, including individually delegated lending limits, which are reviewed annually. The Board annually reviews our Credit Risk Management Policy and delegates to the CEO discretionary lending limits for further specific delegation to senior officers. Credit decision-making is conducted at the management level appropriate to the size and risk of each transaction, in accordance with comprehensive corporate policies, standards and procedures governing the conduct of activities in which credit risk arises. Corporate Audit Division reviews and tests management processes and controls and samples credit transactions in order to assess adherence to acceptable lending standards as set out in the enterprise risk appetite, as well as compliance with all applicable governing policies, standards and procedures.

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

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

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

Credit and Counterparty Risk Management

Collateral Management

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

Collateral for our derivatives trading counterparty exposures is primarily comprised of cash and eligible liquid securities that are monitored and revalued on a daily basis. Collateral is obtained under the contractual terms of standardized industry documentation. With limited exceptions, we utilize the International Swaps and Derivatives Association Inc. Master Agreement, frequently with a Credit Support Annex, to document our collateralized trading relationships with our counterparties for over-the-counter (OTC) derivatives that are not centrally cleared. Credit Support Annexes entitle a party to demand a transfer of collateral (or other credit support) when its OTC derivatives exposure to the other party exceeds an agreed threshold. Collateral transferred can include an independent initial margin and/or variation margin. Credit Support Annexes contain, among

other measures, provisions setting out acceptable types of collateral and a method for their valuation (discounts are often applied to the market values), as well as thresholds, whether or not the collateral can be re-pledged by the recipient and how interest is to be calculated.

Many G20 jurisdictions have new regulations in place that require certain counterparties with significant OTC derivatives exposures to post or collect prescribed types and amounts of collateral for uncleared OTC derivatives transactions. For additional discussion, refer to Legal and Regulatory Risk – Derivatives Reform on page 104.

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

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

In the event a loan is classified as impaired, and depending on its size, a current external appraisal, evaluation or restricted use appraisal is obtained and updated every twelve months while the loan is classified as impaired. In Canada, for residential real estate that has a loan-to-value (LTV) ratio of less than 80%, an external property appraisal is routinely obtained at the time of loan origination. We may use an external service provided by Canada Mortgage and Housing Corporation or an automated valuation model provided by a third-party appraisal management company to assist with determining either the current value of a property or the need for a full property appraisal.

For insured mortgages in Canada with a high LTV ratio (greater than 80%), the default insurer is responsible for confirming the lending value.

Portfolio Management and Concentrations of Credit and Counterparty Risk

BMO's credit risk governance policies require an acceptable level of diversification to help ensure we avoid undue concentrations of credit risk. Concentrations of credit risk may exist if a number of clients are engaged in similar activities, are located in the same geographic region or have similar economic characteristics such that their ability to meet contractual obligations could be similarly affected by changes in economic, political or other conditions. Limits may be specified for several portfolio dimensions, including industry, specialty segment (e.g., hedge funds and leveraged lending), country, product and single-name concentrations. The diversification of our credit exposure may be supplemented by the purchase or sale of credit protection through guarantees, insurance or credit default swaps.

Our credit assets consist of a well-diversified portfolio representing millions of clients, the majority of them individual consumers and small to medium-sized businesses. From an industry viewpoint, on a drawn loans and commitments basis, our most significant exposure as at October 31, 2019 was to individual consumers, comprising $249,762 million ($238,400 million in 2018).

Wrong-Way Risk

Wrong-way risk occurs when our exposure to a counterparty or the magnitude of our potential loss is highly correlated with the counterparty's probability of default. Specific wrong-way risk arises when the credit quality of the counterparty and the market risk factors affecting collateral or other risk mitigants display a high correlation, and general wrong-way risk arises when the credit quality of the counterparty, for non-specific reasons, is highly correlated with macroeconomic or other factors that affect the value of the risk mitigant. Our procedures require that specific wrong-way risk be identified in transactions and accounted for in the assessment of risk, including any elevated measure of exposure. Stress testing of replacement risk is conducted monthly and can be used to identify existing or emerging concentrations of general wrong-way risk in our portfolios.

Credit and Counterparty Risk Measurement

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

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

For inclusion in regulatory capital calculations, OSFI permits three approaches for the measurement of credit risk: Standardized, Foundation Internal Ratings Based and Advanced Internal Ratings Based (AIRB). We primarily use the AIRB Approach to determine credit RWA in our portfolios, including portfolios of our subsidiary BMO Financial Corp. Exposures under AIRB capital treatment account for 93% of total EAD of our Wholesale and Retail portfolios, and the remaining exposures are considered under the Standardized Approach. Waivers and exemptions to existing AIRB models are subject to OSFI's approval. The Basel III Standardized Approach is currently being used for regulatory capital calculations related to the acquired Marshall & Isley Corporation and BMO Transportation Finance portfolios, and for certain other exposures that are considered to be immaterial. We continue to transition all material exposures in these portfolios to the AIRB Approach. For securitization exposures, we apply the Basel hierarchy of approaches, including the Securitization Internal Ratings-based Approach and the External Ratings-based Approach, as well as the Standardized Approach.

Our regulatory capital and economic capital frameworks both use EAD to assess credit and counterparty risk. Exposures are classified as follows:

- Drawn loans include loans, acceptances, deposits with regulated financial institutions, and certain securities. For off-balance sheet amounts and undrawn amounts, EAD includes an estimate of any further amounts that may be drawn at the time of default.
- Undrawn commitments cover all unutilized authorizations associated with the drawn loans noted above, including those which are unconditionally cancellable. EAD for undrawn commitments is model-generated, based on internal empirical data.
- OTC derivatives are those in our proprietary accounts that attract credit risk in addition to market risk. EAD for OTC derivatives is equal to the positive replacement cost, after considering netting, plus any potential credit exposure amount.
- Other off-balance sheet exposures include items such as guarantees, standby letters of credit and documentary credits. EAD for other off-balance sheet items is based on management's best estimate.
- Repo-style transactions include repos, reverse repos and securities lending transactions, which represent both asset and liability exposures. EAD for repo-style transactions is the calculated exposure, net of collateral.
- Capital is calculated based on exposures that, where applicable, have been redistributed to a more favourable PD band, LGD measure or a different Basel asset class as a result of the application of credit risk mitigation and a consideration of credit risk mitigants, including collateral and netting.

Total non-trading exposures at default by industry sector, excluding the impact of collateral, as at October 31, 2019 and 2018, based on the Basel III classifications, are as follows:

(Canadian $ in millions)	Drawn		Commitments (undrawn)		OTC derivatives		Other off-balance sheet items		Repo-style transactions		Total (1)	
	2019	2018	**2019**	2018	**2019**	2018	**2019**	2018	**2019**	2018	**2019**	2018
Financial institutions	**117,959**	102,552	**24,010**	21,741	**974**	1,649	**6,402**	5,016	**203,084**	177,094	**352,429**	308,052
Governments	**58,051**	44,552	**1,665**	2,118	**9**	1	**894**	667	**8,452**	8,401	**69,071**	55,739
Manufacturing	**26,266**	22,580	**16,581**	13,490	**12**	10	**1,494**	1,396	**–**	–	**44,353**	37,476
Real estate	**37,146**	31,534	**8,948**	8,170	**1**	1	**861**	820	**–**	–	**46,956**	40,525
Retail trade	**22,529**	19,961	**3,974**	3,617	**–**	–	**601**	559	**–**	–	**27,104**	24,137
Service industries	**46,612**	39,067	**13,304**	12,666	**12**	1	**2,996**	2,389	**–**	–	**62,924**	54,123
Wholesale trade	**16,843**	14,659	**5,273**	4,531	**1**	2	**564**	436	**–**	–	**22,681**	19,628
Oil and gas	**13,406**	9,131	**11,302**	10,410	**–**	–	**1,802**	1,804	**–**	–	**26,510**	21,345
Individual	**198,214**	190,688	**51,433**	47,586	**–**	–	**115**	126	**–**	–	**249,762**	238,400
Others (2)	**40,573**	35,617	**19,814**	18,197	**68**	88	**6,866**	6,474	**–**	–	**67,321**	60,376
Total exposure at default	**577,599**	510,341	**156,304**	142,526	**1,077**	1,752	**22,595**	19,687	**211,536**	185,495	**969,111**	859,801

(1) Credit exposure excluding equity, securitization, trading book and other assets such as non-significant investments, goodwill, deferred tax asset and intangibles.
(2) Includes industries having a total exposure of less than 2%.

Risk Rating Systems

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

Credit risk-based parameters are reviewed, validated and monitored regularly. The monitoring is on a quarterly basis for both the wholesale and retail models. Refer to page 102 for a discussion of our model risk mitigation processes.

Retail (Consumer and Small Business)

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

The retail risk rating system assesses risk based on individual loan characteristics. BMO has a range of internally developed PD, LGD and EAD models for each of the major retail portfolios. The major product lines within each of the retail risk areas are modelled separately, so that the risk-based parameters capture the distinct nature of each product. The models, in general, are designed based on internal data recorded over a period of more than seven years, and adjustments are made at the parameter level to account for any uncertainty. The retail parameters are tested and calibrated on an annual basis, if required, to incorporate additional data points in the parameter estimation process, ensuring that the most recent experience is incorporated. Our largest retail portfolios are the Canadian mortgage, Canadian home equity line of credit and Canadian retail credit card portfolios.

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

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

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

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

Retail Credit Probability of Default Bands by Risk Rating

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

Wholesale (Corporate, Commercial, Bank and Sovereign)

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

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

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

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

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

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

LGD and EAD models have been developed for each asset class using internal data recorded over a period of more than seven years, which includes at least one full economic cycle, and results are benchmarked using external data, when necessary. For capital purposes, the parameters are calibrated to reflect a downturn scenario. The PD, LGD and EAD estimates are updated annually and recalibrated as required, by comparing the estimates to observed historical experience.

As demonstrated in the table below, our internal risk rating system corresponds in a logical manner to those of external rating agencies.

Wholesale Borrower Risk Rating Scale

BMO rating	Moody's Investors Service implied equivalent	Standard & Poor's implied equivalent
Acceptable		
I-1 to I-7	Aaa to Baa3	AAA to BBB-
S-1 to S-4	Ba1 to B1	BB+ to B+
Watchlist		
P-1 to P-3	B2 to Ca	B to CC
Default / Impaired		
T1, D-1 to D-4	C	C to D

Credit Quality Information

Portfolio Review

Total enterprise-wide outstanding credit risk exposures were $969.1 billion as at October 31, 2019, comprised of $467.9 billion in Canada, $415.8 billion in the United States and $85.4 billion in other jurisdictions. This represents an increase of $109.3 billion or 13% from the prior year.

BMO's loan book continues to be well diversified by industry and geographic region. Gross loans and acceptances increased $47.3 billion or 12% from the prior year to $451.5 billion as at October 31, 2019. The geographic mix of our Canadian and U.S. portfolios represented 62.4% and 35.2% of total loans, respectively, compared with 64.7% and 32.9% in 2018. Our loan portfolio is well-diversified, with the consumer loan portfolio representing 44.4% of the total portfolio, a decrease from 47.3% in 2018, and business and government loans representing 55.6% of the total portfolio, up from 52.7% in 2018.



Material presented in a blue-tinted font above is an integral part of the 2019 audited annual consolidated financial statements (refer to page 68).

MANAGEMENT'S DISCUSSION AND ANALYSIS

Loan Maturities and Interest Rate Sensitivity

The following table presents gross loans and acceptances by contractual maturity and by country of ultimate risk:

(Canadian $ in millions)	1 year or less		Over 1 year to 5 years		Over 5 years		Total	
	2019	2018	**2019**	2018	**2019**	2018	**2019**	2018
Canada								
Consumer	**58,580**	54,375	**113,162**	109,991	**4,432**	4,199	**176,174**	168,565
Commercial and corporate (excluding real estate)	**65,534**	57,530	**16,591**	14,862	**1,973**	1,750	**84,098**	74,142
Commercial real estate	**7,928**	7,397	**11,647**	10,143	**2,298**	1,275	**21,873**	18,815
United States	**37,867**	33,688	**87,443**	73,470	**33,423**	25,955	**158,733**	133,113
Other countries	**9,214**	8,628	**996**	658	**449**	294	**10,659**	9,580
Total	**179,123**	161,618	**229,839**	209,124	**42,575**	33,473	**451,537**	404,215

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

(Canadian $ in millions)	**2019**	2018
Fixed rate	**217,002**	193,661
Floating rate	**209,092**	190,330
Non-interest sensitive (1)	**23,593**	18,585
Total	**449,687**	402,576

(1) Non-interest sensitive is comprised of customers' liability under acceptances.

Further details of our loan book, including detailed breakdowns by industry and geographic region, can be found in Tables 7 to 15 on pages 122 to 128. Details of our credit exposures are presented in Note 4 on page 151 of the consolidated financial statements.

Real Estate Secured Lending

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

Provision for Credit Losses (PCL)

Total PCL was $872 million in 2019, compared with $662 million in 2018. Detailed discussions of our PCL, including historical PCL trends, are provided on page 29, in Table 15 on page 128 and in Note 4 on page 151 of the consolidated financial statements.

Gross Impaired Loans (GIL)

Total GIL was $2,629 million in 2019, an increase of 36% from $1,936 million in 2018. The largest increase in impaired loans was recorded in the oil and gas sector. GIL as a percentage of gross loans and acceptances was 0.58% in 2019, compared with 0.48% in the prior year.

Factors contributing to the change in GIL are outlined in the table below. Loans classified as impaired during the year increased to $2,686 million from $2,078 million in 2018, reflecting higher impaired loan formations in the oil and gas and manufacturing industries. On a geographic basis, Canada accounted for less than half of impaired loan formations, comprising 45.3% of total formations in 2019, compared with 55.7% in 2018. Detailed breakdowns of impaired loans by geographic region and industry can be found in Table 11 on page 124 and in Note 4 on page 151 of the consolidated financial statements.

Changes in Gross Impaired Loans (1) and Acceptances

(Canadian $ in millions, except as noted) For the year ended October 31	**2019**	2018	2017
GIL, beginning of year	**1,936**	2,220	2,383
Classified as impaired during the year	**2,686**	2,078	2,193
Transferred to not impaired during the year	**(604)**	(708)	(607)
Net repayments	**(800)**	(1,051)	(1,017)
Amounts written off	**(528)**	(618)	(618)
Recoveries of loans and advances previously written off	**–**	–	–
Disposals of loans	**(57)**	(11)	(46)
Foreign exchange and other movements	**(4)**	26	(68)
GIL, end of year	**2,629**	1,936	2,220
GIL as a % of gross loans and acceptances	**0.58**	0.48	0.59

(1) GIL excludes purchased credit impaired loans.

Allowance for Credit Losses

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

(Stage 2). ECL is calculated on a probability-weighted basis, based on three different economic scenarios, and is a function of PD, EAD and LGD. The timing of the loss is also considered, and ECL is estimated by incorporating forward-looking economic information, and by using experienced credit judgment to reflect factors not captured in ECL models. An allowance on impaired loans is maintained to reduce the carrying value of individually identified impaired loans (Stage 3) to the expected recoverable amount.

BMO maintains an allowance for credit losses (ACL) at a level that we consider appropriate to absorb credit-related losses. As at October 31, 2019, our ACL was $2,094 million, an increase of $224 million from the prior year, reflecting higher allowances on both performing loans and impaired loans. The allowance on impaired loans was $485 million as at October 31, 2019, and the allowance on performing loans was $1,609 million. These amounts include an allowance on impaired loans of $22 million and an allowance on performing loans of $222 million related to undrawn commitments and letters of credit that are considered other credit instruments and recorded in other liabilities. The allowance on impaired loans increased $88 million from $397 million in the prior year. Our coverage ratio remains adequate, with ACL on impaired loans as a percentage of GIL of 17.6%, compared with 19.1% in 2018. This ratio can change quarter-over-quarter, due to variability in the write-down of loans and the related allowance. The allowance on performing loans increased $136 million from $1,473 million in the prior year, primarily driven by portfolio growth, a moderating economic outlook and changes in scenario weighting.

Further details on the continuity in ACL by each product type can be found in Tables 12 and 13 on pages 126 and 127, and in Note 4 on page 151 of the consolidated financial statements.

European Exposures

BMO's geographic exposures are subject to a country risk management framework that incorporates economic and political assessments and management of exposures within limits based on product, entity and country of ultimate risk. Our exposure to European countries, as at October 31, 2019, including Greece, Ireland, Italy, Portugal and Spain (GIIPS), is set out in the tables that follow.

The table below outlines total net portfolio exposures for funded lending, securities (including credit default swap (CDS) activity), repo-style transactions and derivatives. Funded lending is detailed by counterparty type, as well as by total commitments compared with the funded amount, in the table on page 84.

European Exposure by Country and Counterparty (1)

(Canadian $ in millions)

As at October 31, 2019	Funded lending (2)			Securities (3)(4)		Repo-style transactions and derivatives (5)(6)				Total net
Country	Total	Bank	Corporate	Sovereign	Total	Bank	Corporate	Sovereign	Total	exposure
GIIPS										
Greece	–	–	–	–	–	–	–	–	–	–
Ireland (7)	323	–	–	–	–	3	240	–	243	566
Italy	14	–	–	–	–	4	–	–	4	18
Portugal	–	–	–	–	–	–	–	–	–	–
Spain	162	–	–	–	–	–	–	–	–	162
Total – GIIPS	**499**	**–**	**–**	**–**	**–**	**7**	**240**	**–**	**247**	**746**
Eurozone (excluding GIIPS)										
France	244	–	–	63	63	20	2	–	22	329
Germany	515	785	48	758	1,591	18	5	2	25	2,131
Netherlands	354	743	3	–	746	4	153	–	157	1,257
Other (8)	233	–	1	211	212	3	15	2	20	465
Total – Eurozone (excluding GIIPS)	**1,346**	**1,528**	**52**	**1,032**	**2,612**	**45**	**175**	**4**	**224**	**4,182**
Rest of Europe										
Norway	581	255	1	–	256	1	6	–	7	844
Sweden	–	261	–	327	588	2	–	–	2	590
United Kingdom	1,677	8	400	7,550	7,958	122	219	34	375	10,010
Other (8)	255	147	–	–	147	22	35	1	58	460
Total – Rest of Europe	**2,513**	**671**	**401**	**7,877**	**8,949**	**147**	**260**	**35**	**442**	**11,904**
Total – All of Europe (9)	**4,358**	**2,199**	**453**	**8,909**	**11,561**	**199**	**675**	**39**	**913**	**16,832**

As at October 31, 2018	Funded lending (2)			Securities (3)		Repo-style transactions and derivatives (5)(6)				Total net
Country	Total	Bank	Corporate	Sovereign	Total	Bank	Corporate	Sovereign	Total	exposure
Total – GIIPS	321	–	44	–	44	27	138	–	165	530
Total – Eurozone (excluding GIIPS)	1,081	738	47	5,095	5,880	61	153	30	244	7,205
Total – Rest of Europe	1,566	673	646	4,232	5,551	112	161	76	349	7,466
Total – All of Europe (9)	2,968	1,411	737	9,327	11,475	200	452	106	758	15,201

(1) BMO has the following indirect exposures to Europe as at October 31, 2019:
– Collateral of €770 million to support trading activity in securities (€168 million from GIIPS) and €42 million of cash collateral held.
– Guarantees of $10.5 billion ($307 million to GIIPS).
(2) Funded lending includes loans.
(3) Securities include cash products, insurance investments and traded credit.
(4) BMO's total net notional CDS exposure (embedded as part of the securities exposure in this table) to Europe was $166 million, with no net single-name* CDS exposure to GIIPS countries as at October 31, 2019 (*includes a net position of $100 million (bought protection) on a CDS Index, of which 8% is comprised of GIIPS domiciled entities).
(5) Repo-style transactions are primarily with bank counterparties for which BMO holds collateral ($32.0 billion for Europe as at October 31, 2019).
(6) Derivatives amounts are marked-to-market, incorporating transaction netting where master netting agreements with counterparties have been entered into, and collateral offsets for counterparties where a Credit Support Annex is in effect.
(7) Does not include Irish subsidiary reserves we are required to maintain with the Irish Central Bank of $213 million as at October 31, 2019.
(8) Other Eurozone exposure includes five countries with less than $300 million net exposure. Other European exposure is distributed across six countries as at October 31, 2019.
(9) Of our total net direct exposure to Europe, approximately 95% was to counterparties in countries with a rating of Aa2/AAA from at least one of Moody's or S&P.

MANAGEMENT'S DISCUSSION AND ANALYSIS

European Lending Exposure by Country and Counterparty (9)

(Canadian $ in millions)	Funded lending as at October 31, 2019			Lending (2) As at October 31, 2019		As at October 31, 2018	
Country	Bank	Corporate	Sovereign	Commitments	Funded	Commitments	Funded
GIIPS							
Greece	–	–	–	–	–	–	–
Ireland (7)	2	321	–	343	323	5	5
Italy	14	–	–	14	14	15	15
Portugal	–	–	–	–	–	–	–
Spain	138	24	–	237	162	318	301
Total – GIIPS	**154**	**345**	**–**	**594**	**499**	338	321
Eurozone (excluding GIIPS)							
France	172	72	–	376	244	186	136
Germany	283	232	–	707	515	522	461
Netherlands	123	231	–	377	354	443	298
Other (8)	80	153	–	396	233	313	186
Total – Eurozone (excluding GIIPS)	**658**	**688**	**–**	**1,856**	**1,346**	1,464	1,081
Rest of Europe							
Norway	36	545	–	1,100	581	687	323
Sweden	–	–	–	69	–	87	28
Switzerland	–	–	–	–	–	303	244
United Kingdom	23	1,654	–	2,671	1,677	1,638	942
Other (8)	12	243	–	475	255	548	29
Total – Rest of Europe	**71**	**2,442**	**–**	**4,315**	**2,513**	3,263	1,566
Total – All of Europe (9)	**883**	**3,475**	**–**	**6,765**	**4,358**	5,065	2,968

Refer to footnotes in the table on page 83.

Derivative Transactions

The following table presents the notional amounts of our over-the-counter (OTC) derivative contracts, comprised of those which are centrally cleared and settled through a designated clearing house or central counterparty (CCP) and those which are non-centrally cleared.

CCPs are established under the supervision of central banks or other similar regulatory authorities and, as financial market infrastructure, must satisfy certain financial resilience requirements. Generally speaking, to centrally clear, BMO acquires a membership in the CCP and, in addition to providing collateral to protect the CCP against risk related to BMO, we are exposed to risk as a member for our contribution to a default fund, and we may be called on to make additional contributions, or to provide other support in the event another member defaults. As part of BMO's Brexit preparations, we are closely monitoring the implications of the United Kingdom's exit from the European Union and the potential impact on CCPs in both jurisdictions.

Margin requirements for non-centrally cleared derivatives, specifically the requirement for the exchange of regulatory initial margin, became effective for BMO and BMO Europe plc on September 1, 2019. This global regulatory change applies to certain OTC derivative contracts that BMO has entered into with other in-scope counterparties. The exchange of margin reduces counterparty credit risk and has the potential to mitigate systemic risk, although there may be additional funding costs related to the sourcing of eligible collateral.

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

Over-the-Counter Derivative Contracts (Notional amounts)

(Canadian $ in millions)	Non-centrally cleared		Centrally cleared		Total	
As at October 31	**2019**	2018	**2019**	2018	**2019**	2018
Interest Rate Contracts						
Swaps	**467,428**	453,976	**3,928,844**	3,378,021	**4,396,272**	3,831,997
Forward rate agreements	**7,106**	10,031	**484,331**	401,542	**491,437**	411,573
Purchased options	**42,084**	35,023	**–**	–	**42,084**	35,023
Written options	**49,487**	48,721	**–**	–	**49,487**	48,721
Total interest rate contracts	**566,105**	547,751	**4,413,175**	3,779,563	**4,979,280**	4,327,314
Foreign Exchange Contracts						
Cross-currency swaps	**97,507**	92,916	**–**	–	**97,507**	92,916
Cross-currency interest rate swaps	**507,221**	455,232	**–**	–	**507,221**	455,232
Forward foreign exchange contracts	**415,367**	438,754	**38,344**	33,569	**453,711**	472,323
Purchased options	**37,306**	21,093	**92**	375	**37,398**	21,468
Written options	**42,035**	23,622	**39**	396	**42,074**	24,018
Total foreign exchange contracts	**1,099,436**	1,031,617	**38,475**	34,340	**1,137,911**	1,065,957
Commodity Contracts						
Swaps	**24,722**	24,366	**–**	–	**24,722**	24,366
Purchased options	**6,608**	6,182	**–**	–	**6,608**	6,182
Written options	**4,371**	4,233	**–**	–	**4,371**	4,233
Total commodity contracts	**35,701**	34,781	**–**	–	**35,701**	34,781
Equity Contracts	**51,226**	53,107	**–**	–	**51,226**	53,107
Credit Default Swaps						
Purchased	**973**	1,448	**4,388**	1,599	**5,361**	3,047
Written	**129**	23	**1,939**	420	**2,068**	443
Total credit default swaps	**1,102**	1,471	**6,327**	2,019	**7,429**	3,490
Total	**1,753,570**	1,668,727	**4,457,977**	3,815,922	**6,211,547**	5,484,649

MANAGEMENT'S DISCUSSION AND ANALYSIS

Market Risk

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

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

Trading and Underwriting Market Risk Governance

BMO's market risk-taking activities are subject to a comprehensive governance framework. The RRC provides oversight of the management of market risk on behalf of the Board of Directors and approves limits governing market risk exposures that are consistent with our risk appetite. The RMC regularly reviews and discusses significant market risk exposures and positions, and provides ongoing senior management oversight of BMO's risk-taking activities. Both of these committees are kept apprised of specific market risk exposures and other factors that could expose BMO to unusual, unexpected or unquantified risks associated with market exposures, as well as other current and emerging market risks. In addition, all businesses and individuals authorized to conduct trading and underwriting activities on behalf of BMO are required to work within BMO's risk governance framework and, as part of their first-line-of-defence responsibilities, they must adhere to all relevant corporate policies, standards and procedures and maintain and manage market risk exposures within specified limits and risk tolerances. In support of BMO's risk governance framework, our market risk management framework is comprised of the processes, infrastructure and supporting documentation which, together, ensure that the bank's market risk exposures are appropriately identified, accurately measured, and independently monitored and controlled on an ongoing basis.

Trading and Underwriting Market Risk

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

Identification and Measurement of Trading and Underwriting Market Risk

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

Reflecting the multi-dimensional nature of market risk, various metrics and techniques are then employed to measure identified market risk exposures. These metrics primarily include Value at Risk, Stressed Value at Risk, and regulatory and economic capital attribution, as well as stress testing. Other techniques include the analysis of the sensitivity of our trading and underwriting portfolios to various market risk factors and the review of position concentrations, notional values and trading losses.

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

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

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

A consistent set of VaR and SVaR models is used for both management and regulatory purposes across all BMO Financial Group legal entities in which trading and/or underwriting activities are conducted.

We use a variety of methods to verify the integrity of our risk models, including the application of back-testing against hypothetical losses and approval by an independent model validation team. This testing is aligned with defined regulatory expectations, and its results confirm the reliability of our models. The volatility data and correlations that underpin our models are updated frequently, so that risk metrics reflect current conditions.

Probabilistic stress testing and scenario analysis are used daily to determine the potential impact of plausible but severe market changes on our portfolios. In addition, historical event stresses are tested on a weekly basis, including tests of scenarios such as the stock market crash of 1987 and the collapse of Lehman Brothers in 2008. Targeted analyses of risks and portfolios, along with other ad hoc analyses, are also conducted to determine our sensitivity to hypothetical, low-frequency, high-severity scenarios. Scenarios are amended, added or removed to better reflect changes in underlying market conditions and the results are reported to the lines of business, the RMC and the RRC on a regular basis.

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

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

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

Monitoring and Control of Trading and Underwriting Market Risk

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

Trading Market Risk Measures

Trading VaR and SVaR

Average Total Trading VaR increased year-over-year, driven by higher client facilitation in credit products after the acquisition of KGS-Alpha in 2018 and reflecting an increase in the volatility of historical data used in the calculation, partly offset by the effects of increased diversification. Changes in total trading SVaR are also attributable to the increase in client facilitation activities, along with changes in equity and interest rate exposures, partly offset by the effects of increased diversification.

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

As at or for the year ended October 31 (pre-tax Canadian $ equivalent in millions)	2019				2018			
	Year-end	**Average**	**High**	**Low**	Year-end	Average	High	Low
Commodity VaR	**1.0**	**1.4**	**4.9**	**0.6**	0.7	0.9	13.6	0.3
Equity VaR	**3.0**	**4.6**	**12.6**	**2.5**	4.4	4.4	7.8	2.9
Foreign exchange VaR	**0.5**	**0.5**	**1.4**	**0.2**	0.5	0.6	2.2	0.1
Interest rate VaR	**9.9**	**6.5**	**10.6**	**4.3**	6.1	5.9	8.7	3.6
Credit VaR	**5.1**	**5.8**	**9.2**	**4.0**	7.4	2.6	7.4	1.5
Diversification	**(10.9)**	**(9.8)**	**nm**	**nm**	(8.3)	(6.8)	nm	nm
Total Trading VaR	**8.6**	**9.0**	**17.2**	**5.8**	10.8	7.6	17.5	4.7
Total Trading SVaR	**19.2**	**31.7**	**69.6**	**16.5**	56.3	26.8	56.3	16.6

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

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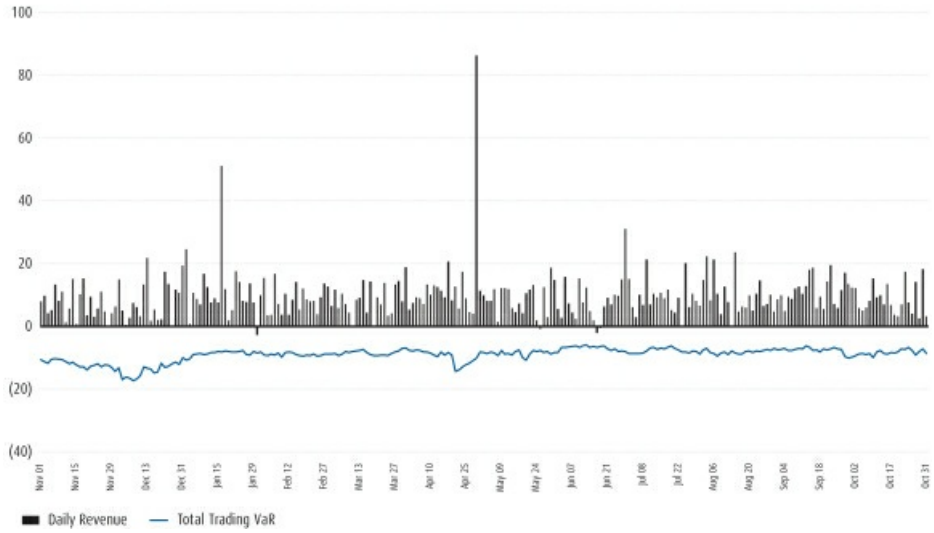
Trading Net Revenue

The charts below present daily net revenues plotted against Total Trading VaR, along with a representation of daily net revenue distribution. In 2019, we incurred net trading losses on five days totalling $5.9 million. These losses did not exceed VaR. The largest loss occurred on January 30, 2019.

Trading Net Revenues versus Value at Risk

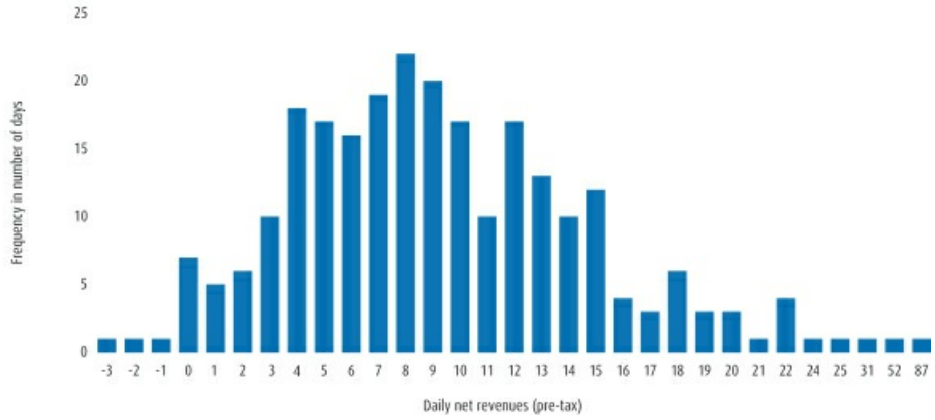
(pre-tax basis and in millions of Canadian dollars)

November 1, 2018 to October 31, 2019 ($ millions)



Frequency Distribution of Daily Net Revenues

November 1, 2018 to October 31, 2019 ($ millions)



Structural (Non-Trading) Market Risk

Structural market risk is comprised of interest rate risk arising from our banking activities (loans and deposits) and foreign exchange risk arising from our foreign currency operations and exposures.

Structural Market Risk Governance

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

The RRC has oversight of the management of structural market risk, annually approves the structural market risk plan and limits, and regularly reviews structural market risk positions. The RMC and Balance Sheet and Capital Management Committee regularly review structural market risk positions and provide senior management oversight.

Structural Market Risk Measurement

Interest Rate Risk

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

Structural interest rate risk is primarily comprised of interest rate mismatch risk and product embedded option risk.

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

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

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

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

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

The models used to measure structural interest rate risk use projected changes in interest rates and predict how customers would likely react to these changes. For customer loans and deposits with scheduled maturity and repricing dates (such as mortgages and term deposits), our models measure the extent to which customers are likely to use embedded options to alter those scheduled terms. For customer loans and deposits without scheduled maturity and repricing dates (such as credit card loans and chequing accounts), we measure our exposure using models that adjust for elasticity in product pricing and reflect historical and forecasted trends in balances. The results of these structural market risk models, by their nature, have inherent uncertainty, as they reflect potential anticipated pricing and customer behaviours, which may differ from actual experience. These models have been developed using statistical analysis and are independently validated and periodically updated through regular model performance assessment, back-testing processes and ongoing dialogue with the lines of business. Models developed to predict customer behaviour are also used to support product pricing. All models are subject to our Model Risk Management Framework, which is described in more detail on page 102.

Structural interest rate earnings and economic value sensitivity to an immediate parallel increase or decrease of 100 basis points in the yield curve is disclosed in the table below. There were no significant changes in our structural market risk management framework during the year.

Structural economic value exposure to rising interest rates primarily reflects a lower market value for fixed rate loans. Structural economic value sensitivity to falling interest rates primarily reflects the impact of a higher market value for fixed rate loans and minimum modelled client deposit rates. Structural economic value exposure to rising interest rates decreased relative to October 31, 2018, primarily due to modelled deposit pricing being less rate-sensitive at lower interest rate levels following the decrease in market rates during the year. The structural economic value benefit of falling interest rates decreased relative to October 31, 2018, due to the reduced extent to which interest rates can now fall. Structural earnings sensitivity quantifies the potential impact of interest rate changes on structural balance sheet pre-tax net income over the next 12 months. Structural earnings exposure to falling interest rates primarily reflects the risk of fixed and floating rate loans repricing at lower rates and the more limited ability to reduce deposit pricing as rates fall. The structural earnings exposure to falling interest rates decreased relative to October 31, 2018, as fewer net assets are scheduled to reprice over the next 12 months as at October 31, 2019. The structural earnings benefit of rising interest rates primarily reflects the benefit of widening deposit margins as interest rates rise, and this decreased relative to October 31, 2018, as fewer net assets are scheduled to reprice over the next 12 months as at October 31, 2019.

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Structural Interest Rate Sensitivity (1)

(Pre-tax Canadian $ equivalent in millions)	As at October 31, 2019 Economic value sensitivity	As at October 31, 2019 Earnings sensitivity over the next 12 months	As at October 31, 2018 Economic value sensitivity	As at October 31, 2018 Earnings sensitivity over the next 12 months
100 basis point increase	**(883.4)**	**46.6**	(1,079.2)	136.5
100 basis point decrease	**215.6**	**(80.3)**	626.5	(304.1)

(1) Losses are presented in brackets and gains are presented as positive numbers.

Insurance Market Risk

Insurance market risk includes interest rate and equity market risk arising from BMO's insurance business activities. A 100 basis point increase in interest rates as at October 31, 2019 would result in an increase in earnings before tax of $27 million ($37 million as at October 31, 2018). A 100 basis point decrease in interest rates as at October 31, 2019 would result in a decrease in earnings before tax of $25 million ($37 million as at October 31, 2018). On an unhedged basis, a 10% decrease in equity market values as at October 31, 2019 would result in a decrease in earnings before tax of $57 million ($44 million as at October 31, 2018). A 10% increase in equity market values as at October 31, 2019 would result in an increase in earnings before tax of $54 million ($42 million as at October 31, 2018). BMO may enter into hedging arrangements to offset the impact of changes in equity market values on its earnings, and did so during the 2019 fiscal year. The impact of insurance market risk on earnings is reflected in insurance claims, commissions and changes in policy benefit liabilities on the Consolidated Statement of Income, and the corresponding change in the fair value of our policy benefit liabilities is reflected in other liabilities on the Consolidated Balance Sheet. The impact of insurance market risk is not reflected in the table above.

Foreign Exchange Risk

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

Translation risk represents the impact that changes in foreign exchange rates could have on BMO's reported shareholders' equity and capital ratios. BMO may enter into arrangements to offset the impact of foreign exchange rate movements on its capital ratios, and did so during the 2019 fiscal year. Refer to the Enterprise-Wide Capital Management section on page 59 for further discussion.

Transaction risk represents the impact that fluctuations in the Canadian/U.S. dollar exchange rate could have on the Canadian dollar equivalent of BMO's U.S.-dollar-denominated financial results. Exchange rate fluctuations will affect future results measured in Canadian dollars and the impact on those results is a function of the periods during which revenues, expenses and provisions for credit losses arise. Hedging positions may be taken to partially offset the pre-tax effects of Canadian/U.S. dollar exchange rate fluctuations on financial results, although no hedges were executed in the current or prior year. If future results are consistent with results in 2019, each one cent increase (decrease) in the Canadian/U.S. dollar exchange rate would be expected to increase (decrease) the Canadian dollar equivalent of our U.S. segment net income before income taxes for the year by $16 million, in the absence of hedging transactions. Refer to the Foreign Exchange section on page 23 for a more complete discussion of the effects of changes in exchange rates on the bank's results.

Linkages between Balance Sheet Items and Market Risk Disclosures

The table below presents items reported in our Consolidated Balance Sheet that are subject to market risk, comprised of balances that are subject to either traded risk or non-traded risk measurement techniques.

(Canadian $ in millions)	As at October 31, 2019 Consolidated Balance Sheet	Subject to market risk: Traded risk (1)	Subject to market risk: Non-traded risk (2)	Not subject to market risk	As at October 31, 2018 Consolidated Balance Sheet	Subject to market risk: Traded risk (1)	Subject to market risk: Non-traded risk (2)	Not subject to market risk	Main risk factors for non-traded risk balances
Assets Subject to Market Risk									
Cash and cash equivalents	**48,803**	**–**	**48,803**	**–**	42,142	–	42,142	–	Interest rate
Interest bearing deposits with banks	**7,987**	**242**	**7,745**	**–**	8,305	250	8,055	–	Interest rate
Securities	**189,438**	**85,739**	**103,699**	**–**	180,935	99,561	81,374	–	Interest rate, credit spread, equity
Securities borrowed or purchased under resale agreements	**104,004**	**–**	**104,004**	**–**	85,051	–	85,051	–	Interest rate
Loans (net of allowance for credit losses)	**426,094**	**–**	**426,094**	**–**	383,991	–	383,991	–	Interest rate, foreign exchange
Derivative instruments	**22,144**	**19,508**	**2,636**	**–**	25,422	23,619	1,803	–	Interest rate, foreign exchange
Customers' liability under acceptances	**23,593**	**–**	**23,593**	**–**	18,585	–	18,585	–	Interest rate
Other assets	**30,132**	**–**	**15,417**	**14,715**	28,862	–	13,856	15,006	Interest rate
Total Assets	**852,195**	**105,489**	**731,991**	**14,715**	773,293	123,430	634,857	15,006	
Liabilities Subject to Market Risk									
Deposits	**568,143**	**15,829**	**552,314**	**–**	520,928	14,186	506,742	–	Interest rate, foreign exchange
Derivative instruments	**23,598**	**20,094**	**3,504**	**–**	23,629	20,598	3,031	–	Interest rate, foreign exchange
Acceptances	**23,593**	**–**	**23,593**	**–**	18,585	–	18,585	–	Interest rate
Securities sold but not yet purchased	**26,253**	**26,253**	**–**	**–**	28,804	28,804	–	–	
Securities lent or sold under repurchase agreements	**86,656**	**–**	**86,656**	**–**	66,684	–	66,684	–	Interest rate
Other liabilities	**65,881**	**–**	**65,766**	**115**	62,160	–	62,037	123	Interest rate
Subordinated debt	**6,995**	**–**	**6,995**	**–**	6,782	–	6,782	–	Interest rate
Total Liabilities	**801,119**	**62,176**	**738,828**	**115**	727,572	63,588	663,861	123	

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

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

Material presented in a blue-tinted font above is an integral part of the 2019 audited annual consolidated financial statements (refer to page 68).

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Insurance Risk

Insurance risk is the potential for loss as a result of actual experience differing from that assumed when an insurance product was designed and priced. It generally entails the inherent unpredictability that can arise from assuming long-term policy liabilities or from the uncertainty of future events. Insurance provides protection against the financial consequences of insured risks by transferring those risks to the insurer (under specific terms and conditions) in exchange for premiums. Insurance risk is inherent in all of our insurance products, including annuities and life, accident and sickness, and creditor insurance, as well as in our reinsurance business.

Insurance risk consists of:

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

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

A robust product approval process is a cornerstone of our BMO Insurance risk management framework, as it identifies, assesses and mitigates risks associated with new insurance products or changes to existing products. This process, along with guidelines and practices for underwriting and claims management, promotes the effective identification, measurement and management of insurance risk. Reinsurance transactions that transfer insurance risk from BMO Insurance to independent reinsurance companies are also used to mitigate our exposure to insurance risk by diversifying risk and limiting claims. Our reinsurance business, in turn, assumes property catastrophe and other reinsurance risks from independent reinsurers in various jurisdictions worldwide in order to diversify our geographic reinsurance exposures in accordance with our BMO Insurance risk management framework. BMO Insurance will be exiting the Property & Casualty Reinsurance market, with all treaties terminating by March 2021, significantly reducing our exposure to catastrophic claims. However, some exposure to catastrophic claims will remain until all outstanding claims that occurred prior to the treaty termination dates are settled and paid.

Liquidity and Funding Risk

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

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

Liquidity and Funding Risk Governance

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

Enterprise Risk and Portfolio Management, as the second line of defence, provides oversight, independent risk assessment and effective challenge of liquidity and funding management frameworks, policies, limits, monitoring and reporting across the enterprise. The Risk Management Committee (RMC) and Balance Sheet and Capital Management Committee (BSCMC) provide senior management oversight and also review and discuss significant liquidity and funding policies, issues and developments that arise in the pursuit of our strategic priorities. The Risk Review Committee (RRC) provides oversight of the management of liquidity and funding risk, annually approves applicable policies, limits and the contingency plan, and regularly reviews liquidity and funding positions.

Liquidity and Funding Risk Management

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

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

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

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

BMO employs practices related to funds transfer pricing and liquidity transfer pricing in order to ensure that appropriate economic signals for the pricing of products for customers are provided to the lines of business and to assess the performance of each business. These practices capture both the cost of funding assets and the value of deposits under normal operating conditions, as well as the cost of holding supplemental liquid assets to meet contingent liquidity requirements.

Liquidity and Funding Risk Measurement

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

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

In addition to the Stress NLP, we regularly monitor positions in relation to the limits and liquidity ratios noted in the Liquidity and Funding Risk Management section above. These include regulatory metrics such as the Liquidity Coverage Ratio (LCR) and Net Cumulative Cash Flow and, beginning in 2020, the Net Stable Funding Ratio (NSFR).

Unencumbered Liquid Assets

Unencumbered liquid assets include high-quality assets that are marketable, can be pledged as security for borrowings, and can be converted to cash in a time frame that meets our liquidity and funding requirements. Liquid assets are primarily held in our trading businesses, as well as in supplemental liquidity pools that are maintained for contingent liquidity risk management purposes. The liquidity value recognized for different asset classes under our management framework reflects management's assessment of the liquidity value of those assets under a severe stress scenario. Liquid assets held in the trading businesses include cash on deposit with central banks, short-term deposits with other financial institutions, highly-rated debt and equity securities and short-term reverse repurchase agreements. Supplemental liquidity pool assets are predominantly comprised of cash on deposit with central banks, securities, and short-term reverse repurchase agreements of highly-rated Canadian federal and provincial government debt and U.S. federal government and agency debt**.** Substantially all supplemental liquidity pool assets meet the definition of high-quality liquid assets under Basel III. Approximately 75% of the supplemental liquidity pool is held at the parent bank level in Canadian-dollar- and U.S.-dollar-denominated assets, with the majority of the remaining supplemental liquidity pool held at BMO Harris Bank in U.S.-dollar-denominated assets. The size of the supplemental liquidity pool is integrated with our measurement of liquidity risk. To meet local regulatory requirements, certain of our legal entities maintain their own minimum liquidity positions. There may be legal and regulatory restrictions on our ability to use liquid assets held at one legal entity to support the liquidity requirements of another legal entity.

In the ordinary course of business, BMO may encumber a portion of cash and securities holdings as collateral in support of trading activities and participation in clearing and payment systems in Canada and abroad. In addition, BMO may receive liquid assets as collateral and may re-pledge these assets in exchange for cash or as collateral in support of trading activities. Net unencumbered liquid assets, defined as on-balance sheet assets, such as BMO-owned cash and securities and securities borrowed or purchased under resale agreements, plus other off-balance sheet eligible collateral received, less collateral encumbered, totalled $249.7 billion at October 31, 2019, compared with $242.6 billion at October 31, 2018. The increase in unencumbered liquid assets was mainly due to higher cash and securities balances. Net unencumbered liquid assets are primarily held at the parent bank level, at our U.S. bank entity BMO Harris Bank, and in our broker/dealer operations. In addition to liquid assets, BMO has access to the Bank of Canada's lending assistance programs, the Federal Reserve Bank discount window in the United States and European Central Bank standby liquidity facilities. We do not rely on central bank facilities as a source of available liquidity when assessing the soundness of BMO's liquidity position.

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

BMO's total encumbered assets and unencumbered liquid assets are summarized in the table below. Refer to Note 24 on page 197 of the consolidated financial statements for further information on pledged assets.

Material presented in a blue-tinted font above is an integral part of the 2019 audited annual consolidated financial statements (refer to page 68).

Liquid Assets

(Canadian $ in millions)	As at October 31, 2019 Carrying value/on-balance sheet assets (1)	Other cash and securities received	Total gross assets (2)	Encumbered assets	Net unencumbered assets (3)	As at October 31, 2018 Net unencumbered assets (3)
Cash and cash equivalents	**48,803**	**–**	**48,803**	**1,895**	**46,908**	40,487
Deposits with other banks	**7,987**	**–**	**7,987**	**–**	**7,987**	8,305
Securities and securities borrowed or purchased under resale agreements						
Sovereigns / Central banks / Multilateral development banks	**170,219**	**22,838**	**193,057**	**102,694**	**90,363**	78,158
NHA mortgage-backed securities and U.S. agency mortgage-backed securities and collateralized mortgage obligations	**39,393**	**743**	**40,136**	**18,730**	**21,406**	19,767
Corporate and other debt	**25,271**	**12,486**	**37,757**	**5,645**	**32,112**	27,972
Corporate equity	**58,559**	**22,808**	**81,367**	**52,931**	**28,436**	42,805
Total securities and securities borrowed or purchased under resale agreements	**293,442**	**58,875**	**352,317**	**180,000**	**172,317**	168,702
NHA mortgage-backed securities (reported as loans at amortized cost) (4)	**26,126**	**–**	**26,126**	**3,688**	**22,438**	25,118
Total liquid assets	**376,358**	**58,875**	**435,233**	**185,583**	**249,650**	242,612
Other eligible assets at central banks (not included above) (5)	**69,011**	**–**	**69,011**	**765**	**68,246**	63,369
Undrawn credit lines granted by central banks	**–**	**–**	**–**	**–**	**–**	–
Total liquid assets and other sources	**445,369**	**58,875**	**504,244**	**186,348**	**317,896**	305,981

(1) The carrying values outlined in this table are consistent with the carrying values reported in BMO's consolidated balance sheet as at October 31, 2019.
(2) Gross assets include on-balance sheet and off-balance sheet assets.
(3) Net unencumbered liquid assets are defined as on-balance sheet assets, such as BMO-owned cash and securities and securities borrowed or purchased under resale agreements, plus other off-balance sheet eligible collateral received, less encumbered assets.
(4) Under IFRS, National Housing Authority (NHA) mortgage-backed securities that include mortgages owned by BMO as the underlying collateral are classified as loans. Unencumbered NHA mortgage-backed securities have liquidity value and are included as liquid assets under BMO's Liquidity and Funding Management Framework. This amount is shown as a separate line item, NHA mortgage-backed securities.
(5) Represents loans currently lodged at central banks that could potentially be used to access central bank funding. Loans available for pledging as collateral do not include other sources of additional liquidity that may be realized from the bank's loan portfolio, including incremental securitization, covered bond issuances and Federal Home Loan Bank (FHLB) advances.

MANAGEMENT'S DISCUSSION AND ANALYSIS

Asset Encumbrance

(Canadian $ in millions) As at October 31, 2019	Total gross assets (1)	Encumbered (2) Pledged as collateral	Encumbered (2) Other encumbered	Net unencumbered Other unencumbered (3)	Net unencumbered Available as collateral (4)
Cash and deposits with other banks	**56,790**	**–**	**1,895**	**–**	**54,895**
Securities (5)	**378,443**	**153,269**	**30,419**	**12,107**	**182,648**
Loans and acceptances	**399,968**	**73,073**	**765**	**257,884**	**68,246**
Other assets					
Derivative instruments	**22,144**	**–**	**–**	**22,144**	**–**
Customers' liability under acceptances	**23,593**	**–**	**–**	**23,593**	**–**
Premises and equipment	**2,055**	**–**	**–**	**2,055**	**–**
Goodwill	**6,340**	**–**	**–**	**6,340**	**–**
Intangible assets	**2,424**	**–**	**–**	**2,424**	**–**
Current tax assets	**1,165**	**–**	**–**	**1,165**	**–**
Deferred tax asset	**1,568**	**–**	**–**	**1,568**	**–**
Other assets	**16,580**	**3,722**	**–**	**12,858**	**–**
Total other assets	**75,869**	**3,722**	**–**	**72,147**	**–**
Total assets	**911,070**	**230,064**	**33,079**	**342,138**	**305,789**

(Canadian $ in millions) As at October 31, 2018	Total gross assets (1)	Encumbered (2) Pledged as collateral	Encumbered (2) Other encumbered	Net unencumbered Other unencumbered (3)	Net unencumbered Available as collateral (4)
Cash and deposits with other banks	50,447	–	1,655	–	48,792
Securities (5)	352,884	127,211	31,853	10,580	183,240
Loans and acceptances	356,126	73,553	660	218,544	63,369
Other assets					
Derivative instruments	25,422	–	–	25,422	–
Customers' liability under acceptances	18,585	–	–	18,585	–
Premises and equipment	1,986	–	–	1,986	–
Goodwill	6,373	–	–	6,373	–
Intangible assets	2,272	–	–	2,272	–
Current tax assets	1,515	–	–	1,515	–
Deferred tax asset	2,039	–	–	2,039	–
Other assets	14,677	2,509	–	12,168	–
Total other assets	72,869	2,509	–	70,360	–
Total assets	832,326	203,273	34,168	299,484	295,401

(1) Gross assets include on-balance sheet and off-balance sheet assets.

(2) Pledged as collateral refers to the portion of on-balance sheet assets and other cash and securities that is pledged through repurchase agreements, securities lending, derivative contracts, minimum required deposits at central banks, and requirements associated with participation in clearing houses and payment systems. Other encumbered assets include assets that are restricted for legal or other reasons, such as restricted cash and short sales.

(3) Other unencumbered assets include select liquid asset holdings that management believes are not readily available to support BMO's liquidity requirements. These include cash and securities of $12.1 billion as at October 31, 2019, which include securities held at BMO's insurance subsidiary, significant equity investments, and certain investments held at our merchant banking business. Other unencumbered assets also include mortgages and loans that may be securitized to access secured funding.

(4) Loans included in available as collateral represent loans currently lodged at central banks that could potentially be used to access central bank funding. Loans available for pledging as collateral do not include other sources of additional liquidity that may be realized from the bank's loan portfolio, such as incremental securitization, covered bond issuances and FHLB advances.

(5) Includes securities, securities borrowed or purchased under resale agreements and NHA mortgage-backed securities (reported as loans at amortized cost).

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

BMO's Liquidity Coverage Ratio (LCR) is summarized in the following table. The average daily LCR for the quarter ended October 31, 2019 was 138%. The LCR is calculated on a daily basis as the ratio of the stock of High-Quality Liquid Assets (HQLA) held to total net stressed cash outflows over the next 30 calendar days. The average LCR was down from 145% last year. The increase in net cash outflows was partially offset by the increase in HQLA. While banks are required to maintain an LCR greater than 100% in normal conditions, banks are also expected to be able to utilize HQLA during a period of stress, which may result in an LCR of less than 100% during such a period. BMO's HQLA are primarily comprised of cash, highly-rated debt issued or backed by governments, highly-rated covered bonds and non-financial corporate debt, and non-financial equities that are part of a major stock index. Net cash flows include outflows from deposits, secured and unsecured wholesale funding, commitments and potential collateral requirements, offset by permitted inflows from loans, securities lending activities and other non-HQLA debt maturing over a 30-day horizon. OSFI-prescribed weights are applied to cash flows and HQLA to arrive at the weighted values and the LCR. The LCR is only one measure of a bank's liquidity position and does not fully capture all of the bank's liquid assets or the funding alternatives that may be available during a period of stress. BMO's total liquid assets are shown in the Liquid Assets table on page 93.

Liquidity Coverage Ratio

(Canadian $ in billions, except as noted)	For the quarter ended October 31, 2019 **Total unweighted value (average)** (1) (2)	 **Total weighted value (average)** (2) (3)
High-Quality Liquid Assets		
Total high-quality liquid assets (HQLA)	*	**163.2**
Cash Outflows		
Retail deposits and deposits from small business customers, of which:	**200.4**	**13.8**
Stable deposits	**96.0**	**2.9**
Less stable deposits	**104.4**	**10.9**
Unsecured wholesale funding, of which:	**165.3**	**91.2**
Operational deposits (all counterparties) and deposits in networks of cooperative banks	**62.4**	**15.5**
Non-operational deposits (all counterparties)	**68.1**	**40.9**
Unsecured debt	**34.8**	**34.8**
Secured wholesale funding	*	**20.8**
Additional requirements, of which:	**156.3**	**32.7**
Outflows related to derivatives exposures and other collateral requirements	**10.5**	**4.4**
Outflows related to loss of funding on debt products	**1.8**	**1.8**
Credit and liquidity facilities	**144.0**	**26.5**
Other contractual funding obligations	**1.0**	**–**
Other contingent funding obligations	**402.7**	**7.0**
Total cash outflows	*	**165.5**
Cash Inflows		
Secured lending (e.g., reverse repos)	**149.2**	**33.2**
Inflows from fully performing exposures	**10.2**	**5.5**
Other cash inflows	**8.7**	**8.7**
Total cash inflows	**168.1**	**47.4**

	Total adjusted value (4)
Total HQLA	**163.2**
Total net cash outflows	**118.1**
Liquidity Coverage Ratio (%)	**138**

For the quarter ended October 31, 2018	Total adjusted value (4)
Total HQLA	155.0
Total net cash outflows	106.9
Liquidity Coverage Ratio (%)	145

* Disclosure is not required under the LCR disclosure standard.

(1) Unweighted values are calculated at market value (for HQLA) or as outstanding balances maturing or callable within 30 days (for inflows and outflows).

(2) Values are calculated based on the simple average of the daily LCR over 63 business days in the fourth quarter of 2019.

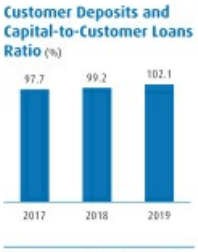
(3) Weighted values are calculated after the application of the weightings prescribed under the OSFI Liquidity Adequacy Requirements (LAR) Guideline for HQLA and cash inflows and outflows.

(4) Adjusted values are calculated based on total weighted values after applicable caps, as defined in the LAR Guideline.

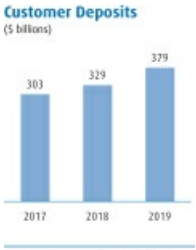
Funding Strategy

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

BMO maintains a large and stable base of customer deposits that, in combination with our strong capital base, is a source of strength. It supports the maintenance of a sound liquidity position and reduces our reliance on wholesale funding. Customer deposits totalled $378.8 billion as at October 31, 2019, and increased from $329.2 billion in 2018, due to strong deposit growth. BMO also receives non-marketable deposits from corporate and institutional customers in support of certain trading activities. These deposits totalled $22.1 billion as at October 31, 2019, down from $29.5 billion as at October 31, 2018.



Our large customer base and strong capital position reduce our reliance on wholesale funding.



Customer deposits provide a strong funding base.

Total wholesale funding outstanding, which largely consists of negotiable marketable securities, was $207.6 billion as at October 31, 2019, with $63.9 billion sourced as secured funding and $143.7 billion sourced as unsecured funding. Wholesale funding outstanding increased from $203.3 billion as at October 31, 2018, primarily due to net wholesale funding issuance. The mix and maturities of BMO's wholesale term funding are outlined in the table below. Additional information on deposit maturities can be found on page 98. BMO maintains a sizeable portfolio of unencumbered liquid assets, totalling $249.7 billion as at October 31, 2019 and $242.6 billion as at October 31, 2018, that can be monetized to meet potential funding requirements, as described in the Unencumbered Liquid Assets section on page 92.

In April 2018, the Government of Canada published the final regulations on Canada's Bank Recapitalization (Bail-In) Regime, which became effective on September 23, 2018. Bail-in debt includes senior unsecured debt issued directly by the bank on or after September 23, 2018 that has an original term greater than 400 days and is marketable, subject to certain exceptions. BMO is required to meet minimum Total Loss Absorbing Capacity (TLAC) ratio requirements by November 1, 2021. We do not expect a material impact on our funding plan as a result of Canada's Bail-In Regime and TLAC requirements. For more information on Canada's Bail-In Regime and TLAC requirements, refer to Capital Regulatory Developments under Enterprise-Wide Capital Management on page 59.

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



BMO's wholesale funding plan seeks to ensure sufficient funding capacity is available to execute our business strategies. The funding plan considers expected maturities, as well as asset and liability growth projected for our businesses in our forecasting and planning processes, and assesses funding needs in relation to the sources available. The funding plan is reviewed annually by the BSCMC and RMC and approved by the RRC, and is regularly updated to reflect actual results and incorporate updated forecast information.

Material presented in a blue-tinted font above is an integral part of the 2019 audited annual consolidated financial statements (refer to page 68).

Wholesale Funding Maturities (1)

(Canadian $ in millions)	As at October 31, 2019 Less than 1 month	1 to 3 months	3 to 6 months	6 to 12 months	Subtotal less than 1 year	1 to 2 years	Over 2 years	Total	As at October 31, 2018 Total
Deposits from banks	**3,521**	**480**	**10**	**291**	**4,302**	**–**	**10**	**4,312**	4,977
Certificates of deposit and commercial paper	**11,391**	**19,286**	**14,918**	**18,528**	**64,123**	**367**	**–**	**64,490**	68,318
Bearer deposit notes	**24**	**63**	**–**	**30**	**117**	**–**	**–**	**117**	576
Asset-backed commercial paper (ABCP)	**683**	**1,524**	**1,069**	**–**	**3,276**	**–**	**–**	**3,276**	3,586
Senior unsecured medium-term notes	**–**	**1,711**	**751**	**10,690**	**13,152**	**15,910**	**34,727**	**63,789**	55,753
Senior unsecured structured notes (2)	**6**	**7**	**–**	**5**	**18**	**–**	**3,789**	**3,807**	3,693
Covered bonds and securitizations									
Mortgage and HELOC securitizations	**–**	**544**	**1,384**	**1,288**	**3,216**	**3,604**	**12,782**	**19,602**	18,203
Covered bonds	**–**	**2,201**	**–**	**3,563**	**5,764**	**4,176**	**15,557**	**25,497**	25,263
Other asset-backed securitizations (3)	**–**	**1,045**	**–**	**173**	**1,218**	**351**	**6,059**	**7,628**	6,930
Subordinated debt	**–**	**–**	**–**	**–**	**–**	**–**	**7,189**	**7,189**	6,841
Other (4)	**–**	**4,970**	**–**	**–**	**4,970**	**–**	**2,896**	**7,866**	9,185
Total	**15,625**	**31,831**	**18,132**	**34,568**	**100,156**	**24,408**	**83,009**	**207,573**	203,325
Of which:									
Secured	**683**	**10,284**	**2,453**	**5,024**	**18,444**	**8,131**	**37,294**	**63,869**	63,167
Unsecured	**14,942**	**21,547**	**15,679**	**29,544**	**81,712**	**16,277**	**45,715**	**143,704**	140,158
Total (5)	**15,625**	**31,831**	**18,132**	**34,568**	**100,156**	**24,408**	**83,009**	**207,573**	203,325

(1) Wholesale unsecured funding primarily includes funding raised through the issuance of marketable, negotiable instruments. Wholesale funding excludes repo transactions and bankers' acceptances, which are disclosed in the contractual maturity table on page 98, and also excludes ABCP issued by certain ABCP conduits that are not consolidated for financial reporting purposes.
(2) Primarily issued to institutional investors.
(3) Includes credit card, auto and transportation finance loan securitizations.
(4) Refers to FHLB advances.
(5) Total wholesale funding consists of Canadian-dollar-denominated funding totalling $51.7 billion and U.S.-dollar-denominated and other foreign-currency-denominated funding totalling $155.9 billion as at October 31, 2019.

Regulatory Developments

The Net Stable Funding Ratio (NSFR) is a regulatory liquidity metric that assesses the stability of a bank's funding profile in relation to the liquidity value of a bank's assets. OSFI finalized the domestic implementation of the NSFR in the second quarter of 2019. Canadian domestic systemically important banks (D-SIBs), including BMO, will be required to maintain a minimum NSFR of 100%, effective January 1, 2020, and to publicly disclose their NSFR, effective for the quarter ending January 31, 2021. In addition, in April 2019, OSFI finalized revisions to the LCR and other liquidity metrics under the Liquidity Adequacy Requirements (LAR) Guideline, with an implementation date of January 1, 2020. We do not expect a material impact on our liquidity and funding management approach as a result of these changes.

Credit Ratings

The credit ratings assigned to BMO's short-term and senior long-term debt securities by external rating agencies are important for the bank to raise both capital and funding to support our business operations. Maintaining strong credit ratings allows us to access the wholesale markets at competitive pricing levels. Should our credit ratings experience a downgrade, our cost of funding would likely increase and our access to funding and capital through the wholesale markets could be reduced. A material downgrade of our ratings could also have other consequences, including those set out in Note 8 starting on page 162 of the consolidated financial statements.

The credit ratings assigned to BMO's senior debt by rating agencies are indicative of high-grade, high-quality issues. Moody's, Standard & Poor's (S&P), Fitch and DBRS have a stable outlook on BMO.

On February 1, 2019, in response to the implementation of bail-in rules in Canada, Fitch downgraded its Support Ratings for Canadian D-SIBs to "5" from "2" and its Support Ratings Floors to "No Floor" from "BBB-". Fitch's lowered outlook for sovereign support had no impact on the Issuer Default Ratings, Viability Ratings, or issue-level ratings for D-SIBs, including BMO. Fitch's ratings for BMO's senior debt and legacy senior debt are unchanged at AA-.

As at October 31, 2019

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

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

We are required to deliver collateral to certain counterparties in the event of a downgrade of our current credit rating. The incremental collateral required is based on mark-to-market exposure, collateral valuations and collateral threshold arrangements, as applicable. As at October 31, 2019, we would be required to provide additional collateral to counterparties totalling $95 million, $392 million and $614 million as a result of a one-notch, two-notch and three-notch downgrade, respectively.

MANAGEMENT'S DISCUSSION AND ANALYSIS

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

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

										2019
(Canadian $ in millions)	0 to 1 month	1 to 3 months	3 to 6 months	6 to 9 months	9 to 12 months	1 to 2 years	2 to 5 years	Over 5 years	No maturity	Total
On-Balance Sheet Financial Instruments										
Assets										
Cash and cash equivalents	47,844	–	–	–	–	–	–	–	959	48,803
Interest bearing deposits with banks	4,088	1,893	1,081	714	211	–	–	–	–	7,987
Securities	2,680	3,420	2,797	3,508	4,670	15,001	46,687	66,005	44,670	189,438
Securities borrowed or purchased under resale agreements	75,936	21,562	4,819	859	518	–	310	–	–	104,004
Loans										
Residential mortgages	1,691	2,059	5,285	6,818	7,138	22,309	68,143	10,297	–	123,740
Consumer instalment and other personal	645	519	991	1,272	1,502	4,823	22,391	11,947	23,646	67,736
Credit cards	–	–	–	–	–	–	–	–	8,859	8,859
Business and government	12,490	7,072	6,168	7,760	6,547	24,687	87,486	20,331	55,068	227,609
Allowance for credit losses	–	–	–	–	–	–	–	–	(1,850)	(1,850)
Total loans and acceptances, net of allowance	14,826	9,650	12,444	15,850	15,187	51,819	178,020	42,575	85,723	426,094
Other Assets										
Derivative instruments	1,209	1,867	877	830	911	2,375	5,095	8,980	–	22,144
Customers' liability under acceptances	20,694	2,562	173	159	5	–	–	–	–	23,593
Other	1,951	593	245	12	5	7	5	4,475	22,839	30,132
Total other assets	23,854	5,022	1,295	1,001	921	2,382	5,100	13,455	22,839	75,869
Total Assets	169,228	41,547	22,436	21,932	21,507	69,202	230,117	122,035	154,191	852,195

										2019
(Canadian $ in millions)	0 to 1 month	1 to 3 months	3 to 6 months	6 to 9 months	9 to 12 months	1 to 2 years	2 to 5 years	Over 5 years	No maturity	Total
Liabilities and Equity										
Deposits (1)										
Banks	12,177	4,187	1,215	319	1,174	–	–	201	4,543	23,816
Business and government	21,088	28,511	21,209	22,334	18,023	22,983	49,292	11,759	147,958	343,157
Individuals	3,607	8,932	12,080	13,390	15,706	11,418	13,257	2,031	120,749	201,170
Total deposits	36,872	41,630	34,504	36,043	34,903	34,401	62,549	13,991	273,250	568,143
Other liabilities										
Derivative instruments	1,329	2,574	1,240	970	1,032	2,985	6,798	6,670	–	23,598
Acceptances	20,694	2,562	173	159	5	–	–	–	–	23,593
Securities sold but not yet purchased	26,253	–	–	–	–	–	–	–	–	26,253
Securities lent or sold under repurchase agreements	83,681	1,459	760	450	–	–	306	–	–	86,656
Current tax liabilities	–	–	–	–	–	–	–	–	55	55
Deferred tax liabilities	–	–	–	–	–	–	–	–	60	60
Securitization and structured entities' liabilities	1	1,655	1,340	1,033	1,038	5,350	13,779	2,963	–	27,159
Other	12,325	3,188	33	29	74	537	3,596	2,406	16,419	38,607
Total other liabilities	144,283	11,438	3,546	2,641	2,149	8,872	24,479	12,039	16,534	225,981
Subordinated debt	–	–	–	–	–	–	–	6,995	–	6,995
Total Equity	–	–	–	–	–	–	–	–	51,076	51,076
Total Liabilities and Equity	181,155	53,068	38,050	38,684	37,052	43,273	87,028	33,025	340,860	852,195

(1) Deposits payable on demand and payable after notice have been included under no maturity.

										2019
(Canadian $ in millions)	0 to 1 month	1 to 3 months	3 to 6 months	6 to 9 months	9 to 12 months	1 to 2 years	2 to 5 years	Over 5 years	No maturity	Total
Off-Balance Sheet Commitments										
Commitments to extend credit (1)	1,868	3,777	5,698	8,832	12,511	21,574	102,113	5,643	–	162,016
Backstop liquidity facilities	–	–	–	–	–	–	5,550	–	–	5,550
Operating leases	32	66	98	97	96	361	931	2,119	–	3,800
Securities lending	4,102	–	–	–	–	–	–	–	–	4,102
Purchase obligations	53	98	138	133	137	111	187	69	–	926

(1) Commitments to extend credit exclude 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.

Material presented in a blue-tinted font above is an integral part of the 2019 audited annual consolidated financial statements (refer to page 68).

(Canadian $ in millions)	0 to 1 month	1 to 3 months	3 to 6 months	6 to 9 months	9 to 12 months	1 to 2 years	2 to 5 years	Over 5 years	No maturity	2018 Total
On-Balance Sheet Financial Instruments										
Assets										
Cash and cash equivalents	41,162	–	–	–	–	–	–	–	980	42,142
Interest bearing deposits with banks	4,964	1,717	1,037	457	112	18	–	–	–	8,305
Securities	4,522	4,283	5,049	7,749	4,943	11,854	32,480	56,004	54,051	180,935
Securities borrowed or purchased under resale agreements	67,804	12,732	2,490	1,781	191	53	–	–	–	85,051
Loans										
Residential mortgages	1,782	1,848	4,343	6,306	4,769	24,522	64,636	11,414	–	119,620
Consumer instalment and other personal	607	440	1,026	1,143	943	5,414	19,910	9,812	23,930	63,225
Credit cards	–	–	–	–	–	–	–	–	8,329	8,329
Business and government	13,088	5,921	7,126	6,779	6,218	19,543	75,099	12,247	48,435	194,456
Allowance for credit losses	–	–	–	–	–	–	–	–	(1,639)	(1,639)
Total loans and acceptances, net of allowance	15,477	8,209	12,495	14,228	11,930	49,479	159,645	33,473	79,055	383,991
Other Assets										
Derivative instruments	2,033	3,379	1,638	1,002	797	3,333	5,816	7,424	–	25,422
Customers' liability under acceptances	16,529	1,988	65	3	–	–	–	–	–	18,585
Other	1,740	506	189	26	6	17	20	4,824	21,534	28,862
Total other assets	20,302	5,873	1,892	1,031	803	3,350	5,836	12,248	21,534	72,869
Total Assets	154,231	32,814	22,963	25,246	17,979	64,754	197,961	101,725	155,620	773,293

(Canadian $ in millions)	0 to 1 month	1 to 3 months	3 to 6 months	6 to 9 months	9 to 12 months	1 to 2 years	2 to 5 years	Over 5 years	No maturity	2018 Total
Liabilities and Equity										
Deposits (1)										
Banks	16,966	6,032	1,200	227	106	–	–	–	3,376	27,907
Business and government	23,524	32,231	22,713	15,893	8,629	22,418	48,684	11,809	126,276	312,177
Individuals	2,582	6,455	7,953	7,619	10,536	11,736	16,327	2,582	115,054	180,844
Total deposits	43,072	44,718	31,866	23,739	19,271	34,154	65,011	14,391	244,706	520,928
Other liabilities										
Derivative instruments	1,496	2,445	1,610	904	631	3,741	6,092	6,710	–	23,629
Acceptances	16,529	1,988	65	3	–	–	–	–	–	18,585
Securities sold but not yet purchased	28,804	–	–	–	–	–	–	–	–	28,804
Securities lent or sold under repurchase agreements	63,496	2,249	8	931	–	–	–	–	–	66,684
Current tax liabilities	–	–	–	–	–	–	–	–	50	50
Deferred tax liabilities	–	–	–	–	–	–	–	–	74	74
Securitization and structured entities' liabilities	1,044	1,084	475	512	588	4,912	13,398	3,038	–	25,051
Other	8,548	5,568	44	34	184	789	4,455	1,905	15,458	36,985
Total other liabilities	119,917	13,334	2,202	2,384	1,403	9,442	23,945	11,653	15,582	199,862
Subordinated debt	–	–	–	–	–	–	–	6,782	–	6,782
Total Equity	–	–	–	–	–	–	–	–	45,721	45,721
Total Liabilities and Equity	162,989	58,052	34,068	26,123	20,674	43,596	88,956	32,826	306,009	773,293

(1) Deposits payable on demand and payable after notice have been included under no maturity.

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

(Canadian $ in millions)	0 to 1 month	1 to 3 months	3 to 6 months	6 to 9 months	9 to 12 months	1 to 2 years	2 to 5 years	Over 5 years	No maturity	2018 Total
Off-Balance Sheet Commitments										
Commitments to extend credit (1)	1,472	3,610	6,892	9,620	11,345	21,056	84,295	3,144	–	141,434
Backstop liquidity facilities	–	–	–	–	–	–	5,627	–	–	5,627
Operating leases	34	70	99	101	100	358	770	1,210	–	2,742
Securities lending	4,939	–	–	–	–	–	–	–	–	4,939
Purchase obligations	56	388	153	155	158	615	186	82	–	1,793

(1) Commitments to extend credit exclude 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.

Caution

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

Material presented in a blue-tinted font above is an integral part of the 2019 audited annual consolidated financial statements (refer to page 68).

Operational Risk

Operational risk is the potential for loss or harm resulting from inadequate or failed internal processes or systems, human errors or misconduct or external events, but excludes business risk, credit risk, market risk, liquidity risk and other financial risk.

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

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

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

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

We regularly review our top and emerging risks, and assess our preparedness to proactively manage the risks that we face or could face in the future. For more information on these and other factors that may affect future results, please refer to the discussion on page 70.

Consistent with the management of risk across the enterprise, we employ a three-lines-of-defence approach in managing operational risk. Operational risk is managed by the operating groups and corporate functions as the first line of defence. This is overseen by ERPM Operational Risk Management (ORM), along with Corporate Support Areas for specialized risks, as the second line of defence, governed by a robust committee structure and supported by a comprehensive Operational Risk Management Framework (ORMF). The Corporate Audit Division, as the third line of defence, assesses our adherence to internal controls and limits, and identifies opportunities to strengthen our processes.

Operational Risk Governance

The Operational Risk Committee (ORC), a sub-committee of the RMC, is the primary governance committee exercising oversight of all operational risk management matters. As part of its governance responsibilities, the ORC provides effective challenge to the policies, standards, operating guidelines, methodologies and tools that comprise the governing principles of the ORMF. The documentation that gives effect to these governing principles is reviewed on a regular basis to ensure it incorporates sound practices and is consistent with our risk appetite. Regular analysis and reporting of our enterprise operational risk profile to the various committees (ORC, RMC and RRC) are important elements of our risk governance framework. Enterprise reporting provides an integrated view of top and emerging risks, trends in loss data, capital consumption, key risk indicators and operating group profiles. We continue to invest in our reporting platforms and support timely and comprehensive reporting capabilities in order to enhance risk transparency and facilitate the proactive management of operational risk exposures.

Operational Risk Management

The operating groups, as the first line of defence, are accountable for the day-to-day management of operational risk, with the CROs of businesses providing governance and oversight for their respective business units, and Corporate Support Areas providing additional governance and oversight in certain targeted areas. Independent risk management oversight is provided by the ORM team, which is responsible for operational risk strategy, tools and policies, and for second-line oversight, effective challenge and governance. ORM establishes and maintains the ORMF, which defines the processes to be used by the first line of defence to identify, measure, manage, mitigate, monitor and report on key operational risk exposures, losses and near-miss operational risk events with significant potential impact. In addition, the ORMF defines the processes by which ORM, as the second line of defence, guides, supports, monitors, assesses and communicates with the first line in its management of operational risk. Operational Risk Officers (OROs) within ORM independently assess group operational risk profiles, identify material exposures and potential weaknesses in processes and controls, and recommend appropriate mitigation strategies and actions. Executing our ORMF strategy also involves continuing to strengthen our risk culture by promoting greater awareness and understanding of operational risk across all three lines of defence, learning from loss events and near-misses and providing other training and communication, as well as day-to-day execution and oversight of the ORMF. We also continue to strengthen our second-line-of-defence support and oversight.

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

- Risk Control Self-Assessment (RCSA) is an established process used by our operating groups to identify the key risks associated with their businesses and the controls required for risk mitigation. The RCSA process provides a forward-looking view of the impact of the business environment and internal controls on operating group risk profiles, enabling the proactive prevention, mitigation and management of risk.

- ORM provides an independent enterprise-level view of operational risk relative to our risk appetite, so that key risks can be appropriately identified, documented, managed and mitigated.
- Process Risk Assessments (PRAs) and ORM reviews take a deeper view by identifying key risks and controls in our critical business processes, which may span multiple business and functional units. PRAs and ORM reviews enable a greater understanding of our key processes, issues and risk mitigation activities, which facilitates more effective oversight and appropriate risk management.
- BMO's initiative assessment and approval process is used to assess, document and approve qualifying initiatives when a new business, service or product is developed or existing services and products are enhanced. The process seeks to ensure that due diligence, approval, monitoring and reporting requirements are appropriately addressed at all levels of the organization.
- Key risk indicators (KRIs) provide an early indication of any adverse changes in risk exposure. Operating groups and corporate functions identify specific metrics related to their material operational risks. KRIs are used in monitoring operational risk profiles and their overall relation to our risk appetite, are subject to review and challenge by ORM, and are linked to thresholds that trigger management intervention.
- The Operational Risk Issue Management program identifies and proactively manages and mitigates issues that may prevent the bank from meeting its objectives, and is an indicator of a mature risk culture. Issue severity assessments provide management with the information necessary to prioritize resources in a risk-based manner. Issues can be identified by management, as well as by other risk frameworks, Corporate Audit or external regulators.
- Internal loss data serves as an important means of assessing our operational risk exposure and identifying opportunities for future risk prevention. In these assessments, internal loss data is analyzed and benchmarked against available external data. Material trends are regularly reported to the ORC, RMC and RRC so that preventative or corrective action can be taken where appropriate. BMO is a member of the Operational Risk Data Exchange Association, the American Bankers Association and other national and international associations of banks that share loss data information anonymously to assist in risk identification, assessment and modelling.
- The Top and Emerging Operational Risks program identifies the internal and external operational risks for the bank, informed by both bottom-up and top-down inputs. The program provides a baseline for discussion that complements knowledge and discussion at the senior leader level, resulting in actions determined by an alignment of strategic direction and prioritized top and emerging risks.
- BMO's Scenario Analysis program assesses key risks and critical business processes to inform risk measurement and risk management. Scenarios help management identify and understand the impact of large-scale events, including events that have a low frequency of occurrence but a high severity of impact, as well as environmental stresses on the business, and identify any mitigation actions or controls that will help manage tail risks.
- BMO's operational risk management training programs seek to ensure that our employees are qualified and equipped to execute the ORMF consistently, effectively and efficiently.
- Effective business continuity management prepares us to maintain, manage and recover critical operations and processes in the event of a business disruption, thereby minimizing any adverse effects on our customers and other stakeholders.
- BMO's Corporate Risk & Insurance team provides a second level of mitigation for certain operational risk exposures. We purchase insurance when required by law, regulation or contractual agreement, and when it is economically attractive and practicable to mitigate our risks, in order to provide adequate protection against unexpected material loss.

A primary objective of the ORMF, and our implementation and oversight of this framework and its provisions, is to ensure that our operational risk profile is consistent with our risk appetite and supported by adequate capital.

Cyber Security Risk

Information security is integral to BMO's business activities, brand and reputation. We face common banking information security risks, given our reliance on the internet and our pervasive use of advanced digital technologies to process data, including the threat of potential data loss, hacking, loss or exposure of customer or employee information, identity theft and corporate espionage, as well as the possibility of denial of service resulting from efforts targeted at causing system failure and service disruption. We continue to evolve our capabilities and increase our ongoing investments in our Financial Crimes Unit, which is the first of its kind among our Canadian peers, bringing together cyber defences, fraud and physical security functions, as well as subject matter experts across the lines of business and business functional groups. In addition, we are enhancing our processes to make them more cyber resilient, while also enhancing our ability to prevent, detect and manage cyber security threats. We continue to benchmark and review best practices across peer companies and other industries, conduct third-party assessments of our controls, evaluate the effectiveness of our key controls, develop new controls, and invest in both technology and human resources. We also work with information security and software suppliers to bolster our internal resources and technology capabilities in order to improve our ability to remain resilient in a rapidly evolving threat landscape.

Anti-Money Laundering

Compliance with all Anti-Money Laundering, Anti-Terrorist Financing (AML/ATF) and Sanctions Measures is an integral part of safeguarding BMO, our customers and the communities in which we operate. BMO is committed to managing AML/ATF and sanctions risks prudently, and complying with all legal and regulatory requirements. Risks related to non-compliance with these requirements can include enforcement action, legal action and damage to our reputation. Our AML/ATF and sanctions compliance program promotes effective governance and oversight across all BMO businesses, so that we are able to take appropriate measures to prevent money laundering, terrorist financing and sanctioned activity, which include the use of analytics, technology and professional expertise in order to deter, detect and report suspicious activity. Recent amendments to Canada's AML/ATF regime that come into effect in June 2021 are intended to improve the regime's effectiveness and further align it with international standards. These amendments increase the amount of data required to be collected and expand mandatory reporting, which requires modifications to customer, transaction, and record management systems and processes. BMO is committed to making the changes necessary to comply with these new regulatory requirements.

Model Risk

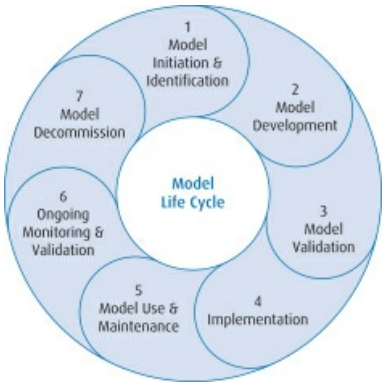
Model risk is the potential for adverse consequences following from decisions that are based on incorrect or misused model results. These adverse consequences can include financial loss, poor business decision-making or damage to reputation.

Model risk arises from the use of quantitative tools that apply statistical, mathematical, economic or other quantitative techniques to process input data and generate quantitative estimates. BMO uses models ranging from very simple models that produce straightforward estimates to highly sophisticated models that value complex transactions or generate a broad range of forward-looking estimates. The results from these models are used to inform business, risk and capital management decision-making, and to assist in making daily lending, trading, underwriting, funding, investment and operational decisions.

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

Model Risk Management Framework

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



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

The Model Risk group is responsible for the development and maintenance of the Model Risk Management Framework, and for ensuring that the framework is compliant with regulatory expectations, as well as for oversight of the effectiveness of our model processes, our model inventory, and the overall aggregation, assessment and reporting of model risk. The Model Risk Management Committee (MRMC), a sub-committee of the RMC, is a cross-functional group representing all key stakeholders across the enterprise. The MRMC meets regularly to help direct the bank's use of models, to oversee the development, implementation and maintenance of the Model Risk Management Framework, to provide effective challenge and to discuss governance of the enterprise's models.

Outcomes Analysis and Back-Testing

Once models are validated, approved and in use, they are subject to ongoing monitoring and outcomes analysis at varying frequencies. As a key component of outcomes analysis, back-testing compares model results against actual observed outcomes. Variances between model forecasts and actual observed outcomes are measured against defined risk materiality thresholds. To ensure that variances remain within the defined tolerance range, actions such as model review and parameter recalibration are taken. Performance is assessed by analyzing model overrides and tests conducted during model development. This analysis serves to confirm the validity of a model's performance over time, which helps to ensure that appropriate controls are in place in order to address identified issues and enhances a model's overall performance.

All models used within BMO are subject to validation and ongoing monitoring, and are used in accordance with our framework. The framework applies to a wide variety of models, ranging from market, credit and operational risk models to stress testing, pricing and valuation, and anti-money laundering models.

Operational Risk Measurement

BMO currently uses the Advanced Measurement Approach (AMA), a risk-sensitive capital model, in conjunction with the Standardized Approach in certain areas, to determine both regulatory capital and economic capital requirements for managing operational risk. The AMA Capital Model employs a loss distribution approach along with four elements that support the measurement of our operational risk exposure, as required by OSFI. Internal and external loss data are used as inputs for the AMA Capital Model and, based on shared attributes, are grouped into cells that include operating group, business activity and event type. Minimum enterprise operational risk capital is determined at a specific upper confidence limit of the enterprise total loss distribution. Business environment and internal control factors are used for post-modelling adjustments, and these are subject to

regular review in order to identify and understand risk drivers and to confirm consistency in application across the enterprise. Scenarios are applied to verify the distributions and correlations used to model capital. Beginning in fiscal 2020, BMO, along with the other AMA-approved banks, will transition to the Standardized Approach for determining enterprise operational risk regulatory capital requirements, and BMO does not expect any impact on capital requirements related to this transition. It is expected that BMO will implement the new Standardized Measurement Approach as part of the final Basel III reforms, which will replace the current Advanced and Standardized Approaches for operational risk regulatory capital requirements.

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

Legal and Regulatory Risk

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

The success of BMO's business relies in part on our ability to manage our exposure to legal and regulatory risk prudently. The financial services industry is highly regulated, and we anticipate intense ongoing scrutiny from our supervisors and strict enforcement of legal and regulatory requirements as governments and regulators around the world continue to implement reforms intended to strengthen the stability of the financial system. Banks globally continue to be subject to fines and penalties for a number of regulatory and conduct issues. As rulemaking and supervisory expectations evolve, we monitor developments to enable BMO to respond to and implement any required changes.

Under the direction of BMO's General Counsel, our Legal & Regulatory Compliance Group maintains enterprise-wide frameworks that identify, measure, manage, monitor and report on legal and regulatory issues. We identify applicable laws and regulations and potential risks, recommend mitigation strategies and actions, conduct internal investigations, and oversee legal proceedings and enforcement actions. We are subject to legal proceedings arising in the ordinary course of business, and the unfavourable resolution of any such legal proceedings could have a material adverse effect on our financial results and damage our reputation. We are required to disclose material legal proceedings to which we are a party. Our disclosure controls and procedures are designed to provide reasonable assurance that all relevant information is gathered and reported to senior management on a timely basis so that appropriate decisions can be made regarding public disclosure. In assessing the materiality of legal proceedings, factors considered include a case-by-case assessment of specific facts and circumstances, our past experience and the opinions of legal experts. Another area of focus is the oversight of fiduciary risk related to any of BMO's businesses that provide products or services giving rise to fiduciary duties, as well as policies and practices that address the responsibilities of a business to a customer (including service requirements and expectations, customer suitability determinations, disclosure obligations and communications).

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

As governments globally seek to curb corruption and counter its negative effects on political stability, sustainable economic development, international trade and investment and other areas, BMO's Anti-Corruption Office, through its global program, has articulated a set of key principles and activities necessary for the effective oversight of compliance with anti-corruption legislation in jurisdictions in which BMO operates. These include guidance on both identifying and avoiding corrupt practices and rigorously investigating allegations of corrupt activity.

Governments and regulators around the world continue to focus on anti-money laundering and related concerns, raising their expectations concerning the quality and efficacy of anti-money laundering programs and penalizing institutions that fail to meet these expectations. Under the direction of the Chief Anti-Money Laundering Officer, BMO's Anti-Money Laundering Office is responsible for the governance, oversight and assessment of principles and procedures designed to help ensure compliance with legal and regulatory requirements and internal risk parameters related to anti-money laundering, anti-terrorist financing and sanctions measures. For additional discussion regarding BMO's operational risk management practices with respect to anti-money laundering, refer to the Anti-Money Laundering section on page 101.

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

Heightened regulatory and supervisory scrutiny has a significant impact on the way we conduct business. Working with the operating groups and other Corporate Support Areas, Legal & Regulatory Compliance assesses and analyzes the implications of regulatory and supervisory changes. We devote substantial resources to the implementation of systems and processes required to comply with new regulations while also helping us meet the needs and demands of our customers. Failure to comply with applicable legal and regulatory requirements may result in legal proceedings, financial losses, regulatory sanctions, enforcement actions, an inability to execute our business strategies, a decline in investor and customer confidence, and damage to our reputation.

BMO recognizes that our business is built on our reputation for good conduct. In recognition of this, BMO has adopted a wide range of practices beyond our Code of Conduct to support the ethical conduct of our employees. We strive to deliver positive outcomes for our customers and contribute to the orderly operation of financial markets, while also maintaining a diverse and inclusive environment for our employees. Our Enterprise Culture and Conduct Framework sets out our approach to managing and mitigating potential misconduct. Misconduct is behaviour that falls short of legal, professional, internal conduct and ethical standards. Similar to our approach to other non-financial risks, this framework is supported by our enterprise Risk Management Framework and our focus on maintaining a strong risk culture. We report on various metrics related to culture and conduct and we engage with other control frameworks across the organization and in all of the jurisdictions in which we operate.

We continue to respond to other global regulatory developments, including capital and liquidity requirements under the Basel Committee on Banking Supervision (BCBS) global standards (Basel III), which we expect will put upward pressure on the amount of capital we are required to hold

over time. Other global regulatory developments include over-the-counter (OTC) derivatives reform, consumer protection measures and specific financial reforms, which are discussed in further detail below. For additional discussion of the regulatory developments relating to capital management and liquidity and funding risk, refer to the Enterprise-Wide Capital Management section starting on page 59 and the Liquidity and Funding Risk section starting on page 91. For a discussion of the impact of certain other regulatory developments, refer to: Critical Accounting Estimates – Income Taxes and Deferred Tax Assets on page 109; Tax Legislation and Interpretations on page 71 and Fiscal and Monetary Policies and Other Economic Conditions in the Countries in which We Conduct Business on page 70 regarding certain potential changes in fiscal policy and tax legislation; Risks That May Affect Future Results – Other Factors That May Affect Future Results – Brexit on page 71 regarding the impact of the United Kingdom's withdrawal from the European Union; and Risks That May Affect Future Results – Other Factors That May Affect Future Results – Benchmark Interest Rate Reform on page 71 regarding benchmark reform.

Bank Resolution and Bail-In – In June 2016, legislation required to implement a Bank Recapitalization (Bail-In) Regime was passed by the Canadian government in order to enhance Canada's bank resolution capabilities, in line with international efforts in this area. Final regulations implementing the Bail-In Regime took effect in September 2018. The related total loss-absorbing capacity (TLAC) requirements take effect in November 2021. For additional discussion of the Bail-In Regime and TLAC requirements, refer to the Enterprise-Wide Capital Management section starting on page 59 and the Liquidity and Funding Risk section starting on page 91.

Federal Financial Sector Legislation – In December 2018, the government of Canada passed legislation: amending the *Bank Act* to strengthen the financial consumer protection framework, with enhancements in the areas of corporate governance, responsible business conduct, complaints and customer redress (no effective date as yet); amending the *Financial Consumer Agency of Canada Act* to strengthen the mandate and powers of the Financial Consumer Agency of Canada (no effective date as yet); and enacting the *Pay Equity Act* to redress systemic gender-based discrimination by requiring federal public and private-sector employers to establish and maintain a pay equity plan within set time frames (no effective date as yet). Implementing regulations are required for other earlier amendments to the *Bank Act* to allow banks to undertake broader financial technology activities.

U.S. Regulatory Reform – In May 2018, the U.S. Congress passed the *Economic Growth, Regulatory Relief, and Consumer Protection Act* (EGRRCP), which made reforms to the *Dodd-Frank Wall Street Reform and Consumer Protection Act*, including raising the threshold for heightened prudential standards, and introduced changes to certain exemptions to restrictions on proprietary trading and the ownership and sponsorship of private investment funds by banks and their affiliates. In October 2019, the U.S. federal banking agencies finalized rules pursuant to EGRRCP that modify capital and liquidity requirements, single counterparty credit limits and enhanced prudential standards for bank holding companies and foreign banking organizations, including BMO. The bank continues to monitor EGRRCP rulemaking activities by applicable agencies.

Other Regulatory Initiatives Impacting Financial Services in Canada – Federal and provincial regulators continue to focus on issues relating to consumer protection, including with respect to seniors and retail investors, OTC derivatives and advisor conduct. The Department of Finance Canada is undertaking a consultation process regarding the merits of open banking, which would allow Canadian consumers and small businesses to direct federally regulated financial institutions to disclose their banking information through a secure mechanism to entities that meet information security and other requirements. Recent amendments to federal privacy legislation set out privacy breach reporting and notification requirements. For additional discussion regarding privacy, refer to the Risks That May Affect Future Results – Top and Emerging Risks That May Affect Future Results – Cyber Security, Information Security and Privacy Risk section in the Enterprise-Wide Risk Management section on page 68.

Derivatives Reform – G20 jurisdictions continue to implement new regulations as part of the OTC derivatives regulatory reform program. Margin requirements for non-centrally cleared derivatives have been adopted in a number of jurisdictions, including Canada, the European Union, Hong Kong, Singapore and the United States. Margin rules require the exchange of variation margin and initial margin, both of which are designed to secure performance on non-centrally cleared derivatives transactions between covered entities. BMO has been subject to variation margin rules since March 1, 2017, and to initial margin rules since September 1, 2019. BMO continues to monitor and prepare for the impact of other OTC derivatives regulatory changes relating to clearing, execution and business conduct rules.

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

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

Caution

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

Business Risk

Business risk is the potential for loss or harm as a result of the specific business activities of an enterprise and the effects these could have on its earnings.

Business risk encompasses the potential causes of earnings volatility that are distinct from credit, market or operational risk factors. The management of business risk identifies and addresses factors related to the risk that volumes will decrease or margins will shrink without the enterprise having the ability to compensate for these developments by cutting costs.

BMO faces many risks that are similar to those faced by non-financial firms, principally that our profitability, and hence value, may be eroded by changes in the business environment or by failures of strategy or execution. Sources of these risks include, but are not limited to, changing client expectations, heightened competition, technology-driven changes, adverse business developments and relatively ineffective responses to industry changes. For example, client retention can be influenced by a number of factors, including service levels, prices for products and services, delivery platforms, ease of access to products and services, the quality of the customer experience, our reputation and the actions of our competitors.

Within BMO, each operating group is responsible for controlling its respective business risk by assessing, managing and mitigating the risks arising from changes in business volumes and cost structures, among other factors.

Strategic Risk

Strategic risk is the potential for loss or harm due to changes in the external business environment and/or failure to respond appropriately to these changes as a result of inaction, ineffective strategies or poor implementation of strategies.

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

BMO's Office of Strategic Management (OSM) oversees our strategic planning process and works with the lines of business, along with ERPM, Finance and Corporate Support Areas, to identify, monitor and mitigate strategic risk across the enterprise. Our rigorous strategic management framework encourages a consistent approach to developing strategies and incorporates information linked to financial commitments.

The OSM works with the lines of business and key corporate stakeholders during the strategy development process to promote consistency and adherence to strategic management standards, including a consideration of the results of stress testing as an input into strategic decision-making. The potential impacts of changes in the business environment, such as broad industry trends and the actions of competitors, are considered as part of this process and inform strategic decisions within each of our lines of business. Enterprise and group strategies are reviewed with the Executive Committee and the Board of Directors annually in interactive sessions that challenge assumptions and strategies in the context of both the current and the potential future business environment.

Our ability to execute on the strategic plans developed by management influences our financial performance. If these strategic plans do not meet with success or if there is a change in the strategic plans, our earnings could grow at a slower pace or decline. Performance objectives established through the strategic management process are monitored regularly and reported on quarterly, using both leading and lagging indicators of performance, so that strategies can be reviewed and adjusted where necessary. Regular strategic and financial updates are also monitored closely in order to identify any significant emerging risk issues.

Environmental and Social Risk

Environmental and social risk is the potential for loss or harm resulting from environmental or social impacts or concerns, including climate change, related to BMO or its customers.

Environmental and social risk is often associated with credit, operational and reputation risk. Environmental and social risk involves a broad spectrum of topics and issues, such as: pollution and waste; energy, water and other resource usage; climate change; biodiversity; human rights; labour standards; community health, safety and security; land acquisition and involuntary resettlement; Indigenous peoples' rights and consultation; and cultural heritage.

Governance

BMO's Sustainability Council, chaired by BMO's General Counsel, is comprised of senior leaders from the lines of business and Corporate Support Areas across our organization, and provides oversight and leadership for our sustainability strategy. The Sustainability team is responsible for coordinating the development and maintenance of an enterprise-wide strategy that meets BMO's overarching environmental and social responsibilities. The Sustainability team works in partnership with the lines of business and Corporate Support Areas, including Risk, the Capital Markets Sustainable Finance team, and the BMO Global Asset Management Responsible Investment team, to manage environmental and social risk within our business, and works with external stakeholders to better understand the consequences and impacts of our operations and financing decisions.

BMO's Sustainability team also partners with the Procurement and Corporate Real Estate groups to establish environmental management processes. These groups are responsible for establishing and maintaining an operational environmental management system that is aligned with the framework set out in ISO 14001, and for setting objectives and targets that are related to aligning the bank's operations with its Environmental Policy.

To keep informed of emerging issues, we participate in global forums with our peers, maintain an open dialogue with our internal and external stakeholders, and monitor and evaluate policy and legislative changes in the jurisdictions in which we operate. BMO is a member of, and actively engaged in, sustainability-focused working groups of the United Nations Environment Programme – Finance Initiative (UNEP-FI), the Equator Principles Association and Canadian Bankers' Association.

BMO is a signatory to the United Nations Principles for Responsible Investment, a framework that encourages sustainable investing through the integration of environmental, social and governance considerations into investment decision-making and ownership practices.

Risk Management

As part of our enterprise risk management framework and credit risk management framework, we evaluate the environmental and social risks associated with credit and counterparty transactions and exposures. We have developed and implemented financing guidelines to address environmental and social risks for specific lines of business. To limit our potential exposure to clients' environmental risks, we apply enhanced due diligence to transactions with clients operating in environmentally sensitive industry sectors, and we avoid doing business with borrowers that have poor track records in environmental and social risk management. Transactions with significant associated environmental or social concerns may be escalated to BMO's Reputation Risk Management Committee for consideration. BMO has been a signatory to the Equator Principles since 2005 and applies its credit risk management framework to identify, assess and manage the environmental and social risk of transactions within its scope. We also apply environmental and social screening procedures to categorize and assess projects based on the magnitude of their potential impacts and risks. These principles have been integrated into our credit risk management framework.

Codes of Conduct and Human Rights

Our Board-approved Code of Conduct reflects our commitment to manage our business responsibly. We expect our suppliers to be aware of, understand and respect the principles of our Supplier Code of Conduct, which outlines our standards for integrity, fair dealing and sustainability. We publicly report under the United Kingdom *Modern Slavery Act 2015*, and our Supplier Code of Conduct reflects this legislation.

Climate Change

BMO supports the recommendations of the Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD). BMO tracks and analyzes its own Scope 1 and Scope 2 greenhouse gas (GHG) emissions, as well as Scope 3 GHG emissions associated with our waste generation and business travel.

BMO has initiated a climate change scenario analysis program, in line with the TCFD recommendations. In fiscal 2019, we conducted a climate scenario analysis pilot project focused on transition risk analysis, and we plan to expand such analysis to other sectors and risk types, including physical risk. Further information can be found in BMO's Sustainability Report [(1)].

Reporting

We publicly report on our environmental and social performance and targets in our annual Sustainability Report, and on our website. Selected environmental and social indicators in the Sustainability Report are assured by a third party. BMO also provides climate-related disclosures in line with the TCFD framework in our Sustainability Report and related public disclosures, which can be found on our website.

(1) In previous years, the title of the Sustainability Report was the BMO Environmental, Social and Governance Report.

Reputation Risk

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

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

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

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

Our corporate governance practices and enterprise risk management framework have various controls in place that support the management of risks to our reputation. We seek to identify activities or events that could impact our reputation, including large-scale impact through the media or otherwise. Where we identify a potential risk to our reputation, we take steps to assess and manage that risk. Instances of significant or heightened exposure to reputation risk are escalated to BMO's Reputation Risk Management Committee for review. As misconduct can impact our reputation, the Chief Ethics and Conduct Officer, who is responsible for enterprise-wide reporting on corporate culture and our employees' conduct, escalates instances of misconduct involving significant reputation risk to BMO's Reputation Risk Management Committee, as appropriate.

Accounting Matters and Disclosure and Internal Control

Critical Accounting Estimates

The most significant assets and liabilities for which we must make estimates include: allowance for credit losses; financial instruments measured at fair value; pension and other employee future benefits; impairment of securities; income taxes and deferred tax assets; goodwill and intangible assets; insurance-related liabilities; and provisions, including legal provisions. We make judgments in assessing whether substantially all risks and rewards have been transferred in respect of transfers of financial assets and whether we control structured entities (SEs). These judgments are discussed in Notes 6 and 7 on pages 159 and 160, respectively, of the consolidated financial statements. Note 17 on page 179 of the consolidated financial statements provides further details on the estimates and judgments made in determining the fair value of financial instruments. If actual results were to differ from our estimates, the impact would be recorded in future periods. We have established detailed policies and control procedures that are intended to ensure the judgments we make in estimating these amounts are well controlled, independently reviewed and consistently applied from period to period. We believe that our estimates of the value of BMO's assets and liabilities are appropriate.

For a more detailed discussion of the use of estimates, refer to Note 1 on page 142 of the consolidated financial statements.

Allowance for Credit Losses

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

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

Our total allowance on credit losses as at October 31, 2019 was $2,094 million ($1,870 million as at October 31, 2018), comprised of an allowance on performing loans of $1,609 million and an allowance on impaired loans of $485 million ($1,473 million and $397 million, respectively, as at October 31, 2018). The allowance on performing loans increased $136 million year over year, primarily driven by portfolio growth and changes in scenario weighting, partially offset by changes in the economic outlook.

As at October 31, 2019, our base case economic forecast depicts a Canadian economy that grows by a moderate 1.6% on average over the forecast period, slightly below long-run potential growth, raising the unemployment rate modestly to 6.0% in 2021. The U.S. economy grows slightly faster than the Canadian economy, averaging 1.8% over the forecast period, supported by healthier consumer spending but challenged by restrictive and uncertain trade policies. Overall, the base case forecast is modestly weaker than a year ago. If we assume a 100% base case economic forecast and include the impact of loan migration by restaging, with other assumptions held constant, including the application of experienced credit judgment, the allowance on performing loans would be approximately $1,325 million as at October 31, 2019 ($1,250 million as at October 31, 2018), compared with the reported allowance on performing loans of $1,609 million ($1,473 million as at October 31, 2018).

As at October 31, 2019, our adverse case economic forecast depicts a typical recession in Canada and the United States occurring in the first year of our forecast horizon, with the economy contracting approximately 3% over four quarters and the unemployment rate rising more than 3% to 9.1% in Canada and 6.8% in the United States. This is initially followed by a steady recovery through the end of the projection period. The adverse case forecast is largely consistent with the adverse forecast used a year ago, with the exception of unemployment rates in Canada and the United States, which are forecasted to be moderately lower compared to last year's scenario. If we assume a 100% adverse economic forecast and include the impact of loan migration by restaging, with other assumptions held constant, including the application of experienced credit judgment, the allowance on performing loans would be approximately $2,800 million as at October 31, 2019 ($2,650 million as at October 31, 2018), compared with the reported allowance on performing loans of $1,609 million ($1,473 million as at October 31, 2018).

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 that are often unequally weighted, and those weightings will change over time.

MANAGEMENT'S DISCUSSION AND ANALYSIS

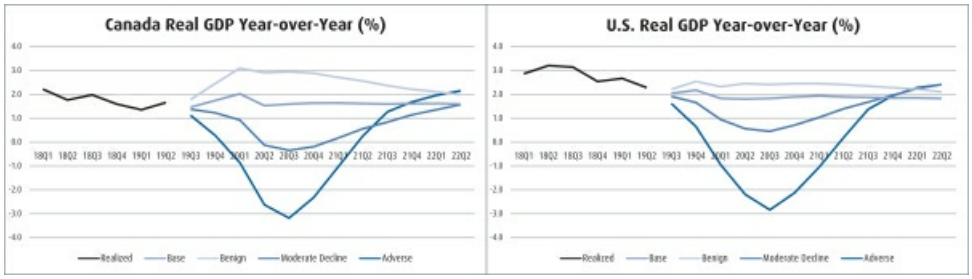
The following table shows the key economic variables we use to estimate our allowance on performing loans during the forecast period. The values shown represent the end-of-period national average values for the first 12 months and then the national average for the remaining horizon. While the values disclosed below are national variables, we use regional variables in our underlying models where considered appropriate.

As at October 31	Benign scenario				Base scenario				Adverse scenario			
	First 12 months		Remaining horizon (1)		First 12 months		Remaining horizon (1)		First 12 months		Remaining horizon (1)	
	2019	2018	**2019**	2018	**2019**	2018	**2019**	2018	**2019**	2018	**2019**	2018
Real gross domestic product growth rates (2)												
Canada	**2.9%**	3.1%	**2.3%**	2.4%	**1.6%**	1.8%	**1.6%**	1.6%	**(3.2)%**	(3.2)%	**0.8%**	0.8%
United States	**2.4%**	2.9%	**2.3%**	1.9%	**1.8%**	2.4%	**1.9%**	1.6%	**(2.9)%**	(2.9)%	**0.9%**	0.9%
Corporate BBB 10-year spread												
Canada	**2.0%**	2.0%	**2.1%**	2.1%	**2.3%**	2.3%	**2.3%**	2.3%	**4.7%**	4.7%	**3.9%**	3.9%
United States	**1.8%**	1.8%	**2.0%**	2.0%	**2.4%**	2.2%	**2.4%**	2.3%	**4.3%**	4.3%	**3.4%**	3.5%
Unemployment rates												
Canada	**5.1%**	5.4%	**4.9%**	5.2%	**5.7%**	5.6%	**5.9%**	5.6%	**8.9%**	9.3%	**8.9%**	9.3%
United States	**3.3%**	3.2%	**3.2%**	3.1%	**3.7%**	3.6%	**3.8%**	3.7%	**6.5%**	6.7%	**6.6%**	6.8%
Housing price index												
Canada (3)	**3.7%**	2.4%	**3.6%**	2.6%	**1.8%**	1.4%	**2.5%**	1.8%	**(12.8)%**	(12.8)%	**(3.2)%**	(3.2)%
United States (4)	**4.5%**	5.1%	**4.1%**	4.3%	**3.0%**	3.6%	**2.7%**	3.0%	**(7.3)%**	(7.3)%	**(1.2)%**	(1.2)%

(1) The remaining forecast period is two years.
(2) Real gross domestic product is based on year-over-year growth.
(3) In Canada, we use the HPI Benchmark Composite.
(4) In the United States, we use the National Case-Shiller House Price Index.

As an additional example of how the allowance could vary under different circumstances, a scenario in which we forecast a moderate decline in the economy is produced, in conjunction with the benign, base and adverse cases used in our calculation of ECL. In this illustrative scenario, we assume that the Canadian economy grows by an average of 0.8% over the forecast period, resulting in the unemployment rate peaking at 7.5% in late 2021. In this modest recession, real GDP contracts moderately for three quarters because of weak global demand and lower commodity prices, before staging a steady recovery in response to lower interest rates, a weaker currency and fiscal stimulus. In addition, the U.S. economy grows a modest 1.5% on average over the forecast period with only one quarter of zero growth, less than long-run potential, lifting the unemployment rate to 4.9% in early 2021. If we assume a 100% moderate economic decline forecast and include the impact of loan migration by restaging, with other assumptions held constant, including the application of experienced credit judgment, the allowance on performing loans would be approximately $1,775 million as at October 31, 2019. This compares with the reported allowance on performing loans of $1,609 million.

As discussed above, real GDP is the basis for measuring changes in our economic forecasts, acting as an important determinant for many of the other key economic and market variables, although the allowance is not sensitive to this variable alone. The charts below plot the change in the GDP forecast for Canada and the United States. to illustrate how it moves over the forecast horizon under different economic scenarios, including the illustrative moderate economic decline scenario.



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 for performing loans that have experienced a significant increase in credit risk since origination (Stage 2). Under our current probability-weighted scenarios and based on the current risk profile of our loan exposures, if all our performing loans were in Stage 1, our models would generate an allowance on performing loans of approximately $1,050 million ($1,000 million in 2018), compared with the reported allowance on performing loans of $1,609 million ($1,473 million in 2018).

Our provision for credit losses (PCL) in 2019 was $872 million ($662 million in 2018), comprised of a $751 million provision ($700 million in 2018) on impaired loans and a provision of $121 million (recovery of $38 million in 2018) on performing loans. The PCL on performing loans in the current year was primarily driven by balance growth and changes to scenario weights. A provision was recorded for performing loans in the current year, compared with a recovery in the prior year, reflecting higher loan growth, as well as higher provisions from portfolio migration, changes in the economic outlook and scenario weights during 2019, compared with the prior year. Additional information on the process and methodology for determining the allowance on credit losses can be found in the discussion of Credit and Counterparty Risk on page 78, as well as in Note 4 on page 151 of the consolidated financial statements.

Financial Instruments Measured at Fair Value

We record assets and liabilities classified as trading, assets and liabilities designated at fair value, derivatives, certain equity and debt securities and securities sold but not yet purchased at fair value. Fair value represents our estimate of the amount we would receive or would be required to pay in the case of a liability, in an orderly transaction between willing parties at the measurement date. We employ a fair value hierarchy to categorize the inputs we use in valuation techniques to measure fair value. The extent of our use of quoted market prices (Level 1), internal models with observable market information (Level 2) and internal models without observable market information (Level 3) in the valuation of loans, securities, derivative assets and liabilities, and liabilities recorded at fair value as at October 31, 2019, as well as a sensitivity analysis of our Level 3 financial instruments, is disclosed in Note 17 on page 179 of the consolidated financial statements.

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

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

For instruments that are valued using models, we consider all reasonable available information and maximize the use of observable market data. When VPC determines that the model estimates do not reflect fair value, we incorporate certain adjustments to establish fair values. These fair value adjustments take into account the estimated impact of credit risk, liquidity risk and other items, including closeout costs. For example, the credit risk valuation adjustment for derivative financial instruments incorporates credit risk into our determination of fair values by taking into account factors such as the counterparty's credit rating, the duration of the instrument and changes in credit spreads. We also incorporate an estimate of the implicit funding costs borne by BMO for over-the-counter derivative positions (the funding valuation adjustment).

The methodologies used for calculating these adjustments are reviewed on an ongoing basis to ensure that they remain appropriate. Changes in methodologies are made only when we believe that a change will result in better estimates of fair value.

The Valuation Steering Committee is BMO's senior management valuation committee. It meets at least monthly to address the more challenging material valuation issues related to BMO's portfolios, approves valuation adjustments and methodology changes, and acts as a key forum for the discussion of positions categorized as Level 3 for financial reporting purposes and their inherent uncertainty.

Valuation Adjustments

(Canadian $ in millions)

As at October 31	**2019**	2018
Credit risk	**91**	55
Funding risk	**40**	19
Liquidity risk	**56**	79
Total	**187**	153

Valuation adjustments increased in 2019, primarily due to the increased size of the trading book.

Pension and Other Employee Future Benefits

Our pension and other employee future benefits expense is calculated by independent actuaries using assumptions determined by management. If actual experience were to differ from the assumptions used, the difference would be recognized in other comprehensive income.

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

Additional information regarding our accounting for pension and other employee future benefits, including a sensitivity analysis for key assumptions, is included in Note 21 on page 190 of the consolidated financial statements.

Impairment of Securities

We have investments in associates and joint ventures, which are classified as other securities. We review these investments at each quarter-end reporting period to identify and evaluate instruments that show indications of possible impairment.

For these other securities, a significant or prolonged decline in the fair value of a security to an amount below its cost is objective evidence of impairment.

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

Additional information regarding our accounting for debt securities measured at amortized cost or FVOCI, other securities, allowance for credit losses and the determination of fair value is included in Note 3 on page 147 and Note 17 on page 179 of the consolidated financial statements.

Income Taxes and Deferred Tax Assets

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

The provision for income taxes is calculated based on the expected tax treatment of transactions recorded in either our Consolidated Statement of Income or our 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 income tax assets will be realized. The factors we use 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.

If income tax rates increase or decrease in future periods in a jurisdiction, our provision for income taxes for future periods will increase or decrease accordingly. Furthermore, our deferred tax assets and liabilities will increase or decrease as income tax rates increase or decrease, respectively, and will result in an income tax impact. For example, the reduction in the U.S. federal tax rate from 35% to 21% as a result of the enactment of the U.S. *Tax Cuts and Jobs Act* in 2018 resulted in a $425 million one-time non-cash tax charge to our net income in 2018 and a corresponding reduction in our net deferred tax assets.

In fiscal 2019, we were reassessed by the Canada Revenue Agency (CRA) for additional income taxes and interest in an amount of approximately $250 million in respect of certain 2014 Canadian corporate dividends. In prior fiscal years, we were reassessed by the CRA for additional income taxes and interest of approximately $361 million for certain Canadian corporate dividends from 2011 to 2013. In its reassessments, the CRA denied dividend deductions on the basis that the dividends were received as part of a "dividend rental arrangement". The tax rules cited by the CRA in the reassessments were prospectively addressed in the 2015 and 2018 Canadian federal budgets. In the future, we expect to be reassessed for significant additional taxes for similar activities in 2015 and subsequent years. We remain of the view that our tax filing positions were appropriate and intend to challenge any reassessment. If our challenge is unsuccessful, the additional expense would negatively impact our net income.

Additional information regarding our accounting for income taxes is included in Note 22 on page 194 of the consolidated financial statements.

Goodwill and Intangible Assets

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

Fair value less costs to sell was used to perform the impairment test in all periods. In determining fair value less costs to sell, we employ a discounted cash flow model, consistent with that 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 our CGUs in a different manner. Management must exercise judgment and make assumptions in determining fair value, and differences in judgments and assumptions could affect the determination of fair value and any resulting impairment write-down. As at October 31, 2019, the estimated fair value of each of our CGUs was greater than carrying value.

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

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

Additional information regarding the composition of goodwill and intangible assets is included in Note 11 on page 172 of the consolidated financial statements.

Insurance-Related Liabilities

Insurance claims and policy benefit liabilities represent current claims and estimates of future insurance policy obligation liabilities. Liabilities for life insurance contracts are determined using the Canadian Asset Liability Method, which incorporates best-estimate assumptions for mortality, morbidity, policy lapses, surrenders, future investment yields, policy dividends, administration costs and margins for adverse deviation. These assumptions are reviewed at least annually and updated to reflect actual experience and market conditions. The most significant potential impact on the valuation of these liabilities would be the result of a change in the assumptions for interest rates and equity market values. If the assumed future interest rates was to increase by one percentage point, earnings before tax would increase by approximately $27 million. A reduction of one percentage point would lower earnings before tax by approximately $25 million. If the assumed equity market value increased by 10%, earnings before tax would increase by approximately $54 million. A reduction of 10% would lower earnings before tax by approximately $57 million.

Additional information on insurance-related liabilities is provided in Note 14 on page 175 of the consolidated financial statements, and information on insurance risk is provided in the Insurance Risk section on page 91.

Provisions

The bank and its subsidiaries are involved in various legal actions in the ordinary course of business.

Provisions are recorded at the best estimate of the amount required to settle any obligation related to these legal actions as at the balance sheet date, taking into account the risks and uncertainties surrounding the obligation. Factors considered in making the estimate include a case-by-case assessment of specific facts and circumstances, our past experience and the opinions of legal experts. Management and internal and external experts are involved in estimating any amounts that may be required. The actual costs of resolving these claims may be substantially higher or lower than the amounts of the provisions.

Additional information regarding provisions is included in the Legal and Regulatory Risk section on pages 103 to 104 and in Note 24 on page 197 of the consolidated financial statements.

Transfers of Financial Assets and Consolidation of Structured Entities

We sell Canadian mortgage loans 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 program. We assess whether substantially all of the risks and rewards of the loans have been transferred in order to determine if they qualify for derecognition. Since we continue to be exposed to substantially all of the prepayment, interest rate and/or credit risk associated with the securitized loans, they do not qualify for derecognition. We continue to recognize the loans, and we recognize the related cash proceeds as secured financing in our Consolidated Balance Sheet. Additional information concerning the transfer of financial assets is included on page 66, as well as in Note 6 on page 159 of the consolidated financial statements.

In the normal course of business, the bank enters into arrangements with SEs. We are required to consolidate an SE if we determine that we control the SE. We control an SE when we have power over the entity, exposure or rights to variable returns from our investment and the ability to exercise power to affect the amount of our returns.

Additional information concerning our interests in SEs is included on page 67, as well as in Note 7 on page 160 of the consolidated financial statements.

Caution

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

Changes in Accounting Policies in 2019

Effective November 1, 2018, we adopted IFRS 15, *Revenue from Contracts with Customers* (IFRS 15), which addresses revenue recognition principles, and provides a robust framework for recognizing and measuring revenue arising from contracts with customers. We elected to present prior periods, as if IFRS 15 had always been applied. IFRS 15 also introduces new disclosure requirements related to the recognition of IFRS 15 revenues by operating segment. Note 1 on page 142 of the consolidated financial statements provides details on the impact of the new standard.

Future Changes in Accounting Policies

Effective November 1, 2019, we will adopt IFRS 16, *Leases* (IFRS 16), which provides guidance whereby lessees will recognize a liability for the present value of the future lease payments and record a corresponding asset on the balance sheet for most leases. When we adopt IFRS 16, we will recognize the cumulative effect of any changes in opening retained earnings, with no changes to prior periods. The impact of IFRS 16 will increase our assets by approximately $2.0 billion, liabilities by approximately $2.1 billion and will decrease equity by approximately $100 million ($75 million after tax). We estimate that the adoption of IFRS 16 will also decrease our CET1 Ratio by up to approximately 10 bps. Further information on the adoption of IFRS 16 is provided in Note 1 on page 142 of the consolidated financial statements.

The IASB published Phase I of its amendments to IFRS 9, *Financial Instruments* and IAS 39, *Financial Instruments: Recognition and Measurement*, as well as IFRS 7, *Financial Instruments: Disclosures* in September 2019, to provide relief from the potential effects of the uncertainty arising from Interbank Offered Rate (IBOR) reform, focusing in particular on the period prior to replacement of interbank offered rates. The amendments modify hedge accounting requirements, allowing us to assume that the interest rate benchmark on which the cash flows of the hedged item and the hedging instrument are based are not altered as a result of IBOR reform, thereby allowing hedge accounting to continue. Mandatory application of the amendments ends at the earlier of when the uncertainty regarding the timing and amount of interest rate benchmark-based cash flow is no longer present and the discontinuation of the hedging relationship. Phase II of the IASB's project on IBOR is underway and will address the transition to IBOR reform. The Phase I amendments are effective for our fiscal year beginning November 1, 2020, with early adoption permitted. We are in the process of assessing our inventory of IBOR-based instruments and related hedge accounting relationships to evaluate the impact of these amendments on our financial results. We provide disclosure on our current hedging relationships in Note 8 on page 162 of the consolidated financial statements.

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*. In June 2019, the IASB published an Exposure Draft that proposes to defer the effective date by one year, which would change the anticipated effective date for the bank to November 1, 2022. We are currently assessing the impact of the standard on our future financial results.

Further information on the new standards and amendments to existing standards that will be effective for the bank in future reporting periods is described in Note 1 on page 142 of the consolidated financial statements.

Caution

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

Transactions with Related Parties

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

Details of our investments in joint ventures and associates and the compensation of key management personnel are disclosed in Note 27 on page 204 of the consolidated financial statements.

MANAGEMENT'S DISCUSSION AND ANALYSIS

Shareholders' Auditors' Services and Fees

Review of Shareholders' Auditors

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

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

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

In 2019, an annual review of the shareholders' auditors was completed. Input was sought from ACRC members and management on areas such as communication effectiveness, industry insights, audit performance, independence and skepticism. In addition, the ACRC performs a comprehensive review of the shareholders' auditors every five years, with the last review performed in 2015. The comprehensive review was based on the recommendations of the CPA of Canada and the CPAB. These reviews focused on: (i) the independence, objectivity and professional skepticism of the shareholders' auditors; (ii) the quality of the engagement team; and (iii) the quality of communications and interactions with the shareholders' auditors. As a result of these reviews, the ACRC was satisfied with the performance of the shareholders' auditors.

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

Pre-Approval Policies and Procedures

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

Shareholders' Auditors' Fees

Aggregate fees paid to the shareholders' auditors during the fiscal years ended October 31, 2019 and 2018 were as follows:

(Canadian $ in millions)

Fees (1)	**2019**	2018
Audit fees	**19.6**	18.2
Audit-related fees (2)	**2.8**	2.2
All other fees (3)	**1.9**	2.1
Total	**24.3**	22.5

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

(2) Audit-related fees for 2019 and 2018 relate to fees paid for accounting advice, specified procedures on our Proxy Circular and other specified procedures.

(3) All other fees for 2019 and 2018 relate primarily to fees paid for reviews of compliance with regulatory requirements for financial information and reports on internal controls over services provided by various BMO Financial Group businesses. They also include the costs of translation services.

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

Disclosure Controls and Procedures

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

As at October 31, 2019, under the supervision of the CEO and the CFO, BMO Financial Group's (BMO) management evaluated the effectiveness of the design and operation of our disclosure controls and procedures, as defined in Canada by *National Instrument 52-109, Certification of Disclosure in Issuers' Annual and Interim Filings* , and in the United States by Rule 13a-15(e) under the *Securities Exchange Act of 1934* (the Exchange Act). Based on this evaluation, the CEO and the CFO have concluded that our disclosure controls and procedures were effective, as at October 31, 2019.

Internal Control over Financial Reporting

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

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

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

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

BMO's management, under the supervision of the CEO and the CFO, has evaluated the effectiveness of internal control over financial reporting using the framework and criteria established in *Internal Control – Integrated Framework*, issued by the Committee of Sponsoring Organizations of the Treadway Commission in May 2013 (2013 COSO Framework). Based on this evaluation, management has concluded that internal control over financial reporting was effective as at October 31, 2019.

At the request of BMO's Audit and Conduct Review Committee, KPMG LLP (the shareholders' auditors), an independent registered public accounting firm, has conducted an audit of the effectiveness of our internal control over financial reporting. The audit report states in its conclusion that, in KPMG's opinion, BMO maintained, in all material respects, effective internal control over financial reporting as at October 31, 2019, in accordance with the criteria established in the 2013 COSO Framework. This audit report appears on page 136.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting during the year ended October 31, 2019 that have materially affected, or are reasonably likely to materially affect, the adequacy and effectiveness of our internal control over financial reporting.

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Enhanced Disclosure Task Force

On October 29, 2012, the Enhanced Disclosure Task Force (EDTF) of the Financial Stability Board published its first report, Enhancing the Risk Disclosures of Banks. We support the recommendations issued by EDTF for the provision of high-quality, transparent risk disclosures.

Disclosures related to the EDTF recommendations are detailed below.

General

1 Present all risk-related information in the Annual Report, Supplementary Financial Information and Supplementary Regulatory Capital Disclosure, and provide an index for easy navigation.

Annual Report: Risk-related information is presented in the Enterprise-Wide Risk Management section on pages 68 to 106.

Supplementary Financial Information: A general index is provided in our Supplementary Financial Information.

Regulatory Supplementary Capital Information: A general index is provided in our Supplementary Capital Information.

2 Define the bank's risk terminology and risk measures and present key parameters used.

Annual Report: Specific risk definitions and key parameters underpinning BMO's risk reporting are provided on pages 78 to 106.

A glossary of financial terms (including risk terminology) can be found on pages 208 to 209.

3 Discuss top and emerging risks for the bank.

Annual Report: BMO's top and emerging risks are discussed on pages 68 to 71.

4 Outline plans to meet new key regulatory ratios once the applicable rules are finalized.

Annual Report: We outline BMO's plans to meet new regulatory ratios on pages 61 and 97.

Risk Governance

5 Summarize the bank's risk management organization, processes, and key functions.

Annual Report: BMO's risk management organization, processes and key functions are summarized on pages 72 to 77.

6 Describe the bank's risk culture.

Annual Report: BMO's risk culture is described on page 75.

7 Describe key risks that arise from the bank's business model and activities.

Annual Report: Descriptions of key risks arising from the bank's business models and activities are provided on pages 73 and 76.

8 Describe the use of stress testing within the bank's risk governance and capital frameworks.

Annual Report: BMO's stress testing process is described on page 77.

Capital Adequacy and Risk-Weighted Assets (RWA)

9 Provide minimum Pillar 1 capital requirements.

Annual Report: Pillar 1 capital requirements are described on pages 59 to 63.

10 Summarize information contained in the composition of capital templates adopted by the Basel Committee.

Annual Report: An abridged version of the regulatory capital template is provided on page 62.

Regulatory Supplementary Capital Information: Pillar 3 disclosure is provided on pages 3 to 5. A Main Features template can be found on BMO's website at www.bmo.com under Investor Relations and Regulatory Filings.

11 Present a flow statement of movements in regulatory capital, including changes in Common Equity Tier 1, Additional Tier 1, and Tier 2 capital.

Regulatory Supplementary Capital Information: Flow Statement of Basel III Regulatory Capital is provided on page 6.

12 Discuss capital planning within a more general discussion of management's strategic planning.

Annual Report: BMO's capital planning process is discussed under Capital Management Framework on page 59.

13 Provide granular information to explain how RWA relate to business activities.

Annual Report: A diagram of BMO's risk exposure, including RWA by operating group, is provided on page 64.

Regulatory Supplementary Capital Information: RWA by operating group is provided on page 11.

14 Present a table showing the capital requirements for each method used for calculating RWA.

Annual Report: Regulatory capital requirement, as a percentage of RWA, is outlined on pages 60 to 61.

Information about significant models used to determine RWA is provided on pages 78 to 81.

Regulatory Supplementary Capital Information: A table showing RWA by model approach and by risk type is provided on page 11.

15 Tabulate credit risk in the banking book for Basel asset classes.

Regulatory Supplementary Capital Information: Credit exposures by internal rating grades are provided on pages 21 to 30. Wholesale and retail credit exposures by model, geography and asset class are provided on pages 33 to 35.

16 Present a flow statement that reconciles movements in RWA by credit risk and market risk.

Regulatory Supplementary Capital Information: RWA flow statements are provided on pages 32 and 57.

17 Describe the bank's Basel validation and back-testing process.

Annual Report: BMO's Basel validation and back-testing process for credit and market risk is described on page 102.

Regulatory Supplementary Capital Information: Estimated and actual loss parameter information is provided on page 58. Back-testing of probability of default by risk profile is provided on pages 59 to 62.

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Liquidity

18 **Describe how the bank manages its potential liquidity needs and the liquidity reserve held to meet those needs.**

Annual Report: BMO's potential liquidity needs and the liquidity reserve held to meet those needs are described on pages 91 to 97.

Funding

19 **Summarize encumbered and unencumbered assets in a table by balance sheet category.**

Annual Report: An Asset Encumbrance table is provided on page 94.

Supplementary Financial Information: The Asset Encumbrance table by currency is provided on page 33.

20 **Tabulate consolidated total assets, liabilities and off-balance sheet commitments by remaining contractual maturity.**

Annual Report: Contractual Maturities information and tables are provided on pages 98 to 99.

21 **Discuss the bank's sources of funding and describe the bank's funding strategy.**

Annual Report: BMO's sources of funding and funding strategy are described on pages 96 to 97.

A table showing the composition and maturity of wholesale funding is provided on page 97.

Market Risk

22 **Provide a breakdown of balance sheet positions into trading and non-trading market risk measures.**

Annual Report: A table linking balance sheet items to market risk measures is provided on page 90.

23 **Provide qualitative and quantitative breakdowns of significant trading and non-trading market risk measures.**

Annual Report: Trading market risk exposures are described and quantified on pages 86 to 88.

Structural (non-trading) market risk exposures are described and quantified on pages 89 to 90.

24 **Describe significant market risk measurement model validation procedures and back-testing and how these are used to enhance the parameters of the model.**

Annual Report: Market risk measurement model validation procedures and back-testing for trading market risk and structural (non-trading) market risk are described on pages 86, 87, 89 and 102.

25 **Describe the primary risk management techniques employed by the bank to measure and assess the risk of loss beyond reported risk measures.**

Annual Report: The use of stress testing, scenario analysis and stressed VaR for market risk management is described on pages 86 to 87.

Credit Risk

26 **Provide information about the bank's credit risk profile.**

Annual Report: Information about BMO's credit risk profile is provided on pages 78 to 85 and in Note 4 on pages 151 to 158 of the consolidated financial statements.

Supplementary Financial Information: Tables detailing credit risk information are provided on pages 18 to 30.

Regulatory Supplementary Capital Information: Tables detailing credit risk information are provided on pages 14 to 35 and 59 to 62.

27 **Describe the bank's policies related to impaired loans and renegotiated loans.**

Annual Report: Impaired loan and renegotiated loan policies are described in Note 4 on pages 151 and 158, respectively of the consolidated financial statements.

28 **Provide reconciliations of impaired loans and the allowance for credit losses.**

Annual Report: Continuity schedules for gross impaired loans and acceptances, and allowance for credit losses are provided on pages 82 to 83 and Note 4 on pages 155 to 156 of the consolidated financial statements, respectively.

29 **Provide a quantitative and qualitative analysis of the bank's counterparty credit risk that arises from its derivative transactions.**

Annual Report: Quantitative disclosures on collateralization agreements for over-the-counter (OTC) derivatives are provided on page 85 and qualitative disclosures are provided on pages 78 to 79.

Regulatory Supplementary Capital Information: Quantitative disclosures for derivative instruments are provided on pages 36 to 48.

30 **Provide a discussion of credit risk mitigation.**

Annual Report: A discussion of BMO's credit and counterparty risk management is provided on pages 78 to 79. Collateral management discussions are provided on pages 78 to 79 and in Note 8 on pages 163 and 168 and in Note 24 on page 199 of the consolidated financial statements.

Regulatory Supplementary Capital Information: Information on credit risk mitigation techniques is provided on pages 16 to 18 and on collateral for counter-party credit risk is provided on page 45.

Other Risks

31 **Describe other risks and discuss how each is identified, governed, measured and managed.**

Annual Report: A diagram illustrating the risk governance process that supports BMO's risk culture is provided on page 74. Other risks are discussed on pages 100 to 106.

32 **Discuss publicly known risk events related to other risks, where material or potentially material loss events have occurred.**

Annual Report: Other risks are discussed on pages 100 to 106.

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SUPPLEMENTAL INFORMATION

Supplemental Information

Certain comparative figures have been reclassified to conform to the current year's presentation and for changes in accounting policies. Refer to Note 1 of the consolidated financial statements. In addition, since November 1, 2011, BMO's financial statements have been reported in accordance with IFRS. Results for years prior to 2011 have not been restated and are presented in accordance with Canadian GAAP as defined at that time (CGAAP). As a result of these changes, certain growth rates and compound annual growth rates (CAGR) may not be meaningful.

Adjusted results in this section are non-GAAP measures. Refer to the Non-GAAP Measures section on page 17.

Table 1: Shareholder Value and Other Statistical Information

As at or for the year ended October 31	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Market Price per Common Share ($)										
High	**106.51**	109.00	104.15	87.92	84.39	85.71	73.90	61.29	63.94	65.71
Low	**86.25**	93.60	83.58	68.65	64.01	67.04	56.74	53.15	55.02	49.78
Close	**97.50**	98.43	98.83	85.36	76.04	81.73	72.62	59.02	58.89	60.23
Common Share Dividends										
Dividends declared per share ($)	**4.06**	3.78	3.56	3.40	3.24	3.08	2.94	2.82	2.80	2.80
Dividend payout ratio (%)	**46.8**	46.1	44.9	49.0	49.2	47.8	47.5	46.0	57.1	58.6
Dividend yield (%)	**4.2**	3.8	3.6	4.0	4.3	3.8	4.0	4.8	4.8	4.6
Dividends declared ($ millions)	**2,594**	2,424	2,312	2,191	2,087	1,991	1,904	1,820	1,690	1,571
Total Shareholder Return (%)										
Five-year average annual return	**7.8**	10.5	15.5	12.5	9.5	15.5	17.0	4.2	1.9	5.9
Three-year average annual return	**8.6**	13.3	10.9	9.9	13.5	16.7	11.5	10.8	17.4	4.5
One-year return	**3.2**	3.3	20.2	17.0	(3.0)	17.1	28.8	5.2	2.4	26.4
Common Share Information										
Number outstanding (in thousands)										
End of year	**639,232**	639,330	647,816	645,761	642,583	649,050	644,130	650,730	639,000	566,468
Average basic	**638,881**	642,930	649,650	644,049	644,916	645,860	648,476	644,407	591,403	559,822
Average diluted	**640,360**	644,913	651,961	646,126	647,141	648,475	649,806	648,615	607,068	563,125
Book value per share ($)	**71.54**	64.73	61.91	59.57	56.31	48.18	43.22	39.41	36.76	34.09
Total market value of shares ($ billions)	**62.3**	62.9	64.0	55.1	48.9	53.0	46.8	38.4	37.6	34.1
Price-to-earnings multiple	**11.3**	12.0	12.5	12.3	11.6	12.8	11.8	9.7	12.2	12.7
Price-to-adjusted earnings multiple	**10.3**	10.9	12.1	11.4	10.9	12.4	11.7	9.9	11.5	12.5
Market-to-book value multiple	**1.36**	1.52	1.60	1.43	1.35	1.70	1.66	1.47	1.49	1.77
Balances ($ millions)										
Total assets	**853,950**	774,075	709,604	687,960	641,881	588,659	537,044	524,684	500,575	411,640
Average assets	**833,252**	754,295	722,626	707,122	664,391	593,928	555,431	543,931	469,934	398,474
Average net loans and acceptances	**432,638**	386,959	370,899	356,528	318,823	290,621	263,596	246,129	215,414	171,554
Return on Equity and Assets										
Return on equity (%)	**12.6**	13.3	13.2	12.1	12.5	14.0	14.9	15.9	15.1	14.9
Adjusted return on equity (%)	**13.7**	14.6	13.6	13.1	13.3	14.4	15.0	15.5	16.0	15.0
Return on tangible common equity (%)	**15.1**	16.2	16.3	15.3	15.8	17.3	17.9	19.4	17.6	16.6
Adjusted return on tangible common equity (%)	**16.1**	17.5	16.4	16.1	16.4	17.4	17.7	18.5	18.2	16.6
Return on average assets (%)	**0.69**	0.72	0.74	0.65	0.66	0.72	0.74	0.75	0.65	0.71
Adjusted return on average assets (%)	**0.75**	0.79	0.76	0.71	0.70	0.74	0.75	0.73	0.68	0.71
Return on average risk-weighted assets (%)	**1.86**	1.97	1.98	1.71	1.84	1.85	1.93	1.96	1.70	1.74
Adjusted return on average risk-weighted assets (%)	**2.01**	2.16	2.04	1.85	1.96	1.91	1.94	1.92	1.79	1.76
Average equity to average total assets (%)	**0.05**	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.05
Other Statistical Information										
Employees (1)										
Canada	**30,438**	29,982	29,647	29,643	30,669	30,587	30,303	30,797	31,351	29,821
United States	**13,487**	13,943	14,071	14,147	14,316	14,845	14,694	14,963	15,184	7,445
Other	**1,588**	1,529	1,482	1,444	1,368	1,346	634	512	440	363
Total	**45,513**	45,454	45,200	45,234	46,353	46,778	45,631	46,272	46,975	37,629
Bank branches										
Canada	**891**	908	926	942	939	934	933	930	920	910
United States	**561**	571	573	576	592	615	626	638	688	321
Other	**4**	4	4	4	4	4	4	3	3	3
Total	**1,456**	1,483	1,503	1,522	1,535	1,553	1,563	1,571	1,611	1,234
Automated banking machines										
Canada	**3,370**	3,387	3,315	3,285	3,442	3,016	2,900	2,596	2,235	2,076
United States	**1,597**	1,441	1,416	1,314	1,319	1,322	1,325	1,375	1,366	905
Total	**4,967**	4,828	4,731	4,599	4,761	4,338	4,225	3,971	3,601	2,981

2010 based on CGAAP.

2011 has not been restated to reflect the new IFRS standards adopted in 2014. The adoption of new IFRS standards in 2015 and 2018 only impacted our results prospectively.

(1) Reflects full-time equivalent number of employees, comprising full-time and part-time employees and adjustments for overtime hours.

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Table 2: Summary Income Statement and Growth Statistics

($ millions, except as noted) For the year ended October 31	2019	2018	2017	2016	2015	5-year CAGR	10-year CAGR
Income Statement – Reported Results							
Net interest income	**12,888**	11,438	11,275	10,945	9,796	**9.2**	**8.7**
Non-interest revenue	**12,595**	11,467	10,832	10,015	9,593	**4.9**	**7.0**
Revenue	**25,483**	22,905	22,107	20,960	19,389	**6.9**	**7.8**
Insurance claims, commissions and changes in policy benefit liabilities (CCPB) (1)	**2,709**	1,352	1,538	1,543	1,254	**12.5**	**11.5**
Revenue, net of CCPB	**22,774**	21,553	20,569	19,417	18,135	**6.4**	**7.5**
Provision for credit losses	**872**	662	746	771	544	**nm**	**nm**
Non-interest expense	**14,630**	13,477	13,192	12,916	12,250	**6.0**	**7.0**
Income before provision for income taxes	**7,272**	7,414	6,631	5,730	5,341	**6.8**	**13.3**
Provision for income taxes	**1,514**	1,961	1,292	1,100	936	**10.9**	**21.4**
Net income	**5,758**	5,453	5,339	4,630	4,405	**5.9**	**11.9**
Attributable to bank shareholders	**5,758**	5,453	5,337	4,621	4,370	**6.1**	**12.4**
Attributable to non-controlling interest in subsidiaries	**–**	–	2	9	35	**nm**	**nm**
Net income	**5,758**	5,453	5,339	4,630	4,405	**5.9**	**12.4**
Income Statement – Adjusted Results							
Net interest income	**12,888**	11,438	11,275	10,945	9,797	**9.2**	**8.7**
Non-interest revenue	**12,595**	11,467	10,832	10,099	9,594	**4.9**	**6.2**
Revenue	**25,483**	22,905	22,107	21,044	19,391	**6.9**	**7.4**
Insurance claims, commissions and changes in policy benefit liabilities (CCPB) (1)	**2,709**	1,352	1,538	1,543	1,254	**12.5**	**11.5**
Revenue, net of CCPB	**22,799**	21,553	20,569	19,501	18,137	**6.4**	**7.0**
Provision for credit losses	**872**	662	822	771	544	**nm**	**nm**
Non-interest expense	**14,005**	13,344	12,897	12,463	11,887	**5.3**	**6.8**
Income before provision for income taxes	**7,922**	7,547	6,850	6,267	5,706	**8.0**	**10.9**
Provision for income taxes	**1,673**	1,565	1,353	1,248	1,025	**19.3**	**14.0**
Adjusted net income	**6,249**	5,982	5,497	5,019	4,681	**7.0**	**10.2**
Attributable to bank shareholders	**6,249**	5,982	5,495	5,010	4,646	**7.0**	**10.2**
Attributable to non-controlling interest in subsidiaries	**–**	–	2	9	35	**nm**	**nm**
Adjusted net income	**6,249**	5,982	5,497	5,019	4,681	**7.0**	**10.2**
Earnings per Share (EPS) ($)							
Basic	**8.68**	8.19	7.93	6.94	6.59	**6.2**	**10.9**
Diluted	**8.66**	8.17	7.90	6.92	6.57	**6.2**	**10.9**
Adjusted diluted	**9.43**	8.99	8.15	7.52	7.00	**7.4**	**7.0**
Year-over-Year Growth-Based Statistical Information (%)							
Net income growth	**5.6**	2.1	15.3	5.1	1.7	**na**	**na**
Adjusted net income growth	**4.5**	8.8	9.5	7.2	5.1	**na**	**na**
Diluted EPS growth	**6.0**	3.3	14.3	5.3	2.5	**na**	**na**
Adjusted diluted EPS growth	**4.9**	10.3	8.3	7.4	6.2	**na**	**na**

Five-year and ten-year CAGR based on CGAAP in 2009 and IFRS in 2014 and 2019.

The adoption of new IFRS standards in 2015 and 2018 only impacted our results prospectively.

(1) Beginning in 2015, insurance claims, commissions and changes in policy benefit liabilities (CCPB) are reported separately. They were previously reported as a reduction in insurance revenue in non-interest revenue.

nm – not meaningful

na – not applicable

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Table 3: Revenue and Revenue Growth

($ millions, except as noted) For the year ended October 31	2019	2018	2017	2016	2015	5-year CAGR	10-year CAGR
Net Interest Income	**12,888**	11,438	11,275	10,945	9,796	**9.2**	**8.7**
Year-over-year growth (%)	**12.7**	1.4	3.0	11.7	18.2	**na**	**na**
Adjusted Net Interest Income	**12,888**	11,438	11,275	10,945	9,797	**9.2**	**8.7**
Year-over-year growth (%)	**12.7**	1.4	3.0	11.7	18.2	**na**	**na**
Net Interest Margin (1)							
Average earning assets	**758,863**	682,945	646,799	622,732	579,471	**7.5**	**8.3**
Net interest margin (%)	**1.70**	1.67	1.74	1.76	1.69	**na**	**na**
Adjusted net interest margin (%)	**1.70**	1.67	1.74	1.76	1.69	**na**	**na**
Non-Interest Revenue							
Securities commissions and fees	**1,023**	1,025	964	921	901	**2.7**	**0.5**
Deposit and payment service charges	**1,204**	1,134	1,109	1,069	1,005	**3.7**	**3.9**
Trading revenues	**298**	705	84	118	(46)	**(20.7)**	**(8.5)**
Lending fees	**1,181**	997	917	859	737	**11.7**	**7.8**
Card fees	**437**	428	329	397	532	**(1.1)**	**13.7**
Investment management and custodial fees	**1,747**	1,749	1,627	1,560	1,552	**6.3**	**17.7**
Mutual fund revenues	**1,419**	1,473	1,411	1,364	1,377	**5.9**	**11.8**
Underwriting and advisory fees	**986**	943	1,044	824	706	**5.8**	**9.5**
Securities gains, other than trading	**249**	239	171	84	171	**9.0**	**nm**
Foreign exchange, other than trading	**166**	182	191	162	172	**(1.5)**	**12.2**
Insurance revenue (2)	**3,183**	1,879	2,070	2,023	1,762	**9.7**	**10.2**
Investments in associates and joint ventures	**151**	167	386	140	207	**(2.3)**	**nm**
Other revenues	**551**	546	529	494	517	**10.7**	**12.5**
Total Non-Interest Revenue	**12,595**	11,467	10,832	10,015	9,593	**4.9**	**7.0**
Year-over-year non-interest revenue growth (%)	**9.8**	5.9	8.2	4.4	(3.4)	**na**	**na**
Non-interest revenue as a % of total revenue	**49.4**	50.1	49.0	47.8	49.5	**na**	**na**
Adjusted Non-Interest Revenue	**12,595**	11,467	10,832	10,099	9,594	**4.9**	**6.2**
Year-over-year adjusted non-interest revenue growth (%)	**9.8**	5.9	7.3	5.3	(3.4)	**na**	**na**
Adjusted non-interest revenue as a % of total adjusted revenue	**49.4**	50.1	49.0	48.0	49.5	**na**	**na**
Total Revenue	**25,483**	22,905	22,107	20,960	19,389	**6.9**	**7.8**
Year-over-year total revenue growth (%)	**11.3**	3.6	5.5	8.1	6.4	**na**	**na**
Total Revenue, net of CCPB (2)	**22,774**	21,553	20,569	19,417	18,135	**6.4**	**7.5**
Year-over-year total revenue growth, net of CCPB (%)	**5.7**	4.8	5.9	7.1	8.5	**na**	**na**
Total Adjusted Revenue	**25,483**	22,905	22,107	21,044	19,391	**6.9**	**7.4**
Year-over-year total adjusted revenue growth (%)	**11.3**	3.6	5.1	8.5	6.4	**na**	**na**
Total Adjusted Revenue, net of CCPB (2)	**22,799**	21,553	20,569	19,501	18,137	**6.4**	**7.0**
Year-over-year total adjusted revenue growth, net of CCPB (%)	**5.8**	4.8	5.5	7.5	8.5	**na**	**na**

Five-year and ten-year CAGR based on CGAAP in 2009 and IFRS in 2014 and 2019.

The adoption of new IFRS standards in 2015 and 2018 only impacted our results prospectively.

(1) Net interest margin is calculated based on average earning assets.

(2) Beginning in 2015, insurance claims, commissions and changes in policy benefit liabilities (CCPB) are reported separately. They were previously reported as a reduction in insurance revenue in non-interest revenue.

na – not applicable

nm – not meaningful

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Table 4: Non-Interest Expense, Expense-to-Revenue Ratio and Government Levies and Taxes

($ millions, except as noted) For the year ended October 31	2019	2018	2017	2016	2015	5-year CAGR	10-year CAGR
Non-Interest Expense(1)							
Employee compensation							
Salaries	**4,762**	4,176	3,996	4,084	3,910	**7.0**	**7.1**
Performance-based compensation	**2,610**	2,510	2,386	2,278	2,102	**6.0**	**6.9**
Employee benefits	**1,051**	775	1,086	1,022	1,069	**3.0**	**4.9**
Total employee compensation	**8,423**	7,461	7,468	7,384	7,081	**6.2**	**6.7**
Premises and equipment							
Rental of real estate	**595**	526	494	486	462	**7.5**	**6.9**
Premises, furniture and fixtures	**283**	345	282	337	287	**1.6**	**0.4**
Property taxes	**37**	38	39	42	39	**(1.2)**	**2.3**
Computers and equipment	**2,073**	1,844	1,676	1,528	1,349	**11.7**	**11.9**
Total premises and equipment	**2,988**	2,753	2,491	2,393	2,137	**9.4**	**8.8**
Other expenses							
Amortization of intangible assets	**554**	503	485	444	411	**7.7**	**10.6**
Communications	**296**	282	286	294	314	**0.5**	**3.0**
Professional fees	**568**	572	569	528	595	**(1.8)**	**4.6**
Travel and business development	**545**	519	540	509	605	**0.1**	**5.9**
Other	**1,256**	1,387	1,353	1,364	1,107	**5.3**	**6.1**
Total other expenses	**3,219**	3,263	3,233	3,139	3,032	**2.8**	**6.1**
Total Non-Interest Expense	**14,630**	13,477	13,192	12,916	12,250	**6.0**	**7.0**
Year-over-year total non-interest expense growth (%)	**8.6**	2.2	2.1	5.4	11.8	**na**	**na**
Total Adjusted Non-Interest Expense	**14,005**	13,344	12,897	12,463	11,887	**5.3**	**6.9**
Year-over-year total adjusted non-interest expense growth (%)	**5.0**	3.5	3.5	4.8	10.1	**na**	**na**
Non-interest expense-to-revenue ratio (Efficiency ratio) (%)	**57.4**	58.8	59.7	61.6	63.2	**na**	**na**
Adjusted non-interest expense-to-revenue ratio (Adjusted efficiency ratio) (%)	**55.0**	58.3	58.3	59.2	61.3	**na**	**na**
Efficiency ratio, net of CCPB (%)	**64.2**	62.5	64.1	66.5	67.5	**na**	**na**
Adjusted efficiency ratio, net of CCPB (%)	**61.4**	61.9	62.7	63.9	65.5	**na**	**na**
Government Levies and Taxes (1)							
Government levies other than income taxes							
Payroll levies	**354**	328	322	324	312	**7.1**	**7.5**
Property taxes	**37**	38	39	42	39	**(1.2)**	**2.3**
Provincial capital taxes	**35**	29	29	30	33	**5.1**	**(0.3)**
Business taxes	**9**	8	8	9	10	**(5.6)**	**(1.0)**
Harmonized sales tax, GST, VAT and other sales taxes	**384**	350	330	318	288	**7.1**	**12.7**
Sundry taxes	**1**	1	1	3	2	**nm**	**nm**
Total government levies other than income taxes	**820**	754	729	726	684	**6.3**	**8.4**
Provision for income taxes	**1,514**	1,961	1,292	1,100	936	**10.9**	**21.4**
Total Government Levies and Taxes	**2,334**	2,715	2,021	1,826	1,620	**9.1**	**14.9**
Total government levies and taxes as a % of income before total government levies and taxes	**28.8**	33.2	27.5	28.3	26.9	**na**	**na**
Effective income tax rate (%)	**20.8**	26.5	19.5	19.2	17.5	**na**	**na**
Adjusted effective income tax rate (%)	**21.1**	20.7	19.8	19.9	18.0	**na**	**na**

Five-year and ten-year CAGR based on CGAAP in 2009 and IFRS in 2014 and 2019.

The adoption of new IFRS standards in 2015 and 2018 only impacted our results prospectively.

(1) Government levies are included in various non-interest expense categories.

na – not applicable

nm – not meaningful

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Table 5: Average Assets, Liabilities and Interest Rates

($ millions, except as noted) For the year ended October 31	2019 Average balances	2019 Average interest rate (%)	2019 Interest income/ expense	2018 Average balances	2018 Average interest rate (%)	2018 Interest income/ expense	2017 Average balances	2017 Average interest rate (%)	2017 Interest income/ expense
Assets									
Canadian Dollar									
Deposits with other banks and other interest bearing assets	**2,972**	**2.03**	**60**	2,374	1.83	43	1,643	0.51	8
Securities	**83,042**	**2.66**	**2,210**	79,187	2.33	1,844	84,985	2.07	1,762
Securities borrowed or purchased under resale agreements	**39,074**	**2.10**	**820**	36,325	1.56	566	32,528	0.95	309
Loans									
Residential mortgages	**109,289**	**3.04**	**3,317**	106,610	2.79	2,973	104,529	2.61	2,729
Non-residential mortgages	**5,637**	**3.43**	**194**	5,873	3.28	193	6,114	3.23	197
Personal and credit cards	**60,680**	**5.49**	**3,333**	58,612	5.15	3,021	57,675	4.77	2,752
Business and government	**62,965**	**4.10**	**2,580**	56,427	3.98	2,248	52,668	3.48	1,831
Total loans	**238,571**	**3.95**	**9,424**	227,522	3.71	8,435	220,986	3.40	7,509
Total Canadian dollar	**363,659**	**3.44**	**12,514**	345,408	3.15	10,888	340,142	2.82	9,588
U.S. Dollar and Other Currencies									
Deposits with other banks and other interest bearing assets	**47,001**	**1.72**	**808**	46,607	1.40	654	39,660	0.86	340
Securities	**109,072**	**3.05**	**3,331**	91,198	2.49	2,275	74,991	2.35	1,763
Securities borrowed or purchased under resale agreements	**65,943**	**2.11**	**1,391**	55,647	1.81	1,010	54,766	0.93	508
Loans									
Residential mortgages	**11,554**	**3.67**	**424**	11,218	3.60	404	8,548	3.55	304
Non-residential mortgages	**9,356**	**4.75**	**445**	6,652	4.48	298	5,159	3.88	200
Personal and credit cards	**11,907**	**4.91**	**585**	10,799	4.41	476	11,513	3.90	449
Business and government	**138,660**	**4.80**	**6,654**	113,772	4.42	5,030	110,166	3.87	4,261
Total loans	**171,477**	**4.73**	**8,108**	142,441	4.36	6,208	135,386	3.85	5,214
Total U.S. dollar and other currencies	**393,493**	**3.47**	**13,638**	335,893	3.02	10,147	304,803	2.57	7,825
Other non-interest bearing assets	**76,100**			72,994			77,681		
Total All Currencies									
Total assets and interest income	**833,252**	**3.14**	**26,152**	754,295	2.79	21,035	722,626	2.41	17,413
Liabilities									
Canadian Dollar									
Deposits									
Banks	**4,905**	**1.02**	**50**	3,607	0.59	21	6,267	0.44	27
Business and government	**113,502**	**1.88**	**2,133**	103,986	1.61	1,673	103,109	1.20	1,237
Individuals	**120,852**	**1.05**	**1,269**	111,081	0.80	891	108,200	0.70	754
Total deposits	**239,259**	**1.44**	**3,452**	218,674	1.18	2,585	217,576	0.93	2,018
Securities sold but not yet purchased and securities lent or sold under repurchase agreements (1)	**44,815**	**2.56**	**1,146**	40,640	2.09	849	34,300	1.74	596
Subordinated debt and other interest bearing liabilities	**25,099**	**2.70**	**677**	25,359	2.48	628	25,334	2.02	512
Total Canadian dollar	**309,173**	**1.71**	**5,275**	284,673	1.43	4,062	277,210	1.13	3,126
U.S. Dollar and Other Currencies									
Deposits									
Banks	**24,534**	**2.41**	**592**	26,282	1.93	506	24,416	1.10	269
Business and government	**211,970**	**1.79**	**3,802**	191,739	1.37	2,622	181,732	0.78	1,417
Individuals	**71,005**	**1.08**	**770**	61,651	0.59	367	57,245	0.33	190
Total deposits	**307,509**	**1.68**	**5,164**	279,672	1.25	3,495	263,393	0.71	1,876
Securities sold but not yet purchased and securities lent or sold under repurchase agreements (1)	**76,889**	**2.91**	**2,235**	63,940	2.60	1,661	59,154	1.65	974
Subordinated debt and other interest bearing liabilities	**19,896**	**2.96**	**590**	16,798	2.26	379	10,776	1.51	162
Total U.S. dollar and other currencies	**404,294**	**1.98**	**7,989**	360,410	1.54	5,535	333,323	0.90	3,012
Other non-interest bearing liabilities	**70,916**			65,223			69,049		
Total All Currencies									
Total liabilities and interest expense	**784,383**	**1.69**	**13,264**	710,306	1.35	9,597	679,582	0.90	6,138
Shareholders' equity	**48,869**			43,989			43,044		
Total Liabilities, Interest Expense and Shareholders' Equity	**833,252**	**1.59**	**13,264**	754,295	1.27	9,597	722,626	0.85	6,138
Net interest margin									
– based on earning assets		**1.70**			1.67			1.74	
– based on total assets		**1.55**			1.52			1.56	
Net interest income			**12,888**			11,438			11,275

(1) For the years ended October 31, 2019, 2018 and 2017, the maximum amount of securities lent or sold under repurchase agreements at any month end amounted to $96,399 million, $85,489 million and $72,826 million, respectively.

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Table 6: Volume/Rate Analysis of Changes in Net Interest Income

($ millions) For the year ended October 31	2019/2018 Increase (decrease) due to change in Average balance	Average rate	Total	2018/2017 Increase (decrease) due to change in Average balance	Average rate	Total
Assets						
Canadian Dollar						
Deposits with other banks and other interest bearing assets	**11**	**6**	**17**	4	31	35
Securities	**90**	**276**	**366**	(120)	202	82
Securities borrowed or purchased under resale agreements	**43**	**211**	**254**	36	221	257
Loans						
Residential mortgages	**75**	**269**	**344**	54	190	244
Non-residential mortgages	**(8)**	**9**	**1**	(8)	4	(4)
Personal and credit cards	**107**	**205**	**312**	45	224	269
Business and government	**260**	**72**	**332**	130	287	417
Total loans	**434**	**555**	**989**	221	705	926
Change in Canadian dollar interest income	**578**	**1,048**	**1,626**	141	1,159	1,300
U.S. Dollar and Other Currencies						
Deposits with other banks and other interest bearing assets	**6**	**148**	**154**	59	255	314
Securities	**445**	**611**	**1,056**	382	130	512
Securities borrowed or purchased under resale agreements	**186**	**195**	**381**	8	494	502
Loans						
Residential mortgages	**12**	**8**	**20**	95	5	100
Non-residential mortgages	**121**	**26**	**147**	58	40	98
Personal and credit cards	**49**	**60**	**109**	(28)	55	27
Business and government	**1,101**	**523**	**1,624**	140	629	769
Total loans	**1,283**	**617**	**1,900**	265	729	994
Change in U.S. dollar and other currencies interest income	**1,920**	**1,571**	**3,491**	714	1,608	2,322
Total All Currencies						
Change in total interest income (a)	**2,498**	**2,619**	**5,117**	855	2,767	3,622
Liabilities						
Canadian Dollar						
Deposits						
Banks	**8**	**21**	**29**	(12)	6	(6)
Business and government	**153**	**307**	**460**	11	425	436
Individuals	**78**	**300**	**378**	20	117	137
Total deposits	**239**	**628**	**867**	19	548	567
Securities sold but not yet purchased and securities lent or sold under repurchase agreements	**87**	**210**	**297**	110	143	253
Subordinated debt and other interest bearing liabilities	**(6)**	**55**	**49**	1	115	116
Change in Canadian dollar interest expense	**320**	**893**	**1,213**	130	806	936
U.S. Dollar and Other Currencies						
Deposits						
Banks	**(33)**	**119**	**86**	20	217	237
Business and government	**277**	**903**	**1,180**	78	1,127	1,205
Individuals	**55**	**348**	**403**	15	162	177
Total deposits	**299**	**1,370**	**1,669**	113	1,506	1,619
Securities sold but not yet purchased and securities lent or sold under repurchase agreements	**336**	**238**	**574**	79	608	687
Subordinated debt and other interest bearing liabilities	**70**	**141**	**211**	91	126	217
Change in U.S. dollar and other currencies interest expense	**705**	**1,749**	**2,454**	283	2,240	2,523
Total All Currencies						
Change in total interest expense (b)	**1,025**	**2,642**	**3,667**	413	3,046	3,459
Change in total net interest income (a – b)	**1,473**	**(23)**	**1,450**	442	(279)	163

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Table 7: Net Loans and Acceptances – Segmented Information (1) (2)

($ millions)	Canada					United States					Other countries				
As at October 31	**2019**	2018	2017	2016	2015	**2019**	2018	2017	2016	2015	**2019**	2018	2017	2016	2015
Consumer															
Residential mortgages	**112,448**	107,956	106,647	103,558	96,975	**11,275**	11,645	8,587	8,686	8,905	**–**	–	–	–	–
Credit cards	**8,289**	7,788	7,550	7,541	7,427	**570**	541	521	560	553	**–**	–	–	–	–
Consumer instalment and other personal loans	**55,311**	52,706	51,637	50,368	49,181	**11,752**	9,918	9,798	13,974	16,098	**537**	458	373	215	206
Total consumer	**176,048**	168,450	165,834	161,467	153,583	**23,597**	22,104	18,906	23,220	25,556	**537**	458	373	215	206
Total business and government	**105,890**	92,883	82,632	78,884	69,044	**134,880**	110,828	97,478	98,236	75,336	**10,122**	9,122	11,270	10,037	10,611
Total loans and acceptances, net of allowance for credit losses on impaired loans	**281,938**	261,333	248,466	240,351	222,627	**158,477**	132,932	116,384	121,456	100,892	**10,659**	9,580	11,643	10,252	10,817
Allowance for credit losses on performing loans (3)	**(740)**	(689)	(799)	(833)	(816)	**(630)**	(574)	(641)	(687)	(682)	**(17)**	(6)	–	–	–
Total net loans and acceptances	**281,198**	260,644	247,667	239,518	221,811	**157,847**	132,358	115,743	120,769	100,210	**10,642**	9,574	11,643	10,252	10,817

Table 8: Net Impaired Loans and Acceptances (NIL) – Segmented Information (2) (4)

($ millions, except as noted)	Canada					United States					Other countries				
As at October 31	**2019**	2018	2017	2016	2015	**2019**	2018	2017	2016	2015	**2019**	2018	2017	2016	2015
Consumer															
Residential mortgages	**233**	185	206	195	204	**164**	171	161	175	173	**–**	–	–	–	–
Consumer instalment and other personal loans	**138**	126	127	121	117	**194**	252	293	345	316	**–**	–	–	–	–
Total consumer	**371**	311	333	316	321	**358**	423	454	520	489	**–**	–	–	–	–
Business and government	**336**	235	248	298	220	**1,101**	597	762	843	613	**–**	–	30	1	4
Total impaired loans and acceptances, net of allowance for credit losses on impaired loans	**707**	546	581	614	541	**1,459**	1,020	1,216	1,363	1,102	**–**	–	30	1	4
Condition Ratios (1)															
NIL as a % of net loans and acceptances	**0.25**	0.21	0.23	0.26	0.24	**0.92**	0.77	1.05	1.13	1.10	**–**	–	0.26	0.01	0.04
NIL as a % of net loans and acceptances															
Consumer	**0.21**	0.18	0.20	0.20	0.21	**1.52**	1.91	2.40	2.24	1.91	**–**	–	–	–	–
Business and government	**0.32**	0.25	0.30	0.38	0.32	**0.82**	0.54	0.78	0.86	0.81	**–**	–	0.27	0.01	0.04

(1) Aggregate Net Loans and Acceptances balances are net of allowance for credit losses on performing loans and impaired loans (excluding those related to off-balance sheet instruments and undrawn commitments). The Consumer and Business and government Net Loans and Acceptances balances are net of allowance for credit losses on impaired loans only (excluding those related to off-balance sheet instruments and undrawn commitments).
(2) Segmented credit information by geographic area is based upon the country of ultimate risk.
(3) Prior periods have not been restated to reflect the adoption of IFRS 9 in 2018. The adoption of IFRS 9 has been applied prospectively.
(4) Net Impaired Loans and Acceptances are net of allowance for credit losses on impaired loans (excluding those related to off-balance sheet instruments and undrawn commitments).

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Total				
2019	2018	2017	2016	2015
123,723	119,601	115,234	112,244	105,880
8,859	8,329	8,071	8,101	7,980
67,600	63,082	61,808	64,557	65,485
200,182	191,012	185,113	184,902	179,345
250,892	212,833	191,380	187,157	154,991
451,074	403,845	376,493	372,059	334,336
(1,387)	(1,269)	(1,440)	(1,520)	(1,498)
449,687	402,576	375,053	370,539	332,838

Total				
2019	2018	2017	2016	2015
397	356	367	370	377
332	378	420	466	433
729	734	787	836	810
1,437	832	1,040	1,142	837
2,166	1,566	1,827	1,978	1,647
0.48	0.39	0.49	0.53	0.50
0.36	0.38	0.43	0.45	0.45
0.57	0.39	0.54	0.61	0.54

Table 9: Net Loans and Acceptances – Segmented Information (1) (2)

($ millions)

As at October 31	**2019**	2018	2017	2016	2015
Net Loans and Acceptances by Province					
Atlantic provinces	**14,601**	13,925	13,686	13,736	13,364
Quebec	**42,985**	40,177	38,802	38,263	36,493
Ontario	**119,499**	109,531	103,152	97,991	88,850
Prairie provinces	**51,639**	48,634	46,853	46,411	43,519
British Columbia and territories	**52,474**	48,377	45,174	43,117	39,585
Total net loans and acceptances in Canada	**281,198**	260,644	247,667	239,518	221,811
Net Business and Government Loans by Industry					
Commercial real estate	**36,707**	31,028	26,479	24,126	20,509
Construction (non-real estate)	**4,943**	3,916	3,916	3,563	3,544
Retail trade	**23,085**	20,403	18,496	16,430	13,538
Wholesale trade	**16,933**	14,814	11,612	12,157	10,172
Agriculture	**13,268**	12,321	11,114	10,951	9,891
Communications	**840**	729	625	905	815
Financing products	**4,124**	4,439	5,060	6,093	6,454
Manufacturing	**26,541**	22,839	19,824	18,587	16,064
Mining	**2,474**	1,916	1,344	1,867	1,309
Oil and gas	**13,421**	9,168	8,167	7,930	6,667
Transportation	**12,390**	10,973	10,496	10,695	3,735
Utilities	**4,783**	3,911	2,776	2,697	1,984
Forest products	**1,152**	840	835	889	859
Service industries	**45,730**	38,348	33,705	32,659	26,778
Financial	**40,839**	32,463	32,265	32,076	27,430
Government	**1,801**	1,436	1,470	1,326	1,488
Other	**1,861**	3,289	3,196	4,206	3,754
	250,892	212,833	191,380	187,157	154,991

Table 10: Net Impaired Loans and Acceptances – Segmented Information (3)

($ millions)

As at October 31	**2019**	2018	2017	2016	2015
Net Impaired Business and Government Loans					
Commercial real estate	**49**	45	45	60	87
Construction (non-real estate)	**21**	18	39	45	83
Retail trade	**56**	50	36	13	55
Wholesale trade	**76**	42	97	51	47
Agriculture	**291**	193	238	221	129
Communications	**6**	–	–	1	13
Financing products	**–**	–	–	–	–
Manufacturing	**191**	77	70	106	102
Mining	**–**	1	1	2	3
Oil and gas	**356**	57	145	408	100
Transportation	**119**	90	156	88	30
Utilities	**2**	2	4	12	14
Forest products	**2**	–	2	7	9
Service industries	**240**	191	181	82	107
Financial	**28**	66	2	39	48
Government	**–**	–	3	6	–
Other	**–**	–	21	1	10
	1,437	832	1,040	1,142	837

(1) Aggregate Net Loans and Acceptances are net of allowance for credit losses on performing loans and impaired loans (excluding those related to off-balance sheet instruments and undrawn commitments). The Consumer and Business and government Net Loans and Acceptances balances are net of allowance for credit losses on impaired loans only (excluding those related to off-balance sheet instruments and undrawn commitments).
(2) Segmented credit information by geographic area is based upon the country of ultimate risk.
(3) Net Impaired Loans and Acceptances balances are net of allowance for credit losses on impaired loans (excluding those related to off-balance sheet instruments and undrawn commitments).

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Table 11: Changes in Gross Impaired Loans – Segmented Information (1) (2)

($ millions, except as noted)	Canada					United States					Other countries				
As at October 31	**2019**	2018	2017	2016	2015	**2019**	2018	2017	2016	2015	**2019**	2018	2017	2016	2015
Gross impaired loans and acceptances (GIL), beginning of year															
Consumer	**426**	439	407	404	438	**470**	508	585	557	678	**–**	–	–	–	–
Business and government	**309**	354	380	282	344	**731**	869	1,009	757	623	**–**	50	2	4	5
Total GIL, beginning of year	**735**	793	787	686	782	**1,201**	1,377	1,594	1,314	1,301	**–**	50	2	4	5
Additions to impaired loans and acceptances															
Consumer	**895**	836	697	631	617	**244**	274	360	473	526	**–**	–	–	–	–
Business and government	**323**	321	281	453	231	**1,224**	647	799	953	542	**–**	–	56	2	5
Total additions	**1,218**	1,157	978	1,084	848	**1,468**	921	1,159	1,426	1,068	**–**	–	56	2	5
Reductions to impaired loans and acceptances (3)															
Consumer	**(586)**	(628)	(479)	(446)	(474)	**(242)**	(212)	(301)	(282)	(432)	**–**	–	–	–	–
Business and government	**(171)**	(282)	(259)	(251)	(164)	**(466)**	(573)	(692)	(456)	(246)	**–**	(49)	(7)	(4)	(5)
Total reductions due to net repayments and other	**(757)**	(910)	(738)	(697)	(638)	**(708)**	(785)	(993)	(738)	(678)	**–**	(49)	(7)	(4)	(5)
Write-offs (4)															
Consumer	**(238)**	(221)	(186)	(182)	(177)	**(87)**	(100)	(136)	(163)	(215)	**–**	–	–	–	–
Business and government	**(44)**	(84)	(48)	(104)	(129)	**(159)**	(212)	(247)	(245)	(162)	**–**	(1)	(1)	–	(1)
Total write-offs	**(282)**	(305)	(234)	(286)	(306)	**(246)**	(312)	(383)	(408)	(377)	**–**	(1)	(1)	–	(1)
Gross impaired loans and acceptances, end of year															
Consumer	**497**	426	439	407	404	**385**	470	508	585	557	**–**	–	–	–	–
Business and government	**417**	309	354	380	282	**1,330**	731	869	1,009	757	**–**	–	50	2	4
Total GIL, end of year	**914**	735	793	787	686	**1,715**	1,201	1,377	1,594	1,314	**–**	–	50	2	4
Condition Ratios															
GIL as a % of Gross Loans															
Consumer	**0.28**	0.25	0.26	0.25	0.26	**1.63**	2.12	2.69	2.52	2.18	**–**	–	–	–	–
Business and government	**0.39**	0.33	0.43	0.48	0.41	**0.98**	0.66	0.89	1.03	1.01	**–**	–	0.44	0.02	0.04
Total Loans and Acceptances	**0.32**	0.28	0.32	0.33	0.31	**1.08**	0.90	1.18	1.31	1.31	**–**	–	0.43	0.02	0.04

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

		Total		
2019	2018	2017	2016	2015
896	947	992	961	1,116
1,040	1,273	1,391	1,043	972
1,936	2,220	2,383	2,004	2,088
1,139	1,110	1,057	1,104	1,143
1,547	968	1,136	1,408	778
2,686	2,078	2,193	2,512	1,921
(828)	(840)	(780)	(728)	(906)
(637)	(904)	(958)	(711)	(415)
(1,465)	(1,744)	(1,738)	(1,439)	(1,321)
(325)	(321)	(322)	(345)	(392)
(203)	(297)	(296)	(349)	(292)
(528)	(618)	(618)	(694)	(684)
882	896	947	992	961
1,747	1,040	1,273	1,391	1,043
2,629	1,936	2,220	2,383	2,004
0.44	0.47	0.51	0.54	0.54
0.70	0.49	0.66	0.74	0.67
0.58	0.48	0.59	0.64	0.60

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Table 12: Changes in Allowance for Credit Losses – Segmented Information (1) (2)

($ millions, except as noted)	Canada					United States					Other countries				
As at October 31	**2019**	2018	2017	2016	2015	**2019**	2018	2017	2016	2015	**2019**	2018	2017	2016	2015
Allowance for credit losses (ACL), beginning of year															
Consumer	**725**	705	595	614	615	**230**	301	254	393	333	**–**	–	–	–	–
Business and government	**255**	317	471	388	371	**648**	566	793	657	646	**12**	29	1	–	1
Total ACL, beginning of year	**980**	1,022	1,066	1,002	986	**878**	867	1,047	1,050	979	**12**	29	1	–	1
Provision for credit losses (3)															
Consumer	**470**	416	394	373	373	**1**	(9)	74	(33)	113	**–**	–	–	–	–
Business and government	**93**	28	37	174	135	**302**	243	220	257	(76)	**9**	(21)	21	–	(1)
Total provision for credit losses	**563**	444	431	547	508	**303**	234	294	224	37	**9**	(21)	21	–	(1)
Recoveries															
Consumer	**120**	127	134	102	111	**104**	75	81	87	151	**–**	–	–	–	–
Business and government	**4**	5	10	14	13	**62**	51	40	140	181	**–**	3	–	–	–
Total recoveries	**124**	132	144	116	124	**166**	126	121	227	332	**–**	3	–	–	–
Write-offs															
Consumer	**(551)**	(515)	(501)	(481)	(482)	**(113)**	(125)	(157)	(173)	(223)	**–**	–	–	–	–
Business and government	**(44)**	(84)	(48)	(104)	(129)	**(159)**	(212)	(247)	(245)	(162)	**–**	(1)	(1)	–	(1)
Total write-offs	**(595)**	(599)	(549)	(585)	(611)	**(272)**	(337)	(404)	(418)	(385)	**–**	(1)	(1)	–	(1)
Other, including foreign exchange rate changes															
Consumer	**(15)**	(8)	(10)	(13)	(3)	**(22)**	(12)	(23)	(20)	19	**–**	–	–	–	–
Business and government	**(5)**	(11)	(27)	(1)	(2)	**(32)**	–	(114)	(16)	68	**–**	2	(1)	1	1
Total Other, including foreign exchange rate changes	**(20)**	(19)	(37)	(14)	(5)	**(54)**	(12)	(137)	(36)	87	**–**	2	(1)	1	1
ACL, end of year															
Consumer	**749**	725	612	595	614	**200**	230	229	254	393	**–**	–	–	–	–
Business and government	**303**	255	443	471	388	**821**	648	692	793	657	**21**	12	20	1	–
Total ACL, end of year	**1,052**	980	1,055	1,066	1,002	**1,021**	878	921	1,047	1,050	**21**	12	20	1	–
Net write-offs as a % of average loans and acceptances (4)	**un**	un	un	un	un	**un**	un	un	un	un	**un**	un	un	un	un

Table 13: Allocation of Allowance for Credit Losses – Segmented Information (1) (5)

($ millions, except as noted)	Canada					United States					Other countries				
As at October 31	**2019**	2018	2017	2016	2015	**2019**	2018	2017	2016	2015	**2019**	2018	2017	2016	2015
Consumer															
Residential mortgages	**10**	9	12	15	17	**7**	10	12	18	21	**–**	–	–	–	–
Consumer instalment and other personal loans	**116**	106	94	76	66	**20**	37	42	47	47	**–**	–	–	–	–
Total consumer	**126**	115	106	91	83	**27**	47	54	65	68	**–**	–	–	–	–
Business and government	**81**	74	106	82	62	**229**	134	107	166	144	**–**	–	20	1	–
Total allowance for credit losses on impaired loans	**207**	189	212	173	145	**256**	181	161	231	212	**–**	–	20	1	–
Allowance for credit losses on performing loans (3)	**740**	689	799	833	816	**630**	574	641	687	682	**17**	6	–	–	–
Allowance for credit losses	**947**	878	1,011	1,006	961	**886**	755	802	918	894	**17**	6	20	1	–
Coverage Ratios															
Allowance for credit losses on impaired loans as a % of gross impaired loans and acceptances															
Total	**22.6**	25.7	26.7	22.0	21.1	**14.9**	15.1	11.7	14.5	16.1	**–**	–	40.0	50.0	–
Consumer	**25.4**	27.0	24.1	22.4	20.5	**7.0**	10.0	10.6	11.1	12.2	**–**	–	–	–	–
Business and government	**19.4**	23.9	29.9	21.6	22.0	**17.2**	18.3	12.3	16.5	19.0	**–**	–	40.0	50.0	–

(1) Segmented credit information by geographic area is based upon country of ultimate risk.
(2) Prior periods have not been restated to reflect the adoption of IFRS 9 in 2018. The adoption of IFRS 9 in 2018 has been applied prospectively.
(3) Excludes provision for credit losses on other assets.
(4) Aggregate Net Loans and Acceptances balances are net of allowance for credit losses on performing loans and impaired loans (excluding those related to off-balance sheet instruments).
(5) Amounts exclude allowance for credit losses included in Other Liabilities.

un – unavailable

		Total		
2019	2018	2017	2016	2015
955	1,006	849	1,007	948
915	912	1,265	1,045	1,018
1,870	1,918	2,114	2,052	1,966
471	407	468	340	486
404	250	278	431	58
875	657	746	771	544
224	202	215	189	262
66	59	50	154	194
290	261	265	343	456
(664)	(640)	(658)	(654)	(705)
(203)	(297)	(296)	(349)	(292)
(867)	(937)	(954)	(1,003)	(997)
(37)	(20)	(33)	(33)	16
(37)	(9)	(142)	(16)	67
(74)	(29)	(175)	(49)	83
949	955	841	849	1,007
1,145	915	1,155	1,265	1,045
2,094	1,870	1,996	2,114	2,052
0.13	0.17	0.19	0.19	0.17

		Total		
2019	2018	2017	2016	2015
17	19	24	33	38
136	143	136	123	113
153	162	160	156	151
310	208	233	249	206
463	370	393	405	357
1,387	1,269	1,440	1,520	1,498
1,850	1,639	1,833	1,925	1,855
17.6	19.1	17.7	17.0	17.8
17.3	18.1	16.9	15.7	15.7
17.7	20.0	18.3	17.9	19.8

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Table 14: Allowance for Credit Losses on Impaired Loans – Segmented Information

($ millions)

As at October 31	2019	2018	2017	2016	2015
Business and Government					
Allowance for Credit Losses on Impaired Loans by Industry					
Commercial real estate	**9**	8	15	13	17
Construction (non-real estate)	**8**	16	14	4	8
Retail trade	**11**	17	14	12	23
Wholesale trade	**52**	23	17	31	19
Agriculture	**22**	16	11	19	6
Communications	**7**	–	–	1	9
Financing products	**–**	–	–	–	–
Manufacturing	**35**	20	51	36	38
Mining	**–**	–	–	1	1
Oil and gas	**48**	17	42	45	2
Transportation	**30**	31	13	9	5
Utilities	**–**	–	2	3	–
Forest products	**–**	1	1	1	2
Service industries	**79**	46	51	50	33
Financial	**3**	1	2	10	3
Government	**1**	–	–	–	–
Other	**5**	12	–	14	40
Total business and government (1)	**310**	208	233	249	206

Table 15: Provision for Credit Losses – Segmented Information

($ millions)

For the year ended October 31	2019	2018	2017	2016	2015
Consumer					
Residential mortgages	**16**	19	11	24	11
Cards	**246**	216	232	232	224
Consumer instalment and other personal loans	**201**	231	232	246	225
Total consumer	**463**	466	475	502	460
Business and Government					
Commercial real estate	**5**	(2)	(4)	(16)	(37)
Construction (non-real estate)	**1**	–	25	15	–
Retail trade	**(2)**	10	29	13	8
Wholesale trade	**54**	18	24	11	19
Agriculture	**27**	37	31	56	3
Communications	**7**	–	(1)	2	13
Financing products	**–**	–	–	–	–
Manufacturing	**25**	20	28	29	67
Mining	**–**	–	–	20	2
Oil and gas	**51**	(25)	9	105	25
Transportation	**67**	74	108	56	(4)
Utilities	**1**	(2)	–	3	–
Forest products	**–**	(1)	–	(1)	–
Service industries	**68**	87	102	21	(29)
Financial	**(35)**	(4)	(3)	(7)	8
Government	**1**	–	–	–	(2)
Other	**18**	22	(1)	(38)	11
Total business and government	**288**	234	347	269	84
Total provision for credit losses on impaired loans	**751**	700	822	771	544
Provision for credit losses on performing loans (2)	**121**	(38)	(76)	–	–
	872	662	746	771	544
Performance Ratios (%)					
PCL to average net loans and acceptances	**0.20**	0.17	0.20	0.22	0.17
PCL on impaired loans to segmented average net loans and acceptances					
Consumer	**0.24**	0.25	0.26	0.28	0.26
Business and government	**0.12**	0.12	0.18	0.15	0.06
PCL on impaired loans to average net loans and acceptances	**0.17**	0.18	0.22	0.22	0.17

(1) Amounts exclude allowance for credit losses included in Other Liabilities.
(2) Prior periods have not been restated to reflect the adoption of IFRS 9 in 2018. The adoption of IFRS 9 in 2018 has been applied prospectively.

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Table 16: Average Deposits

($ millions, except as noted)	2019 Average balance	2019 Average rate paid (%)	2018 Average balance	2018 Average rate paid (%)	2017 Average balance	2017 Average rate paid (%)
Deposits Booked in Canada						
Demand deposits – interest bearing	**24,211**	**1.18**	20,874	0.86	21,253	0.44
Demand deposits – non-interest bearing	**47,849**	**–**	45,967	–	41,985	–
Payable after notice	**86,531**	**1.24**	81,941	0.84	79,963	0.49
Payable on a fixed date	**173,337**	**2.33**	150,583	1.97	147,097	1.50
Total deposits booked in Canada	**331,928**	**1.63**	299,365	1.28	290,298	0.93
Deposits Booked in the United States and Other Countries						
Banks located in the United States and other countries (1)	**23,563**	**2.41**	24,596	1.92	23,520	1.10
Governments and institutions in the United States and other countries	**12,253**	**1.97**	10,014	1.49	9,196	0.76
Other demand deposits	**14,484**	**0.86**	13,858	0.30	14,327	0.04
Other deposits payable after notice or on a fixed date	**164,540**	**1.38**	150,513	1.05	143,628	0.61
Total deposits booked in the United States and other countries	**214,840**	**1.49**	198,981	1.13	190,671	0.63
Total average deposits	**546,768**	**1.58**	498,346	1.22	480,969	0.81

As at October 31, 2019, 2018 and 2017: deposits by foreign depositors in our Canadian bank offices amounted to $46,766 million, $48,592 million and $44,722 million, respectively; total deposits payable after notice included $39,382 million, $34,754 million and $33,561 million, respectively, of chequing accounts that would have been classified as demand deposits under U.S. reporting requirements; and total deposits payable on a fixed date included $25,098 million, $28,927 million and $30,648 million, respectively, of federal funds purchased, commercial paper issued and other deposit liabilities. These amounts would have been classified as short-term borrowings for U.S. reporting purposes.

(1) Includes regulated and central banks.

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GLOSSARY OF FINANCIAL TERMS

Glossary of Financial Terms

Adjusted Earnings and Measures present results adjusted to exclude the impact of certain items, as set out in the Non-GAAP Measures section. Management considers both reported and adjusted results to be useful in assessing underlying ongoing business performance.
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Allowance for Credit Losses represents an amount deemed appropriate by management to absorb credit-related losses on loans and acceptances and other credit instruments, in accordance with applicable accounting standards. *Allowance on Performing Loans* is maintained to cover impairment in the existing portfolio for loans that have not yet been individually identified as impaired. *Allowance on Impaired Loans* is maintained to reduce the carrying value of individually identified impaired loans to the expected recoverable amount.
Pages 82, 107

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

Asset-Backed Commercial Paper (ABCP) is a short-term investment. The commercial paper is backed by assets such as trade receivables, and is generally used for short-term financing needs.
Pages 66, 97

Average Earning Assets represents the daily or monthly average balance of deposits with other banks and loans and securities, over a one-year period.

Bail-In Debt is senior unsecured debt subject to the Canadian Bail-In Regime. Bail-in debt includes senior unsecured debt issued directly by the bank on or after September 23, 2018, which has an original term greater than 400 days and is marketable, subject to certain exceptions. Some or all of this debt may be statutorily converted into common shares of the bank under the Bail-In Regime if the bank enters resolution.
Pages 60, 61, 96, 97

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

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

Business Risk is the potential for loss or harm as a result of the specific business activities of an enterprise and the effects these could have on its earnings.
Page 105

Common Equity Tier 1 (CET1) capital is comprised of common shareholders' equity less deductions for goodwill, intangible assets, pension assets, certain deferred tax assets and certain other items.
Pages 62, 187

Common Equity Tier 1 Ratio reflects CET1 capital divided by risk-weighted assets.
Pages 22, 59, 60, 61, 63, 187

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

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 & regulatory compliance, human resources, communications, marketing, real estate, procurement, data and analytics and innovation. T&O develops, monitors, manages and maintains governance of information technology, and also provides cyber security and operations services.
Page 50

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.
Pages 78, 158

Derivatives are contracts with a value that is derived from movements in underlying interest or foreign exchange rates, equity or commodity prices or other indices. Derivatives allow for the transfer, modification or reduction of current or expected risks from changes in rates and prices.

Dividend Payout Ratio represents common share dividends as a percentage of net income available to common shareholders. It is computed by dividing dividends per share by basic earnings per share.

Earnings per Share (EPS) is calculated by dividing net income attributable to bank shareholders, after deducting preferred share dividends and distributions on other equity instruments, by the average number of common shares outstanding. Diluted EPS, which is our basis for measuring performance, adjusts for possible conversions of financial instruments into common shares if those conversions would reduce EPS. Adjusted EPS is calculated in the same manner using adjusted net income.
Pages 21, 197

Earnings Sensitivity is a measure of the impact of potential changes in interest rates on the projected 12-month pre-tax net income of a portfolio of assets, liabilities and off-balance sheet positions in response to prescribed parallel interest rate movements, with interest rates floored at zero.
Page 89

Economic Capital is an expression of the enterprise's capital demand requirement relative to its view of the economic risks in its underlying business activities. It represents management's estimation of the likely magnitude of economic losses that could occur should severely adverse situations arise, and allows returns to be measured on a consistent basis across such risks. Economic capital is calculated for various types of risk, including credit, market (trading and non-trading), operational, business and insurance, based on a one-year time horizon using a defined confidence level.
Pages 63, 64

Economic Value Sensitivity is a measure of the impact of potential changes in interest rates on the market value of a portfolio of assets, liabilities and off-balance sheet positions in response to prescribed parallel interest rate movements, with interest rates floored at zero.
Page 89

Efficiency Ratio (or Expense-to-Revenue Ratio) is a measure of productivity. It is calculated as non-interest expense divided by total revenue, expressed as a percentage. The adjusted efficiency ratio is calculated in the same manner, utilizing adjusted total revenue and non-interest expense.
Page 30

Environmental and Social Risk is the potential for loss or harm resulting from environmental or social impacts or concerns, including climate change, related to BMO or its customers.
Page 105

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

Forwards and Futures are contractual agreements to either buy or sell a specified amount of a currency, commodity, interest-rate-sensitive financial instrument or security at a specified price and date in the future. Forwards are customized contracts transacted in the over-the-counter market. Futures are transacted in standardized amounts on regulated exchanges and are subject to daily cash margin requirements.
Page 162

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

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

Incremental Risk Charge (IRC) complements the VaR and SVaR metrics and represents an estimate of the default and migration risks of non-securitization products held in the trading book with exposure to interest rate risk, measured over a one-year horizon at a 99.9% confidence level.
Page 86

Insurance Risk is the potential for loss as a result of actual experience differing from that assumed when an insurance product was designed and priced. It generally entails the inherent unpredictability that can arise from assuming long-term policy liabilities or from the uncertainty of future events. Insurance provides protection against the financial consequences of insured risks by transferring those risks to the insurer (under specific terms and conditions) in exchange for premiums. Insurance risk is inherent in all of our insurance products, including annuities and life, accident and sickness, and creditor insurance, as well as in our reinsurance business.
Page 91

Legal and Regulatory Risk is the potential for loss or harm resulting from a failure to comply with laws or satisfy contractual obligations or regulatory requirements. This includes the risks of failure to: comply with the law (in letter or in spirit) or maintain standards of care; implement legislative or regulatory requirements; enforce or comply with contractual terms; assert non-contractual rights; effectively manage disputes; or act in a manner so as to maintain our reputation.
Page 103

Leverage Ratio reflects Tier 1 capital divided by the sum of on-balance sheet items and specified off-balance sheet items, net of specified adjustments.
Page 60

Liquidity and Funding Risk is the potential for loss if BMO is unable to meet financial commitments in a timely manner at reasonable prices as they become due. Financial commitments include liabilities to depositors and suppliers, and lending, investment and pledging commitments.
Page 91

Liquidity Coverage Ratio (LCR) is a Basel III regulatory metric calculated as the ratio of high-quality liquid assets to total net stressed cash outflows over a thirty-day period under a regulatory-prescribed stress scenario.
Pages 94, 95

Market Risk is the potential for adverse changes in the value of BMO's assets and liabilities resulting from changes in market variables such as interest rates, foreign exchange rates, equity and commodity prices and their implied volatilities, and credit spreads, and includes the risk of credit migration and default in our trading book.
Pages 86, 159

Mark-to-Market represents the valuation of financial instruments at market rates as of the balance sheet date, where required by accounting rules.

Net Interest Income is comprised of earnings on assets, such as loans and securities, including interest and certain dividend income, less interest expense paid on liabilities, such as deposits.
Page 26

Net Interest Margin is the ratio of net interest income to average earning assets, expressed as a percentage or in basis points. Net interest margin is sometimes computed using total assets.
Page 26

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

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

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

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

Operating Leverage is the difference between revenue and expense growth rates. Adjusted operating leverage is the difference between adjusted revenue and adjusted expense growth rates.
Page 30

Operational Risk is the potential for loss or harm resulting from inadequate or failed internal processes or systems, human errors or misconduct or external events, but excludes business risk, credit risk, market risk, liquidity risk and other financial risk.
Page 100

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.
Page 162

Provision for Credit Losses (PCL) is a charge to income that represents an amount deemed adequate by management to fully provide for impairment in a portfolio of loans and acceptances and other credit instruments, given the composition of the portfolio, the probability of default, the economic environment and the allowance for credit losses already established. The PCL can be comprised of both a provision for credit losses on impaired loans and a provision for credit losses on performing loans.
Pages 29, 55, 82

Reputation Risk is the potential for loss or harm to the BMO brand. It can arise even if other risks are managed effectively.
Page 106

Return on Equity or Return on Common Shareholders' Equity (ROE) is calculated as net income, less non-controlling interest in subsidiaries and preferred dividends, as a percentage of average common shareholders' equity. Common shareholders' equity is comprised of common share capital, contributed surplus, accumulated other comprehensive income (loss) and retained earnings. Adjusted ROE is calculated using adjusted net income rather than net income.
Pages 22, 55

Return on Tangible Common Equity (ROTCE) is calculated as net income available to common shareholders adjusted for the amortization of acquisition-related intangible assets as a percentage of average tangible common equity. Adjusted ROTCE is calculated using adjusted net income rather than net income.
Pages 22, 55

Risk-Weighted Assets (RWA) are defined as on-balance sheet and off-balance sheet exposures that are risk-weighted based on guidelines established by OSFI. The term is used for capital management and regulatory reporting purposes.
Page 60

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

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

Securitization is the practice of selling pools of contractual debts, such as residential mortgages, auto loans and credit card debt obligations, to third parties or trusts, which then typically issue a series of asset-backed securities to investors to fund the purchase of the contractual debts.
Page 66

Strategic Risk is the potential for loss or harm due to changes in the external business environment and/or failure to respond appropriately to these changes as a result of inaction, ineffective strategies or poor implementation of strategies.
Page 105

Stressed Value at Risk (SVaR) measures the maximum loss likely to be experienced in the trading and underwriting portfolios, measured at a 99% confidence level over a one-day holding period, with model inputs calibrated to historical data from a period of significant financial stress. SVaR is calculated for specific classes of risk in BMO's trading and underwriting activities related to interest rates, foreign exchange rates, credit spreads, equity and commodity prices and their implied volatilities.
Page 86

Structured Entities (SEs) include entities for which voting or similar rights are not the dominant factor in determining control of the entity. We are required to consolidate an SE if we control the entity by having power over the entity, exposure to variable returns as a result of our involvement and the ability to exercise power to affect the amount of our returns.
Page 67

Structural (Non-Trading) Market Risk is comprised of interest rate risk arising from banking activities (loans and deposits) and foreign exchange risk arising from our foreign currency operations and exposures.
Page 89

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:

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

Page 162

Tangible Common Equity is calculated as common shareholders' equity less goodwill and acquisition-related intangible assets, net of related deferred tax liabilities.
Page 22

Taxable Equivalent Basis (teb): Revenues of operating groups are presented in our MD&A on a taxable equivalent basis (teb). 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.
Pages 25, 200

Tier 1 Capital is comprised of CET1 and **Additional Tier 1 (AT1) Capital**. AT1 capital consists of preferred shares and other AT1 capital instruments, less regulatory deductions.
Pages 60, 187

Tier 1 Capital Ratio reflects Tier 1 capital divided by risk-weighted assets.
Pages 60, 187

Tier 2 capital is comprised of subordinated debentures and may include certain loan loss allowances less regulatory deductions.
Pages 60, 187

Total Loss Absorbing Capacity (TLAC) is comprised of total capital and senior unsecured debt subject to the Canadian Bail-In Regime. The largest Canadian banks are required to meet minimum TLAC RWA-based and leverage-based ratios effective November 1, 2021, as calculated under OSFI's TLAC Guideline.
Pages 60, 96, 104

Total Capital includes Tier 1 and Tier 2 capital.
Pages 60, 187

Total Capital Ratio reflects Total capital divided by risk-weighted assets.
Pages 60, 187

Total Shareholder Return: The three-year and five-year average annual total shareholder return (TSR) represents the average annual total return earned on an investment in BMO common shares made at the beginning of a three-year and five-year period, respectively. The return includes the change in share price and assumes dividends received were reinvested in additional common shares. The one-year TSR also assumes that dividends were reinvested in shares.
Page 21

Trading and Underwriting Market Risk gives rise to market risk associated with buying and selling financial products in the course of meeting customer requirements, including market making and related financing activities, and assisting clients to raise funds by way of securities issuance.
Page 86

Trading-Related Revenue includes net interest income and non-interest revenue earned from on-balance sheet and off-balance sheet positions undertaken for trading purposes. The management of these positions typically includes marking them to market on a daily basis. Trading-related revenue includes income (expense) and gains (losses) from both on-balance sheet instruments and interest rate, foreign exchange (including spot positions), equity, commodity and credit contracts.
Page 27

Value-at-Risk (VaR) measures the maximum loss likely to be experienced in the trading and underwriting portfolios, measured at a 99% confidence level over a one-day holding period. VaR is calculated for specific classes of risk in BMO's trading and underwriting activities related to interest rates, foreign exchange rates, credit spreads, equity and commodity prices and their implied volatilities.
Pages 86, 87

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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, 2019, 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, 2019 is set forth on page 136.

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.



Darryl White
Chief Executive Officer



Thomas E. Flynn
Chief Financial Officer

Toronto, Canada
December 3, 2019

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Report of Independent Registered Public Accounting Firm

To the Shareholders 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 at October 31, 2019 and 2018, the related consolidated statements of income, comprehensive income, changes in equity and cash flows for each of the years in the three-year period ended October 31, 2019, 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 at October 31, 2019 and 2018, and its financial performance and its cash flows for each of the years in the three-year period ended October 31, 2019, 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, 2019, 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 3, 2019 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 allowance for credit losses (ACL) as at October 31, 2019 was $2,094 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 on a probability-weighted basis, based on the Bank's forecast of future economic scenarios, for each exposure in the loan portfolio as a function of the probability of default (PD), exposure at default (EAD) and loss given default (LGD). In establishing APL, the Bank attaches probability weightings to three economic scenarios, which represent the Bank's view of a range of forecast economic conditions – 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 is generally recorded. The significant increase in credit risk assessment 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 as a critical audit matter because there was a high degree of measurement uncertainty in the key inputs, methodologies and judgments and their resulting impact on credit losses, as described above. Assessing the APL required significant auditor attention and complex auditor judgment, and knowledge and experience in the industry.

The primary procedures we performed to address this critical audit matter included the following. We tested 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. These included controls related to (1) the monitoring of the PD, LGD and EAD parameters and model validation, (2) technology controls over the data used in the APL models and the APL calculation, (3) the assessment to identify significant increases in credit risk, and (4) the review of the macroeconomic 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, economics, and information technology professionals with specialized skills, industry knowledge and relevant experience, who assisted in evaluating the (1) PD, LGD and EAD parameters produced by the models and the methodology for compliance with IFRS including the determination of significant increases in credit risk, and (2) key data inputs including historical data used in monitoring of model parameters, and the macroeconomic variables and probability weighting of scenarios used in the models, including consideration of alternative inputs for certain macroeconomic variables. For a sample of wholesale loans we evaluated the Bank's assigned credit risk ratings to loans against the Bank's borrower risk rating scale. We assessed the ECJ overlays applied by the Bank to the APL through the application of our knowledge of the industry and credit judgment.

Assessment of the Measurement of the Fair Value ofDifficult-to-value Securities
As discussed in Notes 1, 3 and 17 to the consolidated financial statements, the Bank's securities portfolio included $164,122 million of securities as at October 31, 2019 that are measured at fair value. Included in these amounts are certain difficult-to-value securities for which the Bank determines fair value using models and third party net asset valuations (NAVs) that use significant unobservable market information. Unobservable inputs require the use of significant judgment. The key unobservable inputs used in the valuation of such difficult-to-value securities are NAVs, discount margins, prepayment rates and EV/EBITDA multiples.

We identified the assessment of the measurement of the fair value ofdifficult-to-value securities as a critical audit matter because there was a high degree of measurement uncertainty in the prepayment rates and NAVs, that required significant auditor attention and complex auditor judgment, and knowledge and experience in the industry.

The primary procedures we performed to address this critical audit matter included the following. We tested certain internal controls over the Bank's process to determine the fair value of its difficult-to-value securities with the involvement of valuation and information technology professionals with specialized skills, industry knowledge and relevant experience. These included controls related to the (1) development and ongoing validation of valuation models and methodologies, (2) review of third party NAVs and other key inputs, (3) independent price verification, and (4) segregation of duties and access controls. We also tested the controls related to the assessment of fair value hierarchy classification. We tested, with the involvement of valuation professionals with specialized skills, industry knowledge and relevant experience, the fair value of a sample of difficult-to-value securities. Depending on the nature of the security, we did this by comparing the key unobservable inputs noted above to external information or by developing an independent estimate of fair value and 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 an estimate of the amount required to settle tax obligations.

We identified the assessment of income tax uncertainties as a critical audit matter. There was a high degree of subjectivity and judgment required in assessing the need to record a provision, based on interpretation of tax law, for these uncertainties and estimating the amount of such provision, if necessary. This required significant auditor attention and complex auditor judgment, and knowledge and experience in the industry.

The primary procedures we performed to address this critical audit matter included the following. We tested 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. These included controls related to the 1) identification of tax uncertainties based on interpretation of tax law and 2) determination of the best estimate of the provision required, if any. We involved tax professionals with specialized skills, industry knowledge and relevant experience, who assisted in 1) evaluating the Bank's interpretations of tax laws 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 3) reading correspondence with taxation authorities.

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, 2019 were $11,581 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 for mortality, policy lapses, surrenders, future investment yields, policy dividends, administration costs and margins for adverse deviation.

We identified the assessment of insurance-related liabilities as a critical audit matter, because there was a high degree of measurement uncertainty in the key assumptions, being mortality, policy lapses and future investment yields, that required significant auditor attention and complex auditor judgment, and knowledge and experience in the industry.

The primary procedures we performed to address this critical audit matter included the following. We tested certain internal controls over the Bank's process for the measurement of insurance-related liabilities, including controls over 1) the assessment of the key assumptions noted above, and 2) contract data used in the calculation of the insurance-related liabilities. Actuarial professionals with specialized skills, industry knowledge and relevant experience were involved in testing the controls over the key assumptions. We involved actuarial professionals with specialized skills, industry knowledge and relevant experience in testing the key assumptions noted above by examining the internal and external experience studies conducted by the Bank to support these estimates. We tested a sample of the underlying policyholder data used in the measurement of the liability to source documentation.

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 11 years.

Toronto, Canada
December 3, 2019

Report of Independent Registered Public Accounting Firm

To the Shareholders 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, 2019, 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, Bank of Montreal (the Bank) maintained, in all material respects, effective internal control over financial reporting as of October 31, 2019, 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 at October 31, 2019, and 2018, the related consolidated statements of income, comprehensive income, changes in equity and cash flows for each of the years in the three-year period ended October 31, 2019, and the related notes (collectively, the consolidated financial statements) and our report dated December 3, 2019 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 113 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.



Chartered Professional Accountants, Licensed Public Accountants
Toronto, Canada
December 3, 2019

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Consolidated Statement of Income

For the Year Ended October 31 (Canadian $ in millions, except as noted)	2019	2018	2017
Interest, Dividend and Fee Income			
Loans	$ 19,824	$ 16,275	$ 13,564
Securities (Note 3) (1)	5,541	4,119	3,525
Deposits with banks	787	641	324
	26,152	21,035	17,413
Interest Expense			
Deposits	8,616	6,080	3,894
Subordinated debt	279	226	155
Other liabilities	4,369	3,291	2,089
	13,264	9,597	6,138
Net Interest Income	12,888	11,438	11,275
Non-Interest Revenue			
Securities commissions and fees	1,023	1,025	964
Deposit and payment service charges	1,204	1,134	1,109
Trading revenues	298	705	84
Lending fees	1,181	997	917
Card fees	437	428	329
Investment management and custodial fees	1,747	1,749	1,627
Mutual fund revenues	1,419	1,473	1,411
Underwriting and advisory fees	986	943	1,044
Securities gains, other than trading (Note 3)	249	239	171
Foreign exchange gains, other than trading	166	182	191
Insurance revenue	3,183	1,879	2,070
Investments in associates and joint ventures	151	167	386
Other	551	546	529
	12,595	11,467	10,832
Total Revenue	25,483	22,905	22,107
Provision for Credit Losses (Notes 1 and 4)	872	662	746
Insurance Claims, Commissions and Changes in Policy Benefit Liabilities (Note 14)	2,709	1,352	1,538
Non-Interest Expense			
Employee compensation (Notes 20 and 21)	8,423	7,461	7,468
Premises and equipment (Note 9)	2,988	2,753	2,491
Amortization of intangible assets (Note 11)	554	503	485
Travel and business development	545	519	540
Communications	296	282	286
Professional fees	568	572	569
Other	1,256	1,387	1,353
	14,630	13,477	13,192
Income Before Provision for Income Taxes	7,272	7,414	6,631
Provision for income taxes (Note 22)	1,514	1,961	1,292
Net Income	$ 5,758	$ 5,453	$ 5,339
Attributable to:			
Equity holders of the bank	5,758	5,453	5,337
Non-controlling interest in subsidiaries	–	–	2
Net Income	$ 5,758	$ 5,453	$ 5,339
Earnings Per Common Share (Canadian $) (Note 23)			
Basic	$ 8.68	$ 8.19	$ 7.93
Diluted	8.66	8.17	7.90
Dividends per common share	4.06	3.78	3.56

(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 $1,853 million for the year ended October 31, 2019 ($1,290 million for the year ended October 31, 2018).

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 and for changes in accounting policy (Note 1).



Darryl White
Chief Executive Officer



Jan Babiak
Chair, Audit and Conduct Review Committee

CONSOLIDATED FINANCIAL STATEMENTS

Consolidated Statement of Comprehensive Income

For the Year Ended October 31 (Canadian $ in millions)	2019	2018	2017
Net Income	**$ 5,758**	$ 5,453	$ 5,339
Other Comprehensive Income (Loss), net of taxes (Note 22)			
Items that may subsequently be reclassified to net income			
Net change in unrealized gains (losses) on fair value through OCI debt securities			
Unrealized gains (losses) on fair value through OCI debt securities arising during the year (1)	**412**	(251)	na
Unrealized gains on available-for-sale securities arising during the year (2)	**na**	na	95
Reclassification to earnings of (gains) in the year (3)	**(72)**	(65)	(87)
	340	(316)	8
Net change in unrealized gains (losses) on cash flow hedges			
Gains (losses) on derivatives designated as cash flow hedges arising during the year (4)	**1,444**	(1,228)	(839)
Reclassification to earnings of losses on derivatives designated as cash flow hedges (5)	**143**	336	61
	1,587	(892)	(778)
Net gains (losses) on translation of net foreign operations			
Unrealized gains (losses) on translation of net foreign operations	**(11)**	417	(885)
Unrealized gains (losses) on hedges of net foreign operations (6)	**(13)**	(155)	23
	(24)	262	(862)
Items that will not be reclassified to net income			
Gains (losses) on remeasurement of pension and other employee future benefit plans (7)	**(552)**	261	420
Gains (losses) on remeasurement of own credit risk on financial liabilities designated at fair value (8)	**75**	(24)	(148)
Unrealized gains on fair value through OCI equity securities arising during the year (9)	**1**	–	na
	(476)	237	272
Other Comprehensive Income (Loss), net of taxes (Note 22)	**1,427**	(709)	(1,360)
Total Comprehensive Income	**$ 7,185**	$ 4,744	$ 3,979
Attributable to:			
Equity holders of the bank	**7,185**	4,744	3,977
Non-controlling interest in subsidiaries	**–**	–	2
Total Comprehensive Income	**$ 7,185**	$ 4,744	$ 3,979

(1) Net of income tax (provision) recovery of $(140) million, $69 million and na for the year ended, respectively.
(2) Net of income tax (provision) of na, na and $(21) million for the year ended, respectively.
(3) Net of income tax provision of $26 million, $23 million and $36 million for the year ended, respectively.
(4) Net of income tax (provision) recovery of $(521) million, $432 million and $322 million for the year ended, respectively.
(5) Net of income tax (recovery) of $(51) million, $(121) million and $(21) million for the year ended, respectively.
(6) Net of income tax (provision) recovery of $4 million, $56 million and $(8) million for the year ended, respectively.
(7) Net of income tax (provision) recovery of $196 million, $(111) million and $(157) million for the year ended, respectively.
(8) Net of income tax (provision) recovery of $(27) million, $6 million and $53 million for the year ended, respectively.
(9) Net of income tax (provision) of $(1) million, $nil and na for the year ended, respectively.
na – not applicable due to IFRS 9 adoption.

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 and for changes in accounting policy (Note 1).

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Consolidated Balance Sheet

As at October 31 (Canadian $ in millions)	2019	2018
Assets		
Cash and Cash Equivalents (Note 2)	$ 48,803	$ 42,142
Interest Bearing Deposits with Banks (Note 2)	7,987	8,305
Securities (Note 3)		
Trading	85,903	99,697
Fair value through profit or loss	13,704	11,611
Fair value through other comprehensive income	64,515	62,440
Debt securities at amortized cost	24,472	6,485
Other	844	702
	189,438	180,935
Securities Borrowed or Purchased Under Resale Agreements (Note 4)	104,004	85,051
Loans (Notes 4 and 6)		
Residential mortgages	123,740	119,620
Consumer instalment and other personal	67,736	63,225
Credit cards	8,859	8,329
Business and government	227,609	194,456
	427,944	385,630
Allowance for credit losses (Notes 1 and 4)	(1,850)	(1,639)
	426,094	383,991
Other Assets		
Derivative instruments (Note 8)	22,144	25,422
Customers' liability under acceptances (Note 12)	23,593	18,585
Premises and equipment (Note 9)	2,055	1,986
Goodwill (Note 11)	6,340	6,373
Intangible assets (Note 11)	2,424	2,272
Current tax assets	1,165	1,515
Deferred tax assets (Note 22)	1,568	2,039
Other (Note 12)	16,580	14,677
	75,869	72,869
Total Assets	$ 852,195	$ 773,293
Liabilities and Equity		
Deposits (Note 13)	$ 568,143	$ 520,928
Other Liabilities		
Derivative instruments (Note 8)	23,598	23,629
Acceptances (Note 14)	23,593	18,585
Securities sold but not yet purchased (Note 14)	26,253	28,804
Securities lent or sold under repurchase agreements (Note 6)	86,656	66,684
Securitization and structured entities' liabilities (Notes 6 and 7)	27,159	25,051
Current tax liabilities	55	50
Deferred tax liabilities (Note 22)	60	74
Other (Note 14)	38,607	36,985
	225,981	199,862
Subordinated Debt (Note 15)	6,995	6,782
Equity		
Preferred shares and other equity instruments (Note 16)	5,348	4,340
Common shares (Note 16)	12,971	12,929
Contributed surplus	303	300
Retained earnings	28,725	25,850
Accumulated other comprehensive income	3,729	2,302
Total Equity	51,076	45,721
Total Liabilities and Equity	$ 852,195	$ 773,293

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 and for changes in accounting policy (Note 1).

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CONSOLIDATED FINANCIAL STATEMENTS

Consolidated Statement of Changes in Equity

For the Year Ended October 31 (Canadian $ in millions)	2019	2018	2017
Preferred Shares and Other Equity Instruments (Note 16)			
Balance at beginning of year	**$ 4,340**	$ 4,240	$ 3,840
Issued during the year	**1,008**	400	900
Redeemed during the year	**–**	(300)	(500)
Balance at End of Year	**5,348**	4,340	4,240
Common Shares (Note 16)			
Balance at beginning of year	**12,929**	13,032	12,539
Issued under the Shareholder Dividend Reinvestment and Share Purchase Plan	**–**	–	448
Issued under the Stock Option Plan	**62**	99	146
Repurchased for cancellation	**(20)**	(202)	(101)
Balance at End of Year	**12,971**	12,929	13,032
Contributed Surplus			
Balance at beginning of year	**300**	307	294
Stock option expense, net of options exercised (Note 20)	**–**	(12)	6
Other	**3**	5	7
Balance at End of Year	**303**	300	307
Retained Earnings			
Balance at beginning of year	**25,850**	23,700	21,207
Impact from adopting IFRS 9 (Note 28)	**–**	99	na
Net income attributable to equity holders of the bank	**5,758**	5,453	5,337
Dividends – Preferred shares (Note 16)	**(211)**	(184)	(184)
– Common shares (Note 16)	**(2,594)**	(2,424)	(2,312)
Equity issue expense	**(8)**	(5)	(9)
Common shares repurchased for cancellation (Note 16)	**(70)**	(789)	(339)
Balance at End of Year	**28,725**	25,850	23,700
Accumulated Other Comprehensive Income (Loss) on Fair Value through OCI Securities, net of taxes (1)			
Balance at beginning of year	**(315)**	56	48
Impact from adopting IFRS 9 (Note 28)	**–**	(55)	na
Unrealized gains (losses) on fair value through OCI debt securities arising during the year	**412**	(251)	na
Unrealized gains on fair value through OCI equity securities arising during the year	**1**	–	na
Unrealized gains on available-for-sale securities arising during the year	**na**	na	95
Reclassification to earnings of (gains) during the year	**(72)**	(65)	(87)
Balance at End of Year	**26**	(315)	56
Accumulated Other Comprehensive Income (Loss) on Cash Flow Hedges, net of taxes			
Balance at beginning of year	**(1,074)**	(182)	596
Gains (losses) on derivatives designated as cash flow hedges arising during the year (Note 8)	**1,444**	(1,228)	(839)
Reclassification to earnings of losses on derivatives designated as cash flow hedges in the year	**143**	336	61
Balance at End of Year	**513**	(1,074)	(182)
Accumulated Other Comprehensive Income on Translation of Net Foreign Operations, net of taxes			
Balance at beginning of year	**3,727**	3,465	4,327
Unrealized gains (losses) on translation of net foreign operations	**(11)**	417	(885)
Unrealized gains (losses) on hedges of net foreign operations	**(13)**	(155)	23
Balance at End of Year	**3,703**	3,727	3,465
Accumulated Other Comprehensive Income (Loss) on Pension and Other Employee Future Benefit Plans, net of taxes			
Balance at beginning of year	**169**	(92)	(512)
Gains (losses) on remeasurement of pension and other employee future benefit plans (Note 21)	**(552)**	261	420
Balance at End of Year	**(383)**	169	(92)
Accumulated Other Comprehensive Loss on Own Credit Risk on Financial Liabilities Designated at Fair Value, net of taxes			
Balance at beginning of year	**(205)**	(181)	(33)
Gains (losses) on remeasurement of own credit risk on financial liabilities designated at fair value	**75**	(24)	(148)
Balance at End of Year	**(130)**	(205)	(181)
Total Accumulated Other Comprehensive Income	**3,729**	2,302	3,066
Total Equity	**$ 51,076**	$ 45,721	$ 44,345
Non-controlling Interest in Subsidiaries			
Balance at beginning of year	**–**	–	24
Net income attributable to non-controlling interest	**–**	–	2
Redemption/purchase of non-controlling interest	**–**	–	(25)
Other	**–**	–	(1)
Balance at End of Year	**–**	–	–
Total Equity	**$ 51,076**	$ 45,721	$ 44,345

(1) Fiscal 2017 represents available-for-sale securities (Note 1).

na – not applicable due to IFRS 9 adoption.

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 and for changes in accounting policy (Note 1).

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Consolidated Statement of Cash Flows

For the Year Ended October 31 (Canadian $ in millions)	2019	2018	2017
Cash Flows from Operating Activities			
Net Income	**$ 5,758**	$ 5,453	$ 5,339
Adjustments to determine net cash flows provided by (used in) operating activities			
Provision on securities, other than trading (Note 3)	**1**	1	7
Net (gain) on securities, other than trading (Note 3)	**(250)**	(240)	(178)
Net (increase) decrease in trading securities	**13,816**	(2,650)	(16,237)
Provision for credit losses (Note 4)	**872**	662	746
Change in derivative instruments – Decrease in derivative asset	**6,902**	6,069	15,544
– (Decrease) in derivative liability	**(3,774)**	(7,481)	(14,923)
Depreciation of premises and equipment (Note 9)	**435**	400	391
Amortization of other assets	**216**	224	227
Amortization of intangible assets (Note 11)	**554**	503	485
Net decrease in deferred income tax asset	**483**	832	156
Net increase (decrease) in deferred income tax liability	**(15)**	2	(12)
Net (increase) decrease in current income tax asset	**354**	(232)	(497)
Net increase (decrease) in current income tax liability	**6**	(87)	52
Change in accrued interest – (Increase) in interest receivable	**(299)**	(366)	(130)
– Increase in interest payable	**313**	337	15
Changes in other items and accruals, net	**(1,255)**	2,078	(3,405)
Net increase in deposits	**48,009**	34,138	15,409
Net (increase) in loans	**(43,381)**	(23,089)	(6,823)
Net increase (decrease) in securities sold but not yet purchased	**(2,524)**	2,004	336
Net increase in securities lent or sold under repurchase agreements	**20,358**	452	16,535
Net (increase) in securities borrowed or purchased under resale agreements	**(19,396)**	(2,958)	(10,891)
Net increase in securitization and structured entities' liabilities	**2,120**	1,860	762
Net Cash Provided by Operating Activities	**29,303**	17,912	2,908
Cash Flows from Financing Activities			
Net increase (decrease) in liabilities of subsidiaries	**(1,227)**	2,203	(87)
Proceeds from issuance of covered bonds (Note 13)	**4,168**	2,706	5,845
Redemption of covered bonds (Note 13)	**(3,765)**	(567)	(2,602)
Proceeds from issuance of subordinated debt (Note 15)	**1,000**	2,685	850
Repayment of subordinated debt (Note 15)	**(1,000)**	(900)	(100)
Proceeds from issuance of preferred shares and other equity instruments (Note 16)	**1,008**	400	900
Redemption of preferred shares (Note 16)	**–**	(300)	(500)
Equity issue expense	**(8)**	(5)	(9)
Proceeds from issuance of common shares (Note 16)	**54**	88	149
Common shares repurchased for cancellation (Note 16)	**(90)**	(991)	(440)
Cash dividends and distributions paid	**(2,752)**	(2,582)	(2,010)
Net Cash Provided by (Used in) Financing Activities	**(2,612)**	2,737	1,996
Cash Flows from Investing Activities			
Net (increase) decrease in interest bearing deposits with banks	**329**	(1,648)	(2,245)
Purchases of securities, other than trading	**(63,496)**	(46,749)	(30,424)
Maturities of securities, other than trading	**13,154**	14,754	5,930
Proceeds from sales of securities, other than trading	**31,561**	23,561	24,400
Purchase of non-controlling interest	**–**	–	(25)
Premises and equipment – net (purchases) (Note 9)	**(478)**	(330)	(301)
Purchased and developed software – net (purchases) (Note 11)	**(650)**	(556)	(490)
Acquisitions (Note 10)	**–**	(365)	–
Net Cash (Used in) Investing Activities	**(19,580)**	(11,333)	(3,155)
Effect of Exchange Rate Changes on Cash and Cash Equivalents	**(450)**	227	(803)
Net increase in Cash and Cash Equivalents	**6,661**	9,543	946
Cash and Cash Equivalents at Beginning of Year	**42,142**	32,599	31,653
Cash and Cash Equivalents at End of Year (Note 2)	**$ 48,803**	$ 42,142	$ 32,599
Supplemental Disclosure of Cash Flow Information			
Net cash provided by operating activities includes:			
Interest paid in the year	**$ 12,956**	$ 8,790	$ 5,826
Income taxes paid in the year	**$ 1,209**	$ 1,261	$ 1,338
Interest received in the year	**$ 23,966**	$ 18,867	$ 15,553
Dividends received in the year	**$ 1,740**	$ 1,736	$ 2,063

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 and for changes in accounting policy (Note 1).

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 1: Basis of Presentation

Bank of Montreal ("the bank") 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 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 3, 2019.

Basis of Consolidation

These consolidated financial statements are inclusive of the financial statements of our subsidiaries as at October 31, 2019. 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 net income or loss, including other comprehensive income or loss. Our equity accounted investments are recorded as other securities and our share of the net income or loss is recorded in investments in associates and joint ventures, in our Consolidated Statement of Income. Any other comprehensive income amounts are reflected in the relevant section of our Consolidated Statement of Comprehensive Income. Additional information regarding accounting for other securities is included in Note 3.

Specific 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:

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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 Wealth Management and Capital Markets on brokerage transactions executed for customers, generally as a fixed fee per share traded, where 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 they 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 or at a point in time, i.e. over the period that account maintenance and cash management services are provided, or 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 certain of our cards are recorded as a reduction in card fees.

Investment management and custodial fees are earned in 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 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 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 or milestones 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.

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

Revenue

Effective November 1, 2018, we adopted IFRS 15 *Revenue from Contracts with Customers* ("IFRS 15"). We elected to retrospectively present prior periods as if IFRS 15 had always been applied. Under the new standard, the primary impact is the reclassification of amounts within the Consolidated Statement of Income. As a result, loyalty rewards and cash promotion costs on cards previously recorded in non-interest expense are presented as a reduction in non-interest revenue. In addition, when customers reimburse us for certain out-of-pocket expenses incurred on their behalf, we now record the reimbursement in non-interest revenue. Previously, these reimbursements were recorded as a reduction in the related expense. There is minimal impact to net income as IFRS 15 does not require discounting of loyalty reward liabilities and we now amortize the costs to obtain card customers, which were previously expensed as incurred.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

The following table summarizes the impacts of applying IFRS 15 on our prior period Consolidated Statement of Income:

(Canadian $ in millions)	2018	2017
Increase (decrease) in		
Non-Interest Revenue		
Securities commissions and fees	(4)	(5)
Deposit and payment service charges	(10)	(14)
Card fees	(136)	(150)
Investment management and custodial fees	7	5
Underwriting and advisory fees	7	8
Other	4	3
	(132)	(153)
Non-Interest Expense		
Employee compensation	2	1
Travel and business development	(154)	(153)
Professional fees	8	6
Other	8	8
	(136)	(138)
Provision for income taxes	1	(4)
Net Income	3	(11)

Share-based Payment

Effective November 1, 2018, we adopted amendments to IFRS 2 *Share-based Payment* in relation to the classification and measurement of share-based payment transactions. There was no impact to our consolidated financial statements.

Financial Instruments

Effective November 1, 2017, we adopted IFRS 9 *Financial Instruments* ("IFRS 9"), which replaced IAS 39 *Financial Instruments: Recognition and Measurement* ("IAS 39"). IFRS 9 addresses impairment, classification and measurement, and hedge accounting. 2017 amounts in our Consolidated Statement of Income and Consolidated Statement of Comprehensive Income have not been restated. The impact to equity at November 1, 2017 was an increase of $70 million ($44 million after tax) related to the impairment requirements of the standard. Refer to Note 28, Transition to IFRS 9 for the impact on the opening balance sheet at November 1, 2017 and for accounting policies under IAS 39, which were applicable in the year ended October 31, 2017.

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 include allowance for credit losses; financial instruments measured at fair value; pension and other employee future benefits; impairment of securities; income taxes and deferred tax assets; goodwill and intangible assets; insurance-related liabilities; and provisions. 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.

We have established detailed policies and control procedures that are intended to ensure these judgments are well controlled, independently reviewed and consistently applied from period to period. We believe that our estimates of the value of our assets and liabilities are appropriate.

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 main factors considered in making this determination are relative changes in probability of default since origination, and 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 benefits 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 benefits 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 other securities 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 other securities, 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 income 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 restructuring, 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 Financial Assets and Consolidation of Structured Entities

We enter into transactions in which we transfer assets, typically mortgage loans and credit card loans, to a structured entity or third party to obtain alternate sources of funding. We assess whether substantially all of the risks and rewards of or control over the loans have been transferred to determine if they qualify for derecognition. Since we continue to be exposed to substantially all of the repayment, interest rate and/or credit risk associated with the securitized loans, they do not qualify for derecognition. We continue to recognize the loans and the related cash proceeds as secured financings in our Consolidated Balance Sheet.

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 how activities are funded. We control and consolidate these vehicles when we have the key decision-making powers necessary to obtain the majority of the benefits of 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 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.

Transferred assets are discussed in greater detail in Note 6 and structured entities are discussed in greater detail in Notes 7 and 20.

Future Changes in IFRS

Leases

In January 2016, the IASB issued IFRS 16 *Leases* ("IFRS 16"), which provides guidance whereby for most leases, lessees will recognize a liability for the present value of future lease payments and record a corresponding asset on the balance sheet. There are minimal changes to lessor accounting. IFRS 16 is effective for our fiscal year beginning November 1, 2019.

The main impact for the bank will be recording real estate leases on the balance sheet. Currently, most of our real estate leases are classified as operating leases, whereby we record lease expense over the lease term with no asset or liability recorded on the balance sheet other than any related leasehold improvements. Under IFRS 16, we will recognize right-of-use assets, which will depreciate, and lease liabilities, which will accrete interest, over the lease term.

On transition, we will recalculate the right-of-use asset as if we had always applied IFRS 16 for a selection of leases, and for the remaining leases, we will set the right-of-use asset equal to the lease liability. We will continue to account for low-dollar-value leases as executory contracts, with lease expense recorded over the lease term and no corresponding right-of-use asset or lease liability for certain types of leases. In addition, we have elected to exclude intangibles from the scope of lease accounting, and we will combine lease and non-lease components (for example, maintenance and utilities that have fixed payments) in the calculation of right-of-use assets and lease liabilities.

When we adopt IFRS 16, we will recognize the cumulative effect of any changes in opening retained earnings with no changes to prior years. The impact will be an increase in assets of approximately $2.0 billion, an increase in liabilities of approximately $2.1 billion, a decrease in equity of approximately $100 million ($75 million after tax) and a decrease in our CET1 capital ratio by up to approximately 10 bps.

Uncertainty Over Income Tax Treatments

On June 7, 2017, the IASB issued IFRIC Interpretation 23 *Uncertainty over Income Tax Treatments*, effective for the bank beginning November 1, 2019. The Interpretation clarifies the recognition and measurement requirements in IAS 12 *Income Taxes* when there is uncertainty over income tax treatments. We do not expect the Interpretation to have a significant impact on our financial results.

Interbank Offered Rate ("IBOR") Reform

The IASB published Phase 1 of its amendments to IFRS 9 *Financial Instruments* and IAS 39 *Financial Instruments: Recognition and Measurement*, as well as IFRS 7 *Financial Instruments: Disclosures* in September 2019, to provide relief from the potential effects of the uncertainty arising from Interbank Offered Rate (IBOR) reform, focusing in particular on the period prior to replacement of interbank offered rates. These amendments modify hedge accounting requirements, allowing us to assume that the interest rate benchmark on which the cash flows of the hedged item and the hedging instrument are based are not altered as a result of IBOR reform, thereby allowing hedge accounting to continue. Mandatory application of the amendments ends at the earlier of when the uncertainty regarding the timing and amount of interest rate benchmark-based cash flows is no longer present and the discontinuation of the hedging relationship. Phase 2 of the IASB's project on IBOR is underway and will address transition to IBOR.

The Phase 1 amendments are effective for our fiscal year beginning November 1, 2020, with early adoption permitted. We are in the process of assessing our inventory of IBOR-based instruments and related hedge accounting relationships to evaluate the impact of these amendments on our financial results. We provide disclosure on our current hedging relationships in Note 8.

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*. In June 2019, the IASB published an Exposure Draft which proposes to defer the effective date by one year, which would change the anticipated effective date for the bank to November 1, 2022. We will continue to closely monitor the ongoing developments related to the standard. In order to meet the requirements of IFRS 17, we have established a project and are currently assessing the impact of the standard on our future financial results.

Conceptual Framework

In March 2018, the IASB issued 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, which is effective for our fiscal year beginning November 1, 2020, will inform future standard-setting decisions but does not impact existing IFRS. We do not expect the Framework to have a significant impact on our accounting policies.

Note 2: Cash and Interest Bearing Deposits with Banks

(Canadian $ in millions)	2019	2018
Cash and deposits with banks (1)	**47,598**	40,738
Cheques and other items in transit, net	**1,205**	1,404
Total cash and cash equivalents	**48,803**	42,142

(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 $1,896 million as at October 31, 2019 ($1,655 million in 2018).

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. 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 reliably measurable fair values, 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 fair value through profit or loss, 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 $10,805 million as at October 31, 2019 ($8,783 million as at October 31, 2018) is recorded in securities in our Consolidated Balance Sheet. The impact of recording these investments at fair value through profit or loss was an increase of $1,006 million in non-interest revenue, insurance revenue, for the year ended October 31, 2019 (decrease of $372 million for the year ended October 31, 2018).

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 bank's FVTPL securities of $13,704 million as at October 31, 2019 ($11,611 million as at October 31, 2018) include $2,899 million of securities mandatorily measured at fair value as at October 31, 2019 ($2,828 million as at October 31, 2018).

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 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.

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.

Other securities are investments in associates and joint ventures. Investments in associates are 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 of accounting. The equity method is also applied to our interests in joint ventures over which we have joint control. Our share of the net income or loss is recorded in investments 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. Changes in fair value between the trade date and settlement date are recorded in net income, except for those related to securities measured at FVOCI, which are recorded in other comprehensive income.

Impairment Review

Debt securities at amortized cost or FVOCI are assessed for impairment using the ECL model, with the exception of securities determined to have low credit risk, where the allowance for credit losses is measured at a 12 month expected credit loss. A financial asset is considered to have low credit risk if the financial asset 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 $24,472 million as at October 31, 2019 ($6,485 million as at October 31, 2018) are net of allowances for credit losses of $1 million as at October 31, 2019 ($1 million as at October 31, 2018).

Debt securities at FVOCI totalling $64,434 million as at October 31, 2019 ($62,378 million as at October 31, 2018) are net of allowances for credit losses of $2 million as at October 31, 2019 ($2 million as at October 31, 2018).

Equity securities at FVOCI totalling $81 million as at October 31, 2019 ($62 million as at October 31, 2018) are not subject to an impairment assessment.

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.

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Remaining Term to Maturity of Securities

(Canadian $ in millions, except as noted)	Term to maturity						2019	2018
	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	1,860	3,302	1,414	829	925	–	8,330	10,320
Canadian provincial and municipal governments	921	1,122	735	1,170	3,579	–	7,527	8,702
U.S. federal government	859	3,677	2,432	1,620	175	–	8,763	9,517
U.S. states, municipalities and agencies	232	124	52	195	71	–	674	1,216
Other governments	437	719	296	133	–	–	1,585	1,412
NHA MBS, U.S. agency MBS and CMO (1)	226	171	208	203	10,238	–	11,046	9,184
Corporate debt	1,293	1,613	1,408	1,297	2,107	–	7,718	9,198
Trading loans	7	31	41	24	–	–	103	199
Corporate equity	–	–	–	–	–	40,157	40,157	49,949
Total trading securities	5,835	10,759	6,586	5,471	17,095	40,157	85,903	99,697
FVTPL Securities								
Issued or guaranteed by:								
Canadian federal government	392	4	2	3	116	–	517	431
Canadian provincial and municipal governments	12	10	5	53	1,199	–	1,279	946
U.S. federal government	48	–	–	–	–	–	48	69
Other governments	–	–	49	–	–	–	49	–
NHA MBS, U.S. agency MBS and CMO (1)	–	5	–	–	–	–	5	7
Corporate debt	578	71	128	1,083	6,357	–	8,217	6,820
Corporate equity	–	–	–	–	–	3,589	3,589	3,338
Total FVTPL securities	1,030	90	184	1,139	7,672	3,589	13,704	11,611
FVOCI Securities								
Issued or guaranteed by:								
Canadian federal government								
Amortized cost	5,618	2,090	3,059	1,109	–	–	11,876	12,884
Fair value	5,617	2,098	3,106	1,123	–	–	11,944	12,805
Yield (%)	1.60	1.48	2.01	1.97	–	–	1.72	1.64
Canadian provincial and municipal governments								
Amortized cost	1,406	1,720	2,428	353	–	–	5,907	6,896
Fair value	1,406	1,740	2,503	363	–	–	6,012	6,862
Yield (%)	1.67	2.32	2.63	3.05	–	–	2.34	1.90
U.S. federal government								
Amortized cost	5	3,770	5,095	6,493	–	–	15,363	17,403
Fair value	8	3,820	5,222	6,925	–	–	15,975	16,823
Yield (%)	1.90	2.23	2.15	2.74	–	–	2.42	2.22
U.S. states, municipalities and agencies								
Amortized cost	389	703	961	1,036	1,002	–	4,091	3,694
Fair value	389	709	991	1,065	1,007	–	4,161	3,655
Yield (%)	1.93	2.21	2.57	2.67	3.00	–	2.58	2.42
Other governments								
Amortized cost	947	2,691	3,466	75	–	–	7,179	4,818
Fair value	951	2,727	3,582	75	–	–	7,335	4,790
Yield (%)	1.27	2.53	2.56	3.17	–	–	2.38	2.39
NHA MBS (1)								
Amortized cost	29	409	1,515	–	–	–	1,953	2,382
Fair value	30	411	1,529	–	–	–	1,970	2,370
Yield (%)	2.13	1.71	2.31	–	–	–	2.18	1.98
U.S. agency MBS and CMO (1)								
Amortized cost	12	58	146	2,361	9,389	–	11,966	11,811
Fair value	13	58	150	2,416	9,393	–	12,030	11,317
Yield (%)	2.16	2.28	2.95	2.81	1.96	–	2.14	2.33
Corporate debt								
Amortized cost	1,196	2,336	1,312	35	20	–	4,899	3,783
Fair value	1,197	2,378	1,374	37	21	–	5,007	3,756
Yield (%)	1.28	2.76	3.06	3.09	3.32	–	2.48	2.67
Corporate equity								
Cost	–	–	–	–	–	79	79	62
Fair value	–	–	–	–	–	81	81	62
Total cost or amortized cost	9,602	13,777	17,982	11,462	10,411	79	63,313	63,733
Total fair value	9,611	13,941	18,457	12,004	10,421	81	64,515	62,440
Yield (%)	1.55	2.26	2.38	2.69	2.06	–	2.23	2.13
Amortized Cost Securities								
Issued or guaranteed by:								
Canadian federal government								
Amortized cost	–	701	3,018	813	–	–	4,532	–
Fair value	–	701	3,021	812	–	–	4,534	–
Canadian provincial and municipal governments								
Amortized cost	290	399	1,460	1,404	–	–	3,553	832
Fair value	291	399	1,481	1,405	–	–	3,576	841
U.S. federal government								
Amortized cost	–	2,236	1,339	2,638	–	–	6,213	–
Fair value	–	2,245	1,339	2,630	–	–	6,214	–
Other governments								
Amortized cost	3	667	334	45	–	–	1,049	10
Fair value	3	667	334	45	–	–	1,049	10
NHA MBS, U.S. agency MBS and CMO (1)								
Amortized cost	131	366	642	2,073	5,062	–	8,274	5,552
Fair value	131	368	654	2,116	5,129	–	8,398	5,346
Corporate debt								
Amortized cost	175	306	201	110	59	–	851	91
Fair value	175	305	202	110	59	–	851	91
Total cost or amortized cost	599	4,675	6,994	7,083	5,121	–	24,472	6,485
Total fair value	600	4,685	7,031	7,118	5,188	–	24,622	6,288
Other Securities								
Carrying value	–	–	–	–	–	844	844	702
Total carrying value or amortized cost of securities	17,066	29,301	31,746	25,155	40,299	44,669	188,236	182,228
Total value of securities	17,075	29,465	32,221	25,697	40,309	44,671	189,438	180,935
Total by Currency (in Canadian $ equivalent)								
Canadian dollar	13,507	10,843	13,417	7,314	14,102	26,722	85,905	82,767
U.S. dollar	2,691	18,392	18,656	18,373	26,204	16,257	100,573	96,266
Other currencies	877	230	148	10	3	1,692	2,960	1,902
Total securities	17,075	29,465	32,221	25,697	40,309	44,671	189,438	180,935

(1) These amounts are 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.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Unrealized Gains and Losses on FVOCI Securities

The following table summarizes the unrealized gains and losses:

(Canadian $ in millions)	2019				2018			
	Amortized cost	**Gross unrealized gains**	**Gross unrealized losses**	**Fair value**	Amortized cost	Gross unrealized gains	Gross unrealized losses	Fair value
Issued or guaranteed by:								
Canadian federal government	**11,876**	**72**	**4**	**11,944**	12,884	1	80	12,805
Canadian provincial and municipal governments	**5,907**	**106**	**1**	**6,012**	6,896	8	42	6,862
U.S. federal government	**15,363**	**617**	**5**	**15,975**	17,403	4	584	16,823
U.S. states, municipalities and agencies	**4,091**	**74**	**4**	**4,161**	3,694	16	55	3,655
Other governments	**7,179**	**158**	**2**	**7,335**	4,818	2	30	4,790
NHA MBS	**1,953**	**18**	**1**	**1,970**	2,382	6	18	2,370
U.S. agency MBS and CMO	**11,966**	**106**	**42**	**12,030**	11,811	2	496	11,317
Corporate debt	**4,899**	**110**	**2**	**5,007**	3,783	6	33	3,756
Corporate equity	**79**	**2**	**–**	**81**	62	–	–	62
Total	**63,313**	**1,263**	**61**	**64,515**	63,733	45	1,338	62,440

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 other securities and trading securities. Related income for trading securities is included under Trading-Related Revenue in Note 17.

(Canadian $ in millions)	**2019**	2018	2017
FVTPL	**34**	16	na
FVOCI	**1,585**	1,118	na
Amortized cost	**268**	172	na
Available-for-sale securities	**na**	na	662
Held-to-maturity securities	**na**	na	150
Total	**1,887**	1,306	812

na – not applicable due to IFRS 9 adoption.

Non-Interest Revenue

Net gains and losses from securities, excluding net realized and unrealized gains on trading securities, have been included in our Consolidated Statement of Income as follows:

(Canadian $ in millions)	**2019**	2018	2017
Non-Interest Revenue			
FVTPL securities	**164**	93	na
FVOCI securities (1)			
Gross realized gains	**209**	363	228
Gross realized (losses)	**(123)**	(216)	(99)
Other securities, net realized and unrealized gains	**–**	–	49
Impairment losses	**(1)**	(1)	(7)
Securities gains, other than trading (2)	**249**	239	171

(1) Realized gains (losses) are net of unrealized gains (losses) on related hedge contracts. Fiscal 2017 represents available-for-sale securities.

(2) The following amounts of income related to our insurance operations were included in non-interest revenue, insurance revenue, in our Consolidated Statement of Income: Interest, dividend and fee income of $407 million for the year ended October 31, 2019 ($354 million in 2018); and securities gains, other than trading, of $11 million for the year ended October 31, 2019 ($1 million in 2018).

Unrealized gains and losses on trading securities are included in trading-related revenue in Note 17.

na – not applicable due to IFRS 9 adoption.

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

Note 4: Loans and Allowance for Credit Losses

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. 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 arise in Personal and Commercial Banking and 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 the 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, default or delinquency. 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 recovery attempts have been exhausted.

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 continue to apply.

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 past due more than 90 days (180 days for credit card loans). Overdrafts are considered to be past due once the customer has breached an advised limit or has been advised of a limit smaller 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.

Our average gross impaired loans were $2,285 million for the year ended October 31, 2019 ($2,115 million in 2018). Our average impaired loans, net of the specific allowance, were $1,864 million for the year ended October 31, 2019 ($1,706 million in 2018).

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 $80 million was recognized for the year ended October 31, 2019 ($67 million in 2018 and $75 million in 2017).

During the year ended October 31, 2019, we recorded a net gain of $11 million before tax ($4 million in 2018 and $28 million in 2017) 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 $2,094 million as at October 31, 2019 ($1,870 million in 2018), of which $1,850 million ($1,639 million in 2018) was recorded in loans and $244 million ($231 million in 2018) 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 main factors considered in making this determination are relative changes in probability-weighted probability of default ("PD") since origination and certain other criteria, such as 30-day past due and watchlist status.

For each exposure, ECL is a function of the 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. The 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 outstanding amount of credit exposure 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 forward-looking supportable information about future economic conditions in calculating the amount of expected losses. In assessing information about possible future economic conditions, we utilize multiple economic scenarios, including our base case, which represents, in our view, the most probable outcome, as well as benign and adverse forecasts, 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.

Allowance on Impaired Loans

We maintain an allowance on individually identified impaired loans (Stage 3) of $463 million as at October 31, 2019 ($370 million as at October 31, 2018) on our gross impaired loans of $2,629 million as at October 31, 2019 ($1,936 million as at October 31, 2018), to reduce their carrying value to an expected recoverable amount of $2,166 million as at October 31, 2019 ($1,566 million as at October 31, 2018).

We review our loans on an ongoing basis to assess whether any loans should be classified as impaired and whether an allowance orwrite-off should be recorded (excluding credit card loans, which are classified as impaired and 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 tables set out our credit risk exposure for all loans carried at amortized cost, FVOCI or FVTPL as at October 31, 2019 and October 31, 2018. 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 credit loss that are credit impaired.

(Canadian $ in millions)	October 31, 2019			
	Stage 1	Stage 2	Stage 3	Total
Loans: Residential mortgages				
Exceptionally low	–	–	–	–
Very low	79,011	242	–	79,253
Low	20,853	2,821	–	23,674
Medium	13,651	4,578	–	18,229
High	124	397	–	521
Not rated	1,531	118	–	1,649
Impaired	–	–	414	414
Allowance for credit losses	15	32	17	64
Carrying amount	115,155	8,124	397	123,676
Loans: Consumer instalment and other personal				
Exceptionally low	21,023	25	–	21,048
Very low	16,491	194	–	16,685
Low	9,894	346	–	10,240
Medium	10,510	4,264	–	14,774
High	397	1,423	–	1,820
Not rated	2,594	107	–	2,701
Impaired	–	–	468	468
Allowance for credit losses	82	318	136	536
Carrying amount	60,827	6,041	332	67,200
Loans: Credit cards				
Exceptionally low	2,418	–	–	2,418
Very low	1,214	16	–	1,230
Low	970	158	–	1,128
Medium	2,020	876	–	2,896
High	140	440	–	580
Not rated	606	1	–	607
Impaired	–	–	–	–
Allowance for credit losses	43	193	–	236
Carrying amount	7,325	1,298	–	8,623
Loans: Business and government (1)				
Acceptable				
Investment grade	134,587	1,028	–	135,615
Sub-investment grade	96,731	11,553	–	108,284
Watchlist	–	5,556	–	5,556
Impaired	–	–	1,747	1,747
Allowance for credit losses	263	441	310	1,014
Carrying amount	231,055	17,696	1,437	250,188
Commitments and financial guarantee contracts				
Acceptable				
Investment grade	134,920	884	–	135,804
Sub-investment grade	45,178	6,435	–	51,613
Watchlist	–	2,133	–	2,133
Impaired	–	–	324	324
Allowance for credit losses	119	103	22	244
Carrying amount (2)	179,979	9,349	302	189,630

(1) Includes customers' liability under acceptances.

(2) 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.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(Canadian $ in millions)

October 31, 2018	Stage 1	Stage 2	Stage 3	Total
Loans: Residential mortgages				
Exceptionally low	–	–	–	–
Very low	76,314	125	–	76,439
Low	18,975	2,479	–	21,454
Medium	12,621	3,765	–	16,386
High	90	445	–	535
Not rated	4,250	181	–	4,431
Impaired	–	–	375	375
Allowance for credit losses	20	37	19	76
Carrying amount	112,230	6,958	356	119,544
Loans: Consumer instalment and other personal				
Exceptionally low	20,236	20	–	20,256
Very low	13,364	222	–	13,586
Low	12,581	364	–	12,945
Medium	7,707	4,153	–	11,860
High	357	1,427	–	1,784
Not rated	2,105	168	–	2,273
Impaired	–	–	521	521
Allowance for credit losses	83	312	143	538
Carrying amount	56,267	6,042	378	62,687
Loans: Credit cards				
Exceptionally low	2,403	4	–	2,407
Very low	1,140	11	–	1,151
Low	943	107	–	1,050
Medium	1,742	874	–	2,616
High	108	428	–	536
Not rated	568	1	–	569
Impaired	–	–	–	–
Allowance for credit losses	39	191	–	230
Carrying amount	6,865	1,234	–	8,099
Loans: Business and government (1)				
Acceptable				
Investment grade	109,774	2,148	–	111,922
Sub-investment grade	88,348	7,308	–	95,656
Watchlist	–	4,423	–	4,423
Impaired	–	–	1,040	1,040
Allowance for credit losses	232	355	208	795
Carrying amount	197,890	13,524	832	212,246
Commitments and financial guarantee contracts				
Acceptable				
Investment grade	116,108	1,722	–	117,830
Sub-investment grade	44,895	3,426	–	48,321
Watchlist	–	1,650	–	1,650
Impaired	–	–	242	242
Allowance for credit losses	108	96	27	231
Carrying amount (2)	160,895	6,702	215	167,812

(1) Includes customers' liability under acceptances.

(2) 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.

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

The following table shows the continuity in the loss allowance, by product type, for the year ended October 31, 2019:

(Canadian $ in millions)

For the year ended	Stage 1	Stage 2	Stage 3	Total
Loans: Residential mortgages				
Balance as at October 31, 2018	20	38	44	102
Transfer to Stage 1 (1)	27	(25)	(2)	–
Transfer to Stage 2 (1)	(2)	7	(5)	–
Transfer to Stage 3 (1)	–	(8)	8	–
Net remeasurement of loss allowance (2)	(35)	26	15	6
Loan originations	7	–	–	7
Derecognitions and maturities	(2)	(4)	–	(6)
Total provision for credit losses ("PCL") (3)	(5)	(4)	16	7
Write-offs (4)	–	–	(19)	(19)
Recoveries of previous write-offs	–	–	13	13
Foreign exchange and other	–	(1)	(16)	(17)
Balance as at October 31, 2019	15	33	38	86
Loans: Consumer instalment and other personal				
Balance as at October 31, 2018	90	326	144	560
Transfer to Stage 1 (1)	174	(161)	(13)	–
Transfer to Stage 2 (1)	(18)	85	(67)	–
Transfer to Stage 3 (1)	(5)	(109)	114	–
Net remeasurement of loss allowance (2)	(183)	232	167	216
Loan originations	48	–	–	48
Derecognitions and maturities	(16)	(40)	–	(56)
Total PCL (3)	–	7	201	208
Write-offs (4)	–	–	(306)	(306)
Recoveries of previous write-offs	–	–	118	118
Foreign exchange and other	(1)	–	(21)	(22)
Balance as at October 31, 2019	89	333	136	558
Loans: Credit cards				
Balance as at October 31, 2018	74	219	–	293
Transfer to Stage 1 (1)	107	(107)	–	–
Transfer to Stage 2 (1)	(21)	21	–	–
Transfer to Stage 3 (1)	(1)	(173)	174	–
Net remeasurement of loss allowance (2)	(96)	288	72	264
Loan originations	20	–	–	20
Derecognitions and maturities	(4)	(24)	–	(28)
Total PCL (3)	5	5	246	256
Write-offs (4)	–	–	(339)	(339)
Recoveries of previous write-offs	–	–	93	93
Foreign exchange and other	1	1	–	2
Balance as at October 31, 2019	80	225	–	305
Loans: Business and government				
Balance as at October 31, 2018	298	408	209	915
Transfer to Stage 1 (1)	201	(187)	(14)	–
Transfer to Stage 2 (1)	(50)	65	(15)	–
Transfer to Stage 3 (1)	(1)	(66)	67	–
Net remeasurement of loss allowance (2)	(214)	353	250	389
Loan originations	199	–	–	199
Derecognitions and maturities	(102)	(82)	–	(184)
Total PCL (3)	33	83	288	404
Write-offs (4)	–	–	(203)	(203)
Recoveries of previous write-offs	–	–	66	66
Foreign exchange and other	7	5	(49)	(37)
Balance as at October 31, 2019	338	496	311	1,145
Total as at October 31, 2019	522	1,087	485	2,094
Comprised of: Loans	403	984	463	1,850
Other credit instruments (5)	119	103	22	244

(1) Transfers represent the amount of ECL that moved between stages during the period, for example, moving from a 12-month (Stage 1) to lifetime (Stage 2) ECL measurement basis.
(2) Net remeasurements represent the ECL impact due to stage transfers, changes in economic forecasts and credit quality.
(3) Excludes PCL on other assets of $(3) million.
(4) 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.
(5) Recorded in other liabilities on the Consolidated Balance Sheet.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

The following table shows the continuity in the loss allowance, by product type, for the year ended October 31, 2018:

(Canadian $ in millions)

For the year ended	Stage 1	Stage 2	Stage 3	Total
Loans: Residential mortgages				
Balance as at November 1, 2017	16	34	49	99
Transfer to Stage 1 (1)	34	(31)	(3)	–
Transfer to Stage 2 (1)	(1)	7	(6)	–
Transfer to Stage 3 (1)	–	(9)	9	–
Net remeasurement of loss allowance (2)	(37)	42	19	24
Loan originations	10	–	–	10
Derecognitions and maturities	(2)	(6)	–	(8)
Total PCL (3)	4	3	19	26
Write-offs (4)	–	–	(20)	(20)
Recoveries of previous write-offs	–	–	7	7
Foreign exchange and other	–	1	(11)	(10)
Balance as at October 31, 2018	20	38	44	102
Loans: Consumer instalment and other personal				
Balance as at November 1, 2017	76	357	137	570
Transfer to Stage 1 (1)	214	(200)	(14)	–
Transfer to Stage 2 (1)	(22)	105	(83)	–
Transfer to Stage 3 (1)	(4)	(162)	166	–
Net remeasurement of loss allowance (2)	(196)	272	162	238
Loan originations	39	–	–	39
Derecognitions and maturities	(18)	(50)	–	(68)
Total PCL (3)	13	(35)	231	209
Write-offs (4)	–	–	(301)	(301)
Recoveries of previous write-offs	–	–	92	92
Foreign exchange and other	1	4	(15)	(10)
Balance as at October 31, 2018	90	326	144	560
Loans: Credit cards				
Balance as at November 1, 2017	83	254	–	337
Transfer to Stage 1 (1)	177	(177)	–	–
Transfer to Stage 2 (1)	(37)	37	–	–
Transfer to Stage 3 (1)	(1)	(195)	196	–
Net remeasurement of loss allowance (2)	(164)	342	20	198
Loan originations	19	–	–	19
Derecognitions and maturities	(3)	(42)	–	(45)
Total PCL (3)	(9)	(35)	216	172
Write-offs (4)	–	–	(319)	(319)
Recoveries of previous write-offs	–	–	103	103
Balance as at October 31, 2018	74	219	–	293
Loans: Business and government				
Balance as at November 1, 2017	268	410	234	912
Transfer to Stage 1 (1)	136	(128)	(8)	–
Transfer to Stage 2 (1)	(31)	66	(35)	–
Transfer to Stage 3 (1)	(1)	(61)	62	–
Net remeasurement of loss allowance (2)	(155)	203	215	263
Loan originations	163	–	–	163
Derecognitions and maturities	(80)	(86)	–	(166)
Model changes (5)	(7)	(3)	–	(10)
Total PCL (3)	25	(9)	234	250
Write-offs (4)	–	–	(297)	(297)
Recoveries of previous write-offs	–	–	59	59
Foreign exchange and other	5	7	(21)	(9)
Balance as at October 31, 2018	298	408	209	915
Total as at October 31, 2018	482	991	397	1,870
Comprised of: Loans	374	895	370	1,639
Other credit instruments (6)	108	96	27	231

(1) Transfers represent the amount of ECL that moved between stages during the period, for example, moving from a 12-month (Stage 1) to lifetime (Stage 2) ECL measurement basis.
(2) Net remeasurements represent the ECL impact due to stage transfers, changes in economic forecasts and credit quality.
(3) Excludes PCL on other assets of $5 million.
(4) 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.
(5) Model changes represent calibration of models to forward-looking information and changes due to regulatory reform.
(6) Recorded in other liabilities on the Consolidated Balance Sheet.

Loans and allowance for credit losses by geographic region as at October 31, 2019 and 2018 are as follows:

(Canadian $ in millions)	2019				2018			
	Gross amount	**Allowance on impaired loans** (2)	**Allowance on performing loans** (3)	**Net amount**	Gross amount	Allowance on impaired loans (2)	Allowance on performing loans (3)	Net amount
By geographic region: (1)								
Canada	**258,842**	**207**	**740**	**257,895**	243,261	189	689	242,383
United States	**158,454**	**256**	**630**	**157,568**	132,789	181	574	132,034
Other countries	**10,648**	**–**	**17**	**10,631**	9,580	–	6	9,574
Total	**427,944**	**463**	**1,387**	**426,094**	385,630	370	1,269	383,991

(1) Geographic region is based upon the country of ultimate risk.
(2) Excludes allowance for credit losses on impaired loans of $22 million for other credit instruments, which is included in other liabilities ($27 million in 2018).
(3) Excludes allowance for credit losses on performing loans of $222 million for other credit instruments, which is included in other liabilities ($204 million in 2018).
Certain comparative figures have been reclassified to conform with the current year's presentation.

Impaired (Stage 3) loans, including the related allowances, as at October 31, 2019 and 2018 are as follows:

(Canadian $ in millions)	Gross impaired amount		Allowance on impaired loans (2)		Net impaired amount	
	2019	2018	**2019**	2018	**2019**	2018
Residential mortgages	**414**	375	**17**	19	**397**	356
Consumer instalment and other personal loans	**468**	521	**136**	143	**332**	378
Business and government loans	**1,747**	1,040	**310**	208	**1,437**	832
Total	**2,629**	1,936	**463**	370	**2,166**	1,566
By geographic region: (1)						
Canada	**914**	735	**207**	189	**707**	546
United States	**1,715**	1,201	**256**	181	**1,459**	1,020
Other countries	**–**	–	**–**	–	**–**	–
Total	**2,629**	1,936	**463**	370	**2,166**	1,566

(1) Geographic region is based upon the country of ultimate risk.
(2) Excludes allowance for credit losses on impaired loans of $22 million for other credit instruments, which is included in other liabilities ($27 million in 2018).

Fully secured loans with amounts past due between 90 and 180 days that we have not classified as impaired totalled $54 million and $49 million as at October 31, 2019 and 2018, respectively.

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, 2019 and 2018.

(Canadian $ in millions)	1 to 29 days		30 to 89 days		90 days or more		Total	
	2019	2018	**2019**	2018	**2019**	2018	**2019**	2018
Residential mortgages	**806**	660	**465**	513	**16**	21	**1,287**	1,194
Credit card, consumer instalment and other personal loans	**1,590**	1,431	**426**	415	**87**	88	**2,103**	1,934
Business and government loans	**351**	611	**207**	268	**59**	55	**617**	934
Total	**2,747**	2,702	**1,098**	1,196	**162**	164	**4,007**	4,062

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.

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 $1,325 million as at October 31, 2019 ($1,250 million in 2018) compared to the reported allowance for performing loans of $1,609 million ($1,473 million in 2018).

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 $2,800 million as at October 31, 2019 ($2,650 million in 2018) compared to the reported allowance for performing loans of $1,609 million ($1,473 million in 2018).

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.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

The following table shows the key economic variables we use to estimate our allowance on performing loans during the forecast period. The values shown represent the end of period national average values for the first 12 months and then the national average for the remaining horizon. While the values disclosed below are national variables, in our underlying models we use regional variables where considered appropriate.

	Benign scenario				Base scenario				Adverse scenario			
As at October 31	First 12 months		Remaining horizon (1)		First 12 months		Remaining horizon (1)		First 12 months		Remaining horizon (1)	
	2019	2018	**2019**	2018	**2019**	2018	**2019**	2018	**2019**	2018	**2019**	2018
Real gross domestic product (2)												
Canada	**2.9%**	3.1%	**2.3%**	2.4%	**1.6%**	1.8%	**1.6%**	1.6%	**(3.2)%**	(3.2)%	**0.8%**	0.8%
U.S.	**2.4%**	2.9%	**2.3%**	1.9%	**1.8%**	2.4%	**1.9%**	1.6%	**(2.9)%**	(2.9)%	**0.9%**	0.9%
Corporate BBB 10-year spread												
Canada	**2.0%**	2.0%	**2.1%**	2.1%	**2.3%**	2.3%	**2.3%**	2.3%	**4.7%**	4.7%	**3.9%**	3.9%
U.S.	**1.8%**	1.8%	**2.0%**	2.0%	**2.4%**	2.2%	**2.4%**	2.3%	**4.3%**	4.3%	**3.4%**	3.5%
Unemployment rates												
Canada	**5.1%**	5.4%	**4.9%**	5.2%	**5.7%**	5.6%	**5.9%**	5.6%	**8.9%**	9.3%	**8.9%**	9.3%
U.S.	**3.3%**	3.2%	**3.2%**	3.1%	**3.7%**	3.6%	**3.8%**	3.7%	**6.5%**	6.7%	**6.6%**	6.8%
Housing Price Index												
Canada (3)	**3.7%**	2.4%	**3.6%**	2.6%	**1.8%**	1.4%	**2.5%**	1.8%	**(12.8)%**	(12.8)%	**(3.2)%**	(3.2)%
U.S. (4)	**4.5%**	5.1%	**4.1%**	4.3%	**3.0%**	3.6%	**2.7%**	3.0%	**(7.3)%**	(7.3)%	**(1.2)%**	(1.2)%

(1) The remaining forecast period is two years.
(2) Real gross domestic product is based on year over year growth.
(3) In Canada, we use the HPI Benchmark Composite.
(4) In the U.S., we use the National Case-Shiller House Price Index.

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 $1,050 million compared to the reported allowance for performing loans of $1,609 million as at October 31, 2019 ($1,000 million compared to the reported allowance for performing loans of $1,473 million as at October 31, 2018).

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 are permitted to 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 continue to apply.

The carrying value of our renegotiated loans modified during the year was $229 million as at October 31, 2019 ($253 million as at October 31, 2018). Renegotiated loans of $36 million ($53 million in 2018 and $36 million in 2017) were written off during the year ended October 31, 2019. As at October 31, 2019, $66 million ($93 million as at October 31, 2018) of loans previously renegotiated saw their loss allowance change during the year 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-use or held-for-sale according to management's intention and are initially recorded at their carrying amount.

During the year ended October 31, 2019, we foreclosed on impaired loans and received $125 million of real estate properties that we classified as held for sale ($117 million in 2018).

As at October 31, 2019, real estate properties held for sale totalled $62 million ($58 million in 2018). 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 on pages 78 to 80 of 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.

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 on pages 78 to 82 of 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, foreign exchange rates, equity and commodity prices and their implied volatilities, and credit spreads, and includes the risk of credit migration and default in our trading book. We incur market risk in our trading and underwriting activities and in the management of structural market risk in our banking and insurance 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 on pages 86 to 90 of 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, and 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 on pages 91 to 99 of this report.

Note 6: Transfer of Assets

Loan Securitization

We sell Canadian residential mortgages to third-party Canadian securitization programs, including the Canada Mortgage Bond program, directly to third-party investors under the National Housing Act Mortgage-Backed Securities ("NHA-MBS") program and under our own program. 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 Canadian Mortgage Bond holders and receive the interest on the underlying mortgages, which are converted into MBS through the NHA-MBS program and sold to the 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 and the related cash proceeds as secured financing 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, 2019, we sold $6,692 million of mortgages to these programs ($8,062 million in 2018).

The following table presents the carrying amounts and fair values of transferred assets that did not qualify for derecognition and the associated liabilities:

(Canadian $ in millions)	2019		2018	
	Carrying amount (1)	**Fair value**	Carrying amount (1)	Fair value
Assets				
Residential mortgages	**6,357**		5,569	
Other related assets (2)	**10,872**		11,640	
Total	**17,229**	**17,253**	17,209	17,105
Associated liabilities (3)	**16,993**	**17,202**	16,925	16,763

(1) Carrying amount of loans is net of allowance.
(2) 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.
(3) Associated liabilities are recognized in Securitization and structured entities' liabilities in our Consolidated Balance Sheet.

Transferred Financial Assets that Qualified for Derecognition

We retain the mortgage servicing rights for certain mortgage loans purchased or originated in the U.S. which are sold and derecognized. During the year ended October 31, 2019, we sold and derecognized $460 million ($936 million in 2018) and recognized a $15 million gain ($21 million in 2018) in non-interest revenue. We retain mortgage servicing rights for these loans, which represent our continuing involvement. As at October 31, 2019, the carrying value of the mortgage servicing right was $43 million ($52 million as at October 31, 2018).

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, which total $86,656 million as at October 31, 2019 ($66,684 million as at October 31, 2018), due to the short-term nature. The interest expense related to these liabilities is recorded on an accrual basis in interest expense, other liabilities, in our Consolidated Statement of Income.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 7: Structured Entities

We enter into certain transactions in the ordinary course of business which involve the establishment of SEs to facilitate or secure customer transactions and to obtain alternate sources of funding. We are required to consolidate an SE if we control the entity. We control an 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 an 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. 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 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 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 amounts and fair values of transferred assets that did not qualify for derecognition and the associated liabilities issued by our bank securitization vehicles:

(Canadian $ in millions)	2019		2018	
	Carrying amount (1)	**Fair value**	Carrying amount (1)	Fair value
Assets				
Credit cards	**7,747**	**7,747**	7,246	7,246
Consumer instalment and other personal (2)	**5,872**	**5,876**	6,827	6,799
Business and government	**716**	**721**	–	–
Total	**14,335**	**14,344**	14,073	14,045
Associated liabilities (3)	**10,166**	**10,209**	8,179	8,134

(1) Carrying amount of loans is net of allowance.
(2) Includes Canadian real estate lines of credit and Canadian auto loans.
(3) Associated liabilities are recognized in Securitization and structured entities' liabilities in our Consolidated Balance Sheet.

U.S. Customer Securitization Vehicle

We sponsor one customer securitization vehicle (also referred to as a bank-sponsored multi-seller conduit) that provides our customers with alternate sources of funding through the securitization of their assets. This vehicle provides clients with access to financing 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 investors in order to fund the purchases. We do not sell assets to the customer securitization vehicle. We earn fees for providing services related to the securitizations, including liquidity, distribution and financial arrangement fees for supporting the ongoing operations of the vehicle. We have determined that we control and therefore consolidate this vehicle, as we are exposed to its variable returns and we have the key decision-making powers necessary to affect the amount of those returns in our capacity as liquidity provider and servicing agent.

We provide committed liquidity support 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 at October 31, 2019 was $6,733 million ($7,100 million at October 31, 2018).

Capital and Funding Vehicles

We have a funding vehicle, created under the covered bond program, that was created to guarantee payments due to bondholders on bonds issued by us. We sell assets to this funding vehicle in exchange for an intercompany loan.

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. As at October 31, 2019, $325 million of guarantee-linked notes issued by these vehicles were included in deposits in our Consolidated Balance Sheet ($325 million as at October 31, 2018).

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 Note 13 and Note 24, respectively.

Unconsolidated Structured Entities

The table below presents amounts related to our interests in unconsolidated SEs:

(Canadian $ in millions)	2019		2018	
	Capital vehicles	**Canadian customer securitization vehicles** (1)	Capital vehicles	Canadian customer securitization vehicles (1)
Interests recorded on the balance sheet				
Cash and cash equivalents	**547**	**66**	118	53
Trading securities	**–**	**8**	–	12
FVTPL securities	**–**	**567**	–	582
FVOCI securities	**–**	**616**	2	242
Trading loans	**–**	**–**	7	–
Other	**15**	**–**	3	13
	562	**1,257**	130	902
Deposits	**547**	**66**	570	53
Other	**9**	**–**	17	–
	556	**66**	587	53
Exposure to loss (2)	**–**	**7,453**	28	7,135
Total assets of the entities	**556**	**4,854**	587	5,033

(1) Securities held that are issued by our Canadian customer securitization vehicles are comprised of asset-backed commercial paper and are classified as trading securities, FVTPL securities and FVOCI securities. All assets held by these vehicles relate to assets in Canada.

(2) Exposure to loss represents securities held, undrawn liquidity facilities, total committed amounts of the BMO funded vehicle, derivative assets and loans.

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. In 2019, one of our capital vehicles redeemed a note issued by us. Additional information is provided in Note 16.

Canadian 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 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. We do not sell assets to the customer securitization vehicles. 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 entities, as their key relevant activity, the servicing of program assets, does not reside with us.

We provide liquidity facilities to the market-funded vehicles, which may require that we provide additional financing to the vehicles in the event that certain events occur. The total committed and undrawn amount under these liquidity facilities and any undrawn amounts of the BMO funded vehicle at October 31, 2019 was $6,262 million ($6,286 million at October 31, 2018).

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. Based on our assessment, we have determined that we do not control these funds. Our total interest in unconsolidated BMO managed funds was $1,728 million at October 31, 2019 ($1,612 million in 2018), which is included in securities in our Consolidated Balance Sheet.

Other Structured Entities

We purchase and hold investments in a variety of third-party structured entities, including exchange-traded funds, mutual funds, limited partnerships and investment trusts which are recorded in securities in our Consolidated Balance Sheet. We are considered to have an interest in these investments 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 investments. We are generally a passive investor and do not have power over the key decision-making activities of these investments. Our maximum exposure to loss from our investments is limited to the carrying amounts of our investments and any unutilized commitment we have provided.

Sponsored Structured Entities

We may be deemed to be the sponsor of an SE if we are involved in the design, legalset-up or its marketing. We may also be deemed to be the sponsor of an SE if market participants would reasonably associate the entity with us. We do not have an interest in SEs that we have sponsored.

Additional information on our compensation trusts is provided in Note 20.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

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 future 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 income. Embedded derivatives in certain of our equity linked notes are accounted for separately from the host instrument.

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 on October 31, 2019 was $5,736 million ($2,860 million in 2018), for which we have posted collateral of $5,660 million ($2,963 million in 2018).

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.

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 loses 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.

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.

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)	2019			2018		
	Gross assets	**Gross liabilities**	**Net**	Gross assets	Gross liabilities	Net
Trading						
Interest Rate Contracts						
Swaps	**7,588**	**(5,834)**	**1,754**	7,013	(5,637)	1,376
Forward rate agreements	**44**	**(157)**	**(113)**	36	(10)	26
Futures	**1**	**(4)**	**(3)**	2	(3)	(1)
Purchased options	**632**	**–**	**632**	425	–	425
Written options	**–**	**(403)**	**(403)**	–	(273)	(273)
Foreign Exchange Contracts						
Cross-currency swaps	**2,394**	**(1,383)**	**1,011**	2,362	(1,678)	684
Cross-currency interest rate swaps	**3,471**	**(4,950)**	**(1,479)**	4,977	(6,057)	(1,080)
Forward foreign exchange contracts	**2,796**	**(2,379)**	**417**	4,335	(2,817)	1,518
Purchased options	**188**	**–**	**188**	241	–	241
Written options	**–**	**(203)**	**(203)**	–	(228)	(228)
Commodity Contracts						
Swaps	**754**	**(1,273)**	**(519)**	1,559	(1,084)	475
Futures	**122**	**(40)**	**82**	17	–	17
Purchased options	**270**	**–**	**270**	484	–	484
Written options	**–**	**(367)**	**(367)**	–	(372)	(372)
Equity Contracts	**1,199**	**(2,999)**	**(1,800)**	2,158	(2,402)	(244)
Credit Contracts						
Purchased	**2**	**(98)**	**(96)**	1	(36)	(35)
Written	**47**	**(4)**	**43**	9	(1)	8
Total fair value – trading derivatives	**19,508**	**(20,094)**	**(586)**	23,619	(20,598)	3,021
Hedging						
Interest Rate Contracts						
Cash flow hedges – swaps	**1,393**	**(121)**	**1,272**	18	(1,261)	(1,243)
Fair value hedges – swaps	**799**	**(1,435)**	**(636)**	701	(668)	33
Total swaps	**2,192**	**(1,556)**	**636**	719	(1,929)	(1,210)
Foreign Exchange Contracts						
Cash flow hedges	**420**	**(1,948)**	**(1,528)**	1,084	(1,074)	10
Total foreign exchange contracts	**420**	**(1,948)**	**(1,528)**	1,084	(1,074)	10
Equity Contracts						
Cash flow hedges	**24**	**–**	**24**	–	(28)	(28)
Total equity contracts	**24**	**–**	**24**	–	(28)	(28)
Total fair value – hedging derivatives (1)	**2,636**	**(3,504)**	**(868)**	1,803	(3,031)	(1,228)
Total fair value – trading and hedging derivatives	**22,144**	**(23,598)**	**(1,454)**	25,422	(23,629)	1,793
Less: impact of master netting agreements	**(13,538)**	**13,538**	**–**	(15,575)	15,575	–
Total	**8,606**	**(10,060)**	**(1,454)**	9,847	(8,054)	1,793

(1) The fair values of hedging derivatives wholly or partially offset the changes in fair values of the related on-balance sheet financial instruments.

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

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.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

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)	2019			2018		
	Exchange traded	**Over-the-counter**	**Total**	Exchange traded	Over-the-counter	Total
Interest Rate Contracts						
Swaps	**–**	**4,209,193**	**4,209,193**	–	3,684,763	3,684,763
Forward rate agreements	**–**	**491,437**	**491,437**	–	411,573	411,573
Purchased options	**13,737**	**42,084**	**55,821**	26,629	35,023	61,652
Written options	**16,446**	**49,487**	**65,933**	16,511	48,721	65,232
Futures	**225,747**	**–**	**225,747**	192,482	–	192,482
Total interest rate contracts	**255,930**	**4,792,201**	**5,048,131**	235,622	4,180,080	4,415,702
Foreign Exchange Contracts						
Cross-currency swaps	**–**	**47,977**	**47,977**	–	57,226	57,226
Cross-currency interest rate swaps	**–**	**499,571**	**499,571**	–	449,187	449,187
Forward foreign exchange contracts	**–**	**453,711**	**453,711**	–	463,743	463,743
Purchased options	**3,295**	**37,397**	**40,692**	2,625	21,468	24,093
Written options	**2,502**	**42,075**	**44,577**	1,420	24,018	25,438
Futures	**882**	**–**	**882**	739	–	739
Total foreign exchange contracts	**6,679**	**1,080,731**	**1,087,410**	4,784	1,015,642	1,020,426
Commodity Contracts						
Swaps	**–**	**24,722**	**24,722**	–	24,366	24,366
Purchased options	**3,615**	**6,608**	**10,223**	3,303	6,182	9,485
Written options	**5,230**	**4,371**	**9,601**	4,909	4,233	9,142
Futures	**32,422**	**–**	**32,422**	33,104	–	33,104
Total commodity contracts	**41,267**	**35,701**	**76,968**	41,316	34,781	76,097
Equity Contracts	**39,952**	**50,910**	**90,862**	33,687	52,725	86,412
Credit Contracts						
Purchased	**–**	**5,361**	**5,361**	–	3,047	3,047
Written	**–**	**2,068**	**2,068**	–	443	443
Total	**343,828**	**5,966,972**	**6,310,800**	315,409	5,286,718	5,602,127

Derivatives Used in Hedge Accounting

In accordance with our risk management strategy, we enter into various derivative contracts to hedge our interest rate, foreign currency and equity price exposures. In addition, we use deposits to hedge foreign currency exposure in our net investment in foreign operations. To the extent these instruments 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 on page 89 of this report. In addition, our exposure to foreign exchange rate risk is discussed in the Foreign Exchange Risk section of Management's Discussion and Analysis on page 90. 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 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, 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.

The following table outlines the notional amounts and average rates of derivatives and the carrying amounts of deposits designated as hedging instruments, by term to maturity, hedge type, and risk type, where applicable.

		Remaining term to maturity					2019	2018
(Canadian $ in millions, except as noted)		Within 1 year	1 to 3 years	3 to 5 years	5 to 10 years	Over 10 years	Total	Total
Cash Flow Hedges								
Interest rate risk – Interest rate swaps								
Notional amount		**18,151**	**27,369**	**32,852**	**15,239**	**–**	**93,611**	73,769
Average fixed interest rate		**1.78%**	**2.06%**	**2.19%**	**1.83%**	**–**	**2.01%**	2.21%
Foreign exchange risk – Cross-currency swaps and foreign exchange forwards (1)								
CAD-USD pair	Notional amount	**5,666**	**13,671**	**15,039**	**5,527**	**251**	**40,154**	29,119
	Average fixed interest rate	**1.01%**	**1.86%**	**2.48%**	**1.59%**	**3.02%**	**1.95%**	1.57%
	Average exchange rate: CAD-USD	**1.2938**	**1.3127**	**1.3121**	**1.2659**	**1.3122**	**1.3034**	1.2930
CAD-EUR pair	Notional amount	**4,993**	**8,464**	**6,699**	**–**	**201**	**20,357**	21,349
	Average fixed interest rate	**1.98%**	**2.42%**	**2.11%**	**–**	**2.97%**	**2.21%**	2.11%
	Average exchange rate: CAD-EUR	**1.4719**	**1.4994**	**1.4894**	**–**	**1.4870**	**1.4892**	1.4908
Other currency pairs (2)	Notional amount	**1,453**	**2,272**	**3,202**	**922**	**–**	**7,849**	6,353
	Average fixed interest rate	**1.86%**	**2.56%**	**2.92%**	**2.54%**	**–**	**2.57%**	2.59%
	Average exchange rate: CAD-Non USD/EUR	**1.6026**	**1.3199**	**1.1895**	**1.4539**	**–**	**1.3348**	1.3430
Equity price risk – Total return swap								
Notional amount		**316**	**–**	**–**	**–**	**–**	**316**	381
Fair Value Hedges								
Interest rate risk – Interest rate swaps								
Notional amount		**13,300**	**32,633**	**30,708**	**16,809**	**17**	**93,467**	73,464
Average fixed interest rate		**2.26%**	**2.18%**	**2.22%**	**2.30%**	**2.36%**	**2.23%**	2.17%
Net Investment Hedges								
Foreign exchange risk								
USD denominated deposit – carrying amount		**6,495**	**–**	**–**	**–**	**–**	**6,495**	6,596
GBP denominated deposit – carrying amount		**685**	**–**	**–**	**–**	**–**	**685**	473

(1) 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.

(2) Includes CAD-AUD, CAD-CHF, CAD-CNH, CAD-GBP or CAD-HKD cross-currency swaps where applicable.

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, 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 London Interbank Offered Rate ("LIBOR") or Bankers' Acceptances ("BA") rate.

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.

To the extent that changes in the fair value of the derivative offsets changes in the fair value of the hedged item for the designated hedged risk, they are recorded 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. The entire unrealized gain or loss is recognized immediately in net interest income in our Consolidated Statement of Income, if the hedged item is sold or settled. 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 are designated as a hedging instrument for a portion of the net investment in foreign operations. 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.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

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 deposits 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 tables contain information related to items designated as hedging instruments, hedged items and hedge ineffectiveness for the years ended October 31, 2019 and October 31, 2018.

2019

	Carrying amount of hedging instruments (1)		**Hedge ineffectiveness**		
(Canadian $ in millions)	**Asset**	**Liability**	**Gains (losses) on hedging derivatives used to calculate hedge ineffectiveness**	**Gains (losses) on hypothetical derivatives used to calculate hedge ineffectiveness**	**Ineffectiveness recorded in non-interest revenue – other**
Cash flow hedges					
Interest rate risk – Interest rate swaps	**1,393**	**(121)**	**3,142**	**(3,118)**	**15**
Foreign exchange risk – Cross-currency swaps and foreign exchange forwards	**420**	**(1,948)**	**(1,195)**	**1,195**	**–**
Equity price risk – Total return swaps	**24**	**–**	**15**	**(15)**	**–**
	1,837	**(2,069)**	**1,962**	**(1,938)**	**15**
Net investment hedges					
Foreign exchange risk – Deposit liabilities	**–**	**(7,180)**	**(17)**	**17**	**–**
Total	**1,837**	**(9,249)**	**1,945**	**(1,921)**	**15**

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

2018

	Carrying amount of hedging instruments (1)		Hedge ineffectiveness		
(Canadian $ in millions)	Asset	Liability	Gains (losses) on hedging derivatives used to calculate hedge ineffectiveness	Gains (losses) on hypothetical derivatives used to calculate hedge ineffectiveness	Ineffectiveness recorded in non-interest revenue – other
Cash flow hedges					
Interest rate risk – Interest rate swaps	18	(1,261)	(1,685)	1,687	(4)
Foreign exchange risk – Cross-currency swaps and foreign exchange forwards	1,084	(1,074)	(459)	459	–
Equity price risk – Total return swaps	–	(28)	24	(24)	–
	1,102	(2,363)	(2,120)	2,122	(4)
Net investment hedges					
Foreign exchange risk – Deposit liabilities	–	(7,069)	(211)	211	–
Total	1,102	(9,432)	(2,331)	2,333	(4)

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

For cash flow hedges and net investment hedges, the following tables contain information related to impacts on the Consolidated Statement of Other Comprehensive Income, on a pre-tax basis for the years ended October 31, 2019 and October 31, 2018.

2019

					Balance in cash flow hedge AOCI / net foreign operations AOCI	
(Canadian $ in millions)	Balance October 31, 2018	**Gains / (losses) recognized in OCI**	**Amount reclassified to net income as the hedged item affects net income**	**Balance October 31, 2019** (1)	**Active hedges**	**Discontinued hedges**
Cash flow hedges						
Interest rate risk	(2,211)	**3,127**	**240**	**1,156**	**1,150**	**6**
Foreign exchange risk	751	**(1,177)**	**(18)**	**(444)**	**(444)**	**–**
Equity price risk	30	**15**	**(28)**	**17**	**17**	**–**
	(1,430)	**1,965**	**194**	**729**	**723**	**6**
Net investment hedges						
Foreign exchange risk	(1,791)	**(17)**	**–**	**(1,808)**	**(1,808)**	**–**
Total	(3,221)	**1,948**	**194**	**(1,079)**	**(1,085)**	**6**

(1) Tax balance related to cash flow hedge AOCI is $(216) million.

(Canadian $ in millions)	Balance November 1, 2017	Gains / (losses) recognized in OCI	Amount reclassified to net income as the hedged item affects net income	Balance October 31, 2018 (1)	2018 Balance in cash flow hedge AOCI / net foreign operations AOCI: Active hedges	2018 Balance in cash flow hedge AOCI / net foreign operations AOCI: Discontinued hedges
Cash flow hedges						
Interest rate risk	(597)	(1,681)	67	(2,211)	(1,348)	(863)
Foreign exchange risk	298	(3)	456	751	751	–
Equity price risk	72	24	(66)	30	30	–
	(227)	(1,660)	457	(1,430)	(567)	(863)
Net investment hedges						
Foreign exchange risk	(1,580)	(211)	–	(1,791)	(1,791)	–
Total	(1,807)	(1,871)	457	(3,221)	(2,358)	(863)

(1) Tax balance related to cash flow hedge AOCI is $356 million.

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 interest rate swaps to hedge interest rate risk, including benchmark interest rates, inherent in fixed rate securities, a portfolio of mortgages, deposits and subordinated debt.

Any fixed rate assets or liabilities that are part of a hedging relationship are 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 the counterparty effect and 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 relating to derivatives designated as fair value hedging instruments, hedged items and hedge ineffectiveness for the years ended October 31, 2019 and October 31, 2018 are as follows:

(Canadian $ in millions) **2019**

	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								
Interest rate swaps	**799**	**(1,435)**						
Securities and loans	**–**	**–**	**(2,072)**	**2,058**	**(14)**	**53,672**	**1,249**	**8**
Deposits and subordinated debt	**–**	**–**	**1,269**	**(1,255)**	**14**	**(41,277)**	**(609)**	**308**
Total	**799**	**(1,435)**	**(803)**	**803**	**–**	**12,395**	**640**	**316**

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

(Canadian $ in millions) 2018

	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								
Interest rate swaps	701	(668)						
Securities and loans	–	–	850	(843)	7	36,722	(1,160)	–
Deposits and subordinated debt	–	–	(764)	761	(3)	(34,375)	719	436
Total	701	(668)	86	(82)	4	2,347	(441)	436

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

Comparative Information

During 2017, net losses of $1,161 million related to the effective portion of cash flow hedges were recognized in OCI. A gain of $188 million related to cash flow hedges was transferred from equity to interest income or interest expense. Net ineffectiveness recognized on cash flow hedges during 2017 was a loss of $7 million.

Included within non-interest revenue, other, is a fair value loss of $200 million on derivatives held in qualifying fair value hedging relationships, and a gain of $193 million representing net increases in the fair value of the hedged item attributable to the hedged risk.

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, foreign exchange rates, equity and commodity prices and their implied volatilities, as well as credit spreads, 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, including through 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 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 at the present or at a future time, assuming that the closeout and replacement of transactions occur instantaneously, 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 1.4, as outlined in OSFI's Capital Adequacy 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)	2019		
	Replacement cost (1)	Credit risk equivalent (1)	Risk-weighted assets
Interest Rate Contracts			
Over-the-counter			
Swaps	3,233	8,114	2,300
Forward rate agreements	102	1,162	236
Purchased options	11	62	39
Written options	38	154	98
	3,384	9,492	2,673
Exchange traded			
Futures	90	161	3
Purchased options	28	40	1
Written options	3	6	–
	121	207	4
Total interest rate contracts	3,505	9,699	2,677
Foreign Exchange Contracts			
Over-the-counter			
Swaps	1,184	6,248	989
Forward foreign exchange contracts	1,753	7,225	1,260
Purchased options	40	167	46
Written options	10	119	29
	2,987	13,759	2,324
Exchange traded			
Futures	13	20	–
Purchased options	13	24	–
Written options	–	2	–
	26	46	–
Total foreign exchange contracts	3,013	13,805	2,324
Commodity Contracts			
Over-the-counter			
Swaps	213	2,154	629
Purchased options	98	472	125
Written options	116	370	204
	427	2,996	958
Exchange traded			
Futures	393	1,079	22
Purchased options	378	567	11
Written options	1	52	1
	772	1,698	34
Total commodity contracts	1,199	4,694	992
Equity Contracts			
Over-the-counter	197	4,572	1,246
Exchange traded	1,083	2,580	52
Total equity contracts	1,280	7,152	1,298
Credit Contracts	277	496	34
Total	9,274	35,846	7,325

(1) In 2019, Replacement Cost and Credit Risk Equivalent are presented after the impact of master netting agreements and calculated using the Standardized Approach Counterparty Risk ("SA-CCR") in accordance with the Capital Adequacy Requirements ("CAR") Guideline issued by OSFI on October 30, 2018, effective for fiscal year 2019. Prior periods have not been restated as they conform with previous OSFI requirements.

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(Canadian $ in millions)

	2018		
	Replacement cost (1)	Credit risk equivalent (1)	Risk-weighted assets
Interest Rate Contracts			
Over-the-counter			
Swaps	7,732	9,917	–
Forward rate agreements	36	34	–
Purchased options	409	393	–
	8,177	10,344	704
Exchange traded			
Futures	2	29	–
Purchased options	16	250	–
Written options	–	–	–
	18	279	
Total interest rate contracts	8,195	10,623	704
Foreign Exchange Contracts			
Over-the-counter			
Swaps	8,305	22,741	–
Forward foreign exchange contracts	4,453	8,373	–
Purchased options	225	424	–
	12,983	31,538	2,544
Exchange traded			
Futures	–	8	–
Purchased options	16	36	–
Written options	–	–	–
	16	44	
Total foreign exchange contracts	12,999	31,582	2,544
Commodity Contracts			
Over-the-counter			
Swaps	1,559	4,450	–
Purchased options	335	1,108	–
	1,894	5,558	1,188
Exchange traded			
Futures	17	770	–
Purchased options	149	305	–
Written options	–	–	–
	166	1,075	
Total commodity contracts	2,060	6,633	1,188
Equity Contracts			
Over-the-counter	1,585	4,332	
Exchange traded	573	1,646	
Total equity contracts	2,158	5,978	431
Credit Contracts	10	55	83
Total derivatives	25,422	54,871	4,950
Less: impact of master netting agreements	(15,575)	(29,589)	–
Total (2)	9,847	25,282	4,950

(1) In 2019, Replacement Cost and Credit Risk Equivalent are presented after the impact of master netting agreements and calculated using theSA-CCR in accordance with the CAR Guideline issued by OSFI on October 30, 2018, effective for fiscal year 2019. Prior periods have not been restated as they conform with previous OSFI requirements.

(2) The total derivatives and the impact of master netting agreements for replacement cost and credit risk equivalent do not include over-the-counter cleared derivatives with a fair value of $846 million as at October 31, 2018.

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

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					2019	2018
	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	1,652,793	1,321,286	771,362	510,596	140,235	4,396,272	3,831,997
Forward rate agreements, futures and options	723,117	89,440	15,942	9,446	993	838,938	730,939
Total interest rate contracts	2,375,910	1,410,726	787,304	520,042	141,228	5,235,210	4,562,936
Foreign Exchange Contracts							
Swaps	169,935	187,893	126,074	97,154	23,672	604,728	548,148
Forward foreign exchange contracts	442,750	9,590	1,226	119	26	453,711	472,323
Futures	862	18	2	–	–	882	739
Options	79,719	4,445	636	469	–	85,269	49,531
Total foreign exchange contracts	693,266	201,946	127,938	97,742	23,698	1,144,590	1,070,741
Commodity Contracts							
Swaps	6,374	15,899	2,132	317	–	24,722	24,366
Futures	12,120	16,782	3,096	424	–	32,422	33,104
Options	8,646	10,497	613	68	–	19,824	18,627
Total commodity contracts	27,140	43,178	5,841	809	–	76,968	76,097
Equity Contracts	69,854	13,875	5,494	1,636	319	91,178	86,794
Credit Contracts	204	444	4,152	2,451	178	7,429	3,490
Total notional amount	3,166,374	1,670,169	930,729	622,680	165,423	6,555,375	5,800,058

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

Note 9: Premises and Equipment

We record all 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 the value in use and the 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 no significant write-downs of premises and equipment due to impairment during the years ended October 31, 2019, 2018 and 2017. Gains and losses on disposal are included in non-interest expense, premises and equipment, in our Consolidated Statement of Income.

Net rent expense for premises and equipment reported in non-interest expense, premises and equipment, in our Consolidated Statement of Income for the years ended October 31, 2019, 2018 and 2017 was $600 million, $530 million and $501 million, respectively.

(Canadian $ in millions)	2019						2018					
	Land	Buildings	Computer equipment	Other equipment	Leasehold improvements	Total	Land	Buildings	Computer equipment	Other equipment	Leasehold improvements	Total
Cost												
Balance at beginning of year	145	1,627	2,229	933	1,514	6,448	174	1,726	1,994	913	1,429	6,236
Additions	10	86	343	57	124	620	4	66	236	40	87	433
Disposals (1)	(45)	(179)	(102)	(15)	(24)	(365)	(32)	(163)	(11)	(27)	(20)	(253)
Foreign exchange and other	(1)	–	–	(2)	1	(2)	(1)	(2)	10	7	18	32
Balance at end of year	109	1,534	2,470	973	1,615	6,701	145	1,627	2,229	933	1,514	6,448
Accumulated Depreciation and Impairment												
Balance at beginning of year	–	1,016	1,662	704	1,080	4,462	–	1,063	1,465	674	1,001	4,203
Disposals (1)	–	(114)	(101)	(12)	(20)	(247)	–	(116)	(9)	(24)	(15)	(164)
Depreciation	–	59	227	51	98	435	–	60	201	48	91	400
Foreign exchange and other	–	–	(2)	(1)	(1)	(4)	–	9	5	6	3	23
Balance at end of year	–	961	1,786	742	1,157	4,646	–	1,016	1,662	704	1,080	4,462
Net carrying value	109	573	684	231	458	2,055	145	611	567	229	434	1,986

(1) Includes fully depreciated assets written off.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 10: 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.

KGS-Alpha Capital Markets ("KGS")

On September 1, 2018, we completed the acquisition of the business of KGS, a U.S. fixed income broker-dealer specializing in U.S. mortgage and asset-backed securities in the institutional investor market, for cash consideration of US$304 million (CAD$397 million). The acquisition was accounted for as a business combination, and the acquired business and corresponding goodwill are included in our Capital Markets reporting segment. During the year ended October 31, 2019, the purchase price decreased to US$303 million (CAD$396 million) due to a post-closing adjustment based upon working capital. We also finalized our purchase price allocation and refined the valuation of intangible assets acquired, resulting in an intangible asset value of $102 million on acquisition and a goodwill balance of $6 million.

The intangible assets are being amortized over three to fourteen years on an accelerated basis. Goodwill of $4 million related to this acquisition is deductible for tax purposes.

The fair values of the assets acquired and liabilities assumed at the date of acquisition are as follows:

(Canadian $ in millions)

	KGS
Securities – trading	5,193
Securities borrowed or purchased under resale agreements	5,669
Goodwill and intangible assets	108
Other assets	583
Total assets	11,553
Securities lent or sold under repurchase agreements	9,563
Securities sold but not yet purchased	1,431
Other liabilities	163
Purchase price	396

The purchase price allocation for KGS has been completed.

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 2.5% (3.0% in 2018). The discount rates we applied in determining the recoverable amounts in 2019 ranged from 8.0% to 11.0% (8.6% to 11.4% in 2018), 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.

There were no write-downs of goodwill due to impairment during the years ended October 31, 2019, 2018 and 2017.

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, 2019 and 2018 is as follows:

(Canadian $ in millions)	Personal and Commercial Banking			Wealth Management			BMO Capital Markets	Total
	Canadian P&C	U.S. P&C	Total	Traditional Wealth Management	Insurance	Total		
Balance – October 31, 2017	97	3,719	3,816	2,137	2	2,139	289	6,244
Acquisitions (disposals) during the year	–	–	–	–	–	–	54	54
Foreign exchange and other (1)	–	78	78	(8)	–	(8)	5	75
Balance – October 31, 2018	97	3,797	3,894	2,129	2	2,131	348	6,373
Acquisitions (disposals) during the year	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Foreign exchange and other (1)	**–**	**(1)**	**(1)**	**16**	**–**	**16**	**(48)**	**(33)**
Balance – October 31, 2019	**97** (2)	**3,796** (3)	**3,893**	**2,145** (4)	**2** (5)	**2,147**	**300** (6)	**6,340**

(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 to BMO Nesbitt Burns Inc., Guardian Group of Funds Ltd., Pyrford International Limited, LGM Investments Limited, M&I, myCFO, Inc., Stoker Ostler Wealth Advisors, Inc., CTC Consulting LLC, AWMB and F&C Asset Management plc.
(5) Relates to AIG.
(6) Relates to Gerard Klauer Mattison, BMO Nesbitt Burns Inc., Paloma Securities L.L.C., M&I, Greene Holcomb Fisher and KGS.

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	Branch distribution networks	Software – amortizing (1)	Software under development	Other	Total
Cost as at October 31, 2017	654	931	187	3,696	398	376	6,242
Additions (disposals)	35	–	–	422	94	12	563
Foreign exchange and other	(1)	20	4	9	4	(4)	32
Cost as at October 31, 2018	688	951	191	4,127	496	384	6,837
Additions (disposals)	**–**	**–**	**–**	**718**	**(91)**	**30**	**657**
Foreign exchange and other	**72**	**–**	**–**	**(9)**	**(3)**	**33**	**93**
Cost as at October 31, 2019	**760**	**951**	**191**	**4,836**	**402**	**447**	**7,587**

(1) Includes $679 million of internally generated software ($416 as at October 31, 2018).

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

(Canadian $ in millions)	Customer relationships	Core deposits	Branch distribution networks	Software – amortizing	Software under development	Other	Total
Accumulated amortization at October 31, 2017	431	762	187	2,618	–	85	4,083
Amortization	46	51	–	387	–	19	503
Disposals	–	–	–	(20)	–	–	(20)
Foreign exchange and other	(2)	17	4	(15)	–	(5)	(1)
Accumulated amortization at October 31, 2018	475	830	191	2,970	–	99	4,565
Amortization	**60**	**48**	**–**	**395**	**–**	**51**	**554**
Disposals	**–**	**–**	**–**	**(11)**	**–**	**–**	**(11)**
Foreign exchange and other	**16**	**–**	**–**	**7**	**–**	**32**	**55**
Accumulated amortization at October 31, 2019	**551**	**878**	**191**	**3,361**	**–**	**182**	**5,163**
Carrying value at October 31, 2019	**209**	**73**	**–**	**1,475**	**402**	**265**	**2,424**
Carrying value at October 31, 2018	213	121	–	1,157	496	285	2,272

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 $168 million as at October 31, 2019 ($165 million as at October 31, 2018) 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 $10 million during the year ended October 31, 2019 ($13 million in 2018 and $5 million in 2017).

Note 12: Other Assets

Customers' Liability under 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 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 on 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 on our Consolidated Balance Sheet.

Other

The components of other within other assets are as follows:

(Canadian $ in millions)	2019	2018
Accounts receivable, prepaid expenses and other items	**2,905**	2,781
Accrued interest receivable	**1,755**	1,461
Bank owned life insurance policies	**4,242**	4,154
Leased vehicles	**870**	937
Cash collateral	**3,517**	2,019
Due from clients, dealers and brokers	**177**	236
Insurance-related assets	**1,163**	822
Other employee future benefits assets (Note 21)	**46**	–
Pension asset (Note 21)	**186**	664
Precious metals (1)	**1,719**	1,603
Total	**16,580**	14,677

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

Certain comparative figures have been reclassified to conform with the current year's presentation and for changes in accounting policies (Note 1).

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 13: Deposits

(Canadian $ in millions)	Payable on demand				Payable after notice		Payable on a fixed date (3)		Total	
	Interest bearing		Non-interest bearing							
	2019	2018	**2019**	2018	**2019**	2018	**2019**	2018	**2019**	2018
Deposits by:										
Banks (1)	**1,996**	1,450	**1,530**	1,400	**1,017**	526	**19,273**	24,531	**23,816**	27,907
Business and government	**29,083**	25,266	**33,853**	33,984	**85,022**	67,026	**195,199**	185,901	**343,157**	312,177
Individuals	**3,361**	3,476	**23,084**	21,345	**94,304**	90,233	**80,421**	65,790	**201,170**	180,844
Total (2) (4)	**34,440**	30,192	**58,467**	56,729	**180,343**	157,785	**294,893**	276,222	**568,143**	520,928
Booked in:										
Canada	**27,338**	21,735	**49,911**	47,231	**90,630**	82,091	**181,835**	160,069	**349,714**	311,126
United States	**6,043**	7,395	**8,531**	9,477	**88,604**	74,476	**86,368**	86,805	**189,546**	178,153
Other countries	**1,059**	1,062	**25**	21	**1,109**	1,218	**26,690**	29,348	**28,883**	31,649
Total	**34,440**	30,192	**58,467**	56,729	**180,343**	157,785	**294,893**	276,222	**568,143**	520,928

(1) Includes regulated and central banks.
(2) Includes structured notes designated at fair value through profit or loss.
(3) Includes $16,248 million of senior unsecured debt as at October 31, 2019 subject to the Bank Recapitalization (Bail-In) regime ($37 million as at October 31, 2018). 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.
(4) As at October 31, 2019 and 2018, total deposits payable on a fixed date included $25,438 million and $29,673 million, respectively, of federal funds purchased, commercial paper issued and other deposit liabilities. Included in deposits as at October 31, 2019 and 2018 are $279,860 million and $259,747 million, respectively, of deposits denominated in U.S. dollars, and $36,680 million and $37,427 million, respectively, of deposits denominated in other foreign currencies.

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

Deposits payable on demand are comprised primarily of our customers' chequing accounts, some of which we pay interest on. 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 term deposits and guaranteed investment certificates. The terms of these deposits can vary from one day to 10 years.
- Federal funds purchased, which are overnight borrowings of other banks' excess reserve funds at the United States Federal Reserve Bank. As at October 31, 2019, we had borrowed $59 million of federal funds ($55 million in 2018).
- Commercial paper, which totalled $9,495 million as at October 31, 2019 ($9,121 million in 2018).
- Covered bonds, which totalled $25,465 million as at October 31, 2019 ($25,045 million in 2018).

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

(Canadian $ in millions)	**2019**	2018
Within 1 year	**183,952**	162,666
1 to 2 years	**34,401**	34,154
2 to 3 years	**23,855**	26,107
3 to 4 years	**21,735**	16,708
4 to 5 years	**16,959**	22,196
Over 5 years	**13,991**	14,391
Total (1)	**294,893**	276,222

(1) Includes $273,657 million of deposits, each greater than one hundred thousand dollars, of which $167,294 million were booked in Canada, $79,682 million were booked in the United States and $26,681 million were booked in other countries ($246,685 million, $145,574 million, $71,770 million and $29,341 million, respectively, in 2018). Of the $167,294 million of deposits booked in Canada, $73,027 million mature in less than three months, $4,312 million mature in three to six months, $22,814 million mature in six to twelve months and $67,141 million mature after 12 months ($145,574 million, $55,190 million, $3,836 million, $12,909 million and $73,639 million, respectively, in 2018). We have unencumbered liquid assets of $249,650 million to support these and other deposit liabilities ($242,612 million in 2018).

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

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 fair value and notional amount due at contractual maturity of these notes as at October 31, 2019 were $15,829 million and $15,431 million, respectively ($14,186 million and $15,088 million, respectively, in 2018). The change in fair value of these structured notes was recorded as a decrease of $1,414 million in non-interest revenue, trading revenues, and an increase of $114 million before tax was recorded in other comprehensive income related to changes in our own credit spread for the year ended October 31, 2019 (an increase of $1,038 million recorded in non-interest revenue, trading revenues, and a decrease of $28 million related to changes in our own credit spread in 2018). The impact of changes in our own credit spread is measured based on movements in our own credit spread year over year.

The cumulative change in fair value related to changes in our own credit spread that has been recognized in other comprehensive income since the notes were designated at fair value to October 31, 2019 was an unrealized loss of approximately $141 million (unrealized loss of $255 million in 2018).

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 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 on 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 on 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 other assets or other liabilities, 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 the 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)	**2019**	2018
Accounts payable, accrued expenses and other items	**8,613**	8,152
Accrued interest payable	**1,693**	1,385
Cash collateral	**5,128**	5,466
Insurance-related liabilities	**11,581**	9,585
Liabilities of subsidiaries, other than deposits	**7,934**	9,283
Other employee future benefits liability (Note 21)	**1,125**	960
Payable to brokers, dealers and clients	**2,204**	1,898
Pension liability (Note 21)	**329**	256
Total	**38,607**	36,985

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

Insurance-Related Liabilities

We are engaged in insurance businesses related to life and health insurance, annuities and reinsurance.

We designate the obligation 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 fair value of these investment contract liabilities as at October 31, 2019 of $1,043 million ($800 million as at October 31, 2018) is recorded in other liabilities in our Consolidated Balance Sheet. The change in fair value of these investment contract liabilities resulted in an increase of $119 million in insurance claims, commissions and changes in policy benefit liabilities for the year ended October 31, 2019 (decrease of $28 million in 2018). For the year ended October 31, 2019, a loss of $12 million was recorded in other comprehensive income related to changes in our own credit spread (loss of $2 million in 2018). The impact of changes in our own credit spread 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 cumulative change in fair value related to changes in our own credit spread that has been recognized in other comprehensive income since the investment contracts were designated at fair value to October 31, 2019 was an unrealized loss of approximately $33 million ($21 million in 2018).

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.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

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

(Canadian $ in millions)	2019	2018
Insurance-related liabilities, beginning of year	**9,585**	8,959
Increase (decrease) in life insurance policy benefit liabilities from:		
New business	**706**	742
In-force policies	**906**	(400)
Changes in actuarial assumptions and methodology	**23**	3
Net increase in life insurance policy benefit liabilities	**1,635**	345
Change in other insurance-related liabilities	**361**	281
Insurance-related liabilities, end of year	**11,581**	9,585

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, 2019, 2018 and 2017, as shown in the table below:

(Canadian $ in millions)	2019	2018	2017
Direct premium income	**1,944**	1,976	1,750
Ceded premiums	**(158)**	(148)	(157)
	1,786	1,828	1,593

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	2019 Total	2018 Total
Debentures Series 20	150	December 2025 to 2040	8.25	Not redeemable	**145**	143
Series H Medium-Term Notes, First Tranche (8)	1,000	September 2024	3.12	September 2019 (1)	**–**	1,003
Series H Medium-Term Notes, Second Tranche (8)	1,000	December 2025	3.34	December 2020 (2)	**983**	916
Series I Medium-Term Notes, First Tranche (8)	1,250	June 2026	3.32	June 2021 (3)	**1,230**	1,222
Series I Medium-Term Notes, Second Tranche (8)	850	June 2027	2.57	June 2022 (4)	**820**	813
3.803% Subordinated Notes due 2032 (8)	US 1,250	December 2032	3.80	December 2027 (5)	**1,646**	1,573
4.338% Subordinated Notes due 2028 (8)	US 850	October 2028	4.34	October 2023 (6)	**1,180**	1,112
Series J Medium-Term Notes, First Tranche (8)(9)	1,000	September 2029	2.88	September 2024 (7)	**991**	–
Total (10)					**6,995**	6,782

(1) All $1,000 million Series H Medium-Term Notes, First Tranche were redeemed on September 19, 2019 for 100% of the principal amount, plus accrued and unpaid interest to, but excluding, the redemption date.
(2) Redeemable at the greater of par and the Canada Yield Price prior to December 8, 2020, and redeemable at par together with accrued and unpaid interest to, but excluding, their redemption date commencing December 8, 2020.
(3) Redeemable at the greater of par and the Canada Yield Price prior to June 1, 2021, and redeemable at par together with accrued and unpaid interest to, but excluding, their redemption date commencing June 1, 2021.
(4) Redeemable at the greater of par and the Canada Yield Price prior to June 1, 2022, and redeemable at par together with accrued and unpaid interest to, but excluding, their redemption date commencing June 1, 2022.
(5) Redeemable at par on December 15, 2027 together with accrued and unpaid interest to, but excluding, the redemption date.
(6) Redeemable at par on October 5, 2023 together with accrued and unpaid interest to, but excluding, the redemption date.
(7) Redeemable at par on September 17, 2024 together with accrued and unpaid interest to, but excluding, the redemption date.
(8) 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.
(9) On September 16, 2019, we issued $1,000 million of Series J Medium — Term Notes, First Tranche.
(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, 2019 by $20 million (decreased by $233 million in 2018); see Note 8 for further details for 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 on pages 98 to 99 of this report.

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Note 16: Equity

Preferred and Common Shares Outstanding and Other Equity Instruments

(Canadian $ in millions, except as noted)	2019			2018		
	Number of shares	Amount	Dividends declared per share	Number of shares	Amount	Dividends declared per share
Preferred Shares – Classified as Equity						
Class B – Series 16 (1)	–	–	–	–	–	0.64
Class B – Series 17 (2)	–	–	–	–	–	0.52
Class B – Series 25	9,425,607	236	0.45	9,425,607	236	0.45
Class B – Series 26	2,174,393	54	0.70	2,174,393	54	0.59
Class B – Series 27	20,000,000	500	0.98	20,000,000	500	1.00
Class B – Series 29	16,000,000	400	0.96	16,000,000	400	0.98
Class B – Series 31	12,000,000	300	0.95	12,000,000	300	0.95
Class B – Series 33	8,000,000	200	0.95	8,000,000	200	0.95
Class B – Series 35	6,000,000	150	1.25	6,000,000	150	1.25
Class B – Series 36	600,000	600	58.50	600,000	600	58.50
Class B – Series 38	24,000,000	600	1.21	24,000,000	600	1.21
Class B – Series 40	20,000,000	500	1.13	20,000,000	500	1.13
Class B – Series 42	16,000,000	400	1.10	16,000,000	400	1.10
Class B – Series 44 (3)	16,000,000	400	1.44	16,000,000	400	–
Class B – Series 46 (4)	14,000,000	350	0.77	–	–	–
Preferred Shares – Classified as Equity		4,690			4,340	
Other Equity Instruments (5)		658			–	
Preferred Shares and Other Equity Instruments		5,348			4,340	
Common Shares						
Balance at beginning of year	639,329,625	12,929		647,816,318	13,032	
Issued under the Shareholder Dividend Reinvestment and Share Purchase Plan	–	–		–	–	
Issued/cancelled under the Stock Option Plan and other stock-based compensation plans (Note 20)	902,651	62		1,513,307	99	
Repurchased for cancellation	(1,000,000)	(20)		(10,000,000)	(202)	
Balance at End of Year	639,232,276	12,971	4.06	639,329,625	12,929	3.78

(1) On August 25, 2018, we redeemed all 6,267,391 Non-Cumulative Perpetual Class B Preferred Shares, Series 16, at a price of $25.00 cash per share plus all declared and unpaid dividends. Dividends declared for the year ended October 31, 2018 were $0.64 per share and 6,267,391 shares were outstanding at the time of the dividend declaration.
(2) On August 25, 2018, we redeemed all 5,732,609 Non-Cumulative Perpetual Class B Preferred Shares, Series 17, at a price of $25.00 cash per share plus all declared and unpaid dividends. Dividends declared for the year ended October 31, 2018 were $0.52 per share and 5,732,609 shares were outstanding at the time of the dividend declaration.
(3) On September 17, 2018, we issued 16 million Non-Cumulative 5-Year Rate Reset Class B Preferred Shares, Series 44, at a price of $25.00 cash per share for gross proceeds of $400 million.
(4) On April 17, 2019, we issued 14 million Non-Cumulative 5-Year Rate Reset Class B Preferred Shares, Series 46, at a price of $25.00 cash per share for gross proceeds of $350 million.
(5) On July 30, 2019, we issued US$500 million 4.800% Additional Tier 1 Capital Notes.

Preferred Share Rights and Privileges

(Canadian $, except as noted)

	Redemption amount	Quarterly non-cumulative dividend (1)	Reset premium	Date redeemable / convertible	Convertible to
Class B – Series 25	25.00	$0.112813 (2)	1.15%	August 25, 2021 (3)(4)	Class B – Series 26 (8)
Class B – Series 26	25.00	Floating (7)	1.15%	August 25, 2021 (3)(5)	Class B – Series 25 (8)
Class B – Series 27	25.00	$ 0.24075 (2)	2.33%	May 25, 2024 (3)(4)	Class B – Series 28 (8)(9)
Class B – Series 29	25.00	$ 0.2265 (2)	2.24%	August 25, 2024 (3)(4)	Class B – Series 30 (8)(9)
Class B – Series 31	25.00	$ 0.2375 (2)	2.22%	November 25, 2019 (3)(4)	Class B – Series 32 (8)(9)
Class B – Series 33	25.00	$ 0.2375 (2)	2.71%	August 25, 2020 (3)(4)	Class B – Series 34 (8)(9)
Class B – Series 35	25.00	$ 0.3125	Does not reset	August 25, 2020 (6)	Not convertible (9)
Class B – Series 36	1,000.00	$ 14.6250 (2)	4.97%	November 25, 2020 (3)(4)	Class B – Series 37 (8)(9)
Class B – Series 38	25.00	$0.303125 (2)	4.06%	February 25, 2022 (3)(4)	Class B – Series 39 (8)(9)
Class B – Series 40	25.00	$ 0.28125 (2)	3.33%	May 25, 2022 (3)(4)	Class B – Series 41 (8)(9)
Class B – Series 42	25.00	$ 0.2750 (2)	3.17%	August 25, 2022 (3)(4)	Class B – Series 43 (8)(9)
Class B – Series 44	25.00	$0.303125 (2)	2.68%	November 25, 2023 (3)(4)	Class B – Series 45 (8)(9)
Class B – Series 46	25.00	$ 0.31875 (2)	3.51%	May 25, 2024 (3)(4)	Class B – Series 47 (8)(9)

(1) Non-cumulative dividends are payable quarterly as and when declared by the Board of Directors.
(2) The dividend rate will reset on the date redeemable and every five years thereafter at a rate equal to the5-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) Convertible on the date noted and every five years thereafter if not redeemed. If converted, the shares will become fixed rate preferred shares.
(6) Series 35 is subject to a redemption premium if redeemed prior to August 25, 2024.
(7) Floating rate will be set as, and when declared, at the 3-month Government of Canada treasury bill yield plus a reset premium.
(8) If converted, the holders have the option to convert back to the original preferred shares on subsequent redemption dates.
(9) 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 September 27, 2019, we announced that we did not intend to exercise our right to redeem the currently outstanding Non-Cumulative 5-Year Rate Reset Class B Preferred Shares Series 31 ("Preferred Shares Series 31") on November 25, 2019. As a result, subject to certain conditions, the holders of Preferred Shares Series 31 had the right, at their option, by November 12, 2019, to convert any or all of their Preferred Shares Series 31 on a one-for-one basis into Non-Cumulative Floating Rate Class B Preferred Shares Series 32 ("Preferred Shares Series 32"). During the conversion period, which ran from October 28, 2019 to November 12, 2019, 69,570 Preferred Shares Series 31 were tendered for conversion into Preferred Shares Series 32, which is less than the minimum 1,000,000 required to give effect to the conversion, as described in the Preferred Shares Series 31 prospectus supplement dated July 23, 2014. As a result, no Preferred Shares Series 32 were issued and holders of Preferred Shares Series 31 retained their shares. The dividend rate for the Preferred Shares Series 31 for the five-year period commencing on November 25, 2019, and ending on November 24, 2024, will be 3.851%.

On June 27, 2019, we announced that we did not intend to exercise our right to redeem the currently outstanding Non-Cumulative 5-Year Rate Reset Class B Preferred Shares Series 29 ("Preferred Shares Series 29") on August 25, 2019. As a result, subject to certain conditions, the holders of Preferred Shares Series 29 had the right, at their option, by August 12, 2019, to convert any or all of their Preferred Shares Series 29 on a one-for-one basis into Non-Cumulative Floating Rate Class B Preferred Shares Series 30 ("Preferred Shares Series 30"). During the conversion period, which ran from July 26, 2019 to August 12, 2019, 223,098 Preferred Shares Series 29 were tendered for conversion into Preferred Shares Series 30, which is less than the minimum 1,000,000 required to give effect to the conversion, as described in the Preferred Shares Series 29 prospectus supplement dated May 30, 2014. As a result, no Preferred Shares Series 30 were issued and holders of Preferred Shares Series 29 retained their shares. The dividend rate for the Preferred Shares Series 29 for the five-year period commencing on August 25, 2019, and ending on August 24, 2024, will be 3.624%.

On April 17, 2019, we issued 14 million Non-Cumulative 5-Year Rate Reset Class B Preferred Shares Series 46 (Non-Viability Contingent Capital ("NVCC")), at a price of $25 per share, for gross proceeds of $350 million. For the initial five-year period to the earliest redemption date of May 25, 2024, the shares pay quarterly cash dividends, if declared, at a rate of 5.1% 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 3.51%. Holders have the option to convert their shares into an equal number of Non-Cumulative Floating Rate Class B Preferred Shares Series 47 ("Preferred Shares Series 47"), subject to certain conditions, on the earliest redemption date and every fifth year thereafter. Holders of Preferred Shares Series 47 will be entitled to receive non-cumulative preferential floating rate quarterly dividends, as and when declared, equal to the 3-month Government of Canada Treasury Bill yield plus 3.51%.

On March 29, 2019, we announced that we did not intend to exercise our right to redeem the currently outstanding Non-Cumulative 5-Year Rate Reset Class B Preferred Shares Series 27 ("Preferred Shares Series 27") on May 25, 2019. As a result, subject to certain conditions, the holders of Preferred Shares Series 27 had the right, at their option, by May 10, 2019, to convert any or all of their Preferred Shares Series 27 on a one-for-one basis into Non-Cumulative Floating Rate Class B Preferred Shares Series 28 ("Preferred Shares Series 28"). During the conversion period, which ran from April 25, 2019 to May 10, 2019, 412,564 Preferred Shares Series 27 were tendered for conversion into Preferred Shares Series 28, which is less than the minimum 1,000,000 required to give effect to the conversion, as described in the Preferred Shares Series 27 prospectus supplement dated April 16, 2014. As a result, no Preferred Shares Series 28 were issued and holders of Preferred Shares Series 27 retained their shares. The dividend rate for the Preferred Shares Series 27 for the five-year period commencing on May 25, 2019, and ending on May 24, 2024, will be 3.852%.

Other Equity Instruments

On July 30, 2019, we issued US$500 million 4.800% Additional Tier 1 Capital Notes (Non-Viability Contingent Capital ("NVCC")) ("notes"), which are classified as equity and form part of our additional Tier 1 non-viability contingent capital. The 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 component of the notes and, as a result, the full amount of proceeds has been classified as equity. Semi-annual distributions on the notes will be recorded when payable. The rights of the holders of our notes are subordinate to the claims of the depositors and certain other creditors, but rank above our common and preferred shares.

(Canadian $, in millions, except as noted)					2019	2018
	Face value	Interest rate (%)	Redeemable at our option	Convertible to	**Total**	Total
4.800% Additional Tier 1 Capital Notes	US$ 500	4.800 (1)	August 2024 (2)	Variable number of common shares (3)	**658**	–
Total					**658**	–

(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 on or after the first interest reset date in 2024 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.

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 on 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. Further, 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 35, Class B – Series 36, Class B – Series 38, Class B – Series 40, Class B – Series 42, Class B – Series 44 and Class B – Series 46 preferred share issues and the other equity instruments 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

We renewed our normal course issuer bid ("NCIB"), effective June 3, 2019 for one year. Under this NCIB, we may purchase up to 15 million of our common shares for cancellation. The timing and amount of purchases under the NCIB are subject to management discretion based on factors such as market conditions and capital levels. The bank will consult with OSFI before making purchases under the NCIB.

During the year ended October 31, 2019, we purchased for cancellation 1 million of our common shares (10 million in 2018).

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.

In addition, if the bank does not pay the interest in full on the Additional Tier 1 Capital 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 Additional Tier 1 Capital 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 ("DRIP") for our shareholders. Participation in the plan is optional. Under the terms of the DRIP, 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.

For dividends paid in fiscal 2019 and 2018, common shares to supply the DRIP were purchased in the open market.

During the year ended October 31, 2019, we did not issue any common shares from treasury (nil in 2018) and purchased 2,198,109 common shares in the open market (1,995,353 in 2018) for delivery to shareholders under the DRIP.

Potential Share Issuances

As at October 31, 2019, we had reserved 39,947,147 common shares (39,947,147 in 2018) for potential issuance in respect of the DRIP. We have also reserved 6,108,307 common shares (6,095,201 in 2018) for the potential exercise of stock options, as further described in Note 20.

Capital Trust Securities

On December 31, 2018, BMO Capital Trust II redeemed all of its issued and outstanding BMO Tier 1 Notes – Series A at a redemption amount equal to $1,000 for an aggregate redemption of $450 million, plus accrued and unpaid interest to but excluding the redemption date.

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

We record trading assets and liabilities, derivatives, certain equity and debt securities and securities sold but not yet purchased at fair value, and othemon-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 the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between willing market participants 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.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

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 government issued or guaranteed debt securities 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. Market inputs to the model include coupon, maturity and duration.

Mortgage-Backed Securities and Collateralized Mortgage Obligations
The fair value of mortgage-backed securities and collateralized mortgage obligations 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, 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 price quotations are not available, fair value is determined based on discounted cash flow models using discounting curves and spreads obtained from independent dealers, brokers and multi-contributor pricing sources.

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 limited partnership investments is based on net asset values published by third-party fund managers.

Prices from brokers and multi-contributor pricing sources 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 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 quotations, multi-contributor pricing sources and any relevant observable market inputs. Our model calculates 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 bilateral risk that either counterparty to a given derivative may not ultimately be able to fulfill its 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 market 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

Short-term and Other Financial Instruments

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, other assets, acceptances, securities lent or sold under repurchase agreements and 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.

Certain assets, including premises and equipment, goodwill and intangible assets, as well as shareholders' equity, are not financial instruments and therefore no fair value has been determined for these items.

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.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

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

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

(Canadian $ in millions) **2019**

	Carrying value	Fair value	Valued using quoted market prices	Valued using models (with observable inputs)	Valued using models (without observable inputs)
Securities					
Amortized cost	**24,472**	**24,622**	**13,612**	**11,010**	**–**
Loans (1)					
Residential mortgages	**123,676**	**124,093**	**–**	**124,093**	**–**
Consumer instalment and other personal	**67,200**	**67,516**	**–**	**67,516**	**–**
Credit cards	**8,623**	**8,623**	**–**	**8,623**	**–**
Business and government (2)	**224,442**	**225,145**	**–**	**225,145**	**–**
	423,941	**425,377**	**–**	**425,377**	**–**
Deposits (3)	**552,314**	**553,444**	**–**	**553,444**	**–**
Securitization and structured entities' liabilities	**27,159**	**27,342**	**–**	**27,342**	**–**
Subordinated debt	**6,995**	**7,223**	**–**	**7,223**	**–**

(1) Carrying value of loans is net of allowance.
(2) Excludes $2,156 million of loans classified as FVTPL and $22 million of loans classified as FVOCI.
(3) Excludes $15,829 million of structured note liabilities designated at FVTPL and accounted for at fair value.

This table excludes certain financial instruments with a carrying value approximating fair value, such as cash and cash equivalents, interest bearing deposits with banks, securities borrowed or purchased under resale agreements, customers' liability under acceptances, other assets, acceptances, securities lent or sold under repurchase agreements and other liabilities.

(Canadian $ in millions) 2018

	Carrying value	Fair value	Valued using quoted market prices	Valued using models (with observable inputs)	Valued using models (without observable inputs)
Securities					
Amortized cost	6,485	6,288	429	5,795	64
Loans (1)					
Residential mortgages	119,544	118,609	–	118,609	–
Consumer instalment and other personal	62,687	62,618	–	62,618	–
Credit cards	8,099	8,099	–	8,099	–
Business and government (2)	192,225	191,989	–	191,989	–
	382,555	381,315	–	381,315	–
Deposits (3)	506,742	506,581	–	506,581	–
Securitization and structured entities' liabilities	25,051	24,838	–	24,838	–
Subordinated debt	6,782	6,834	–	6,834	–

(1) Carrying value of loans is net of allowance.
(2) Excludes $1,450 million of loans classified as FVTPL.
(3) Excludes $14,186 million of structured note liabilities designated at FVTPL and accounted for at fair value.

This table excludes certain financial instruments with a carrying value approximating fair value, such as cash and cash equivalents, interest bearing deposits with banks, securities borrowed or purchased under resale agreements, customers' liability under acceptances, other assets, acceptances, securities lent or sold under repurchase agreements and other liabilities.

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 yield and prepayment rates 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, business and government loans classified as FVTPL, fair value liabilities, derivative assets and derivative liabilities is presented in the following table:

(Canadian $ in millions)	2019				2018			
	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	**6,959**	**1,371**	**–**	**8,330**	9,107	1,213	–	10,320
Canadian provincial and municipal governments	**3,871**	**3,656**	**–**	**7,527**	4,013	4,689	–	8,702
U.S. federal government	**8,001**	**762**	**–**	**8,763**	9,465	52	–	9,517
U.S. states, municipalities and agencies	**48**	**626**	**–**	**674**	78	1,138	–	1,216
Other governments	**888**	**697**	**–**	**1,585**	1,210	201	–	1,411
NHA MBS and U.S. agency MBS and CMO	**14**	**10,494**	**538**	**11,046**	60	8,869	255	9,184
Corporate debt	**2,620**	**5,091**	**7**	**7,718**	2,973	6,218	7	9,198
Trading loans	**–**	**103**	**–**	**103**	–	199	–	199
Corporate equity	**40,155**	**2**	**–**	**40,157**	49,946	4	–	49,950
	62,556	**22,802**	**545**	**85,903**	76,852	22,583	262	99,697
FVTPL Securities								
Issued or guaranteed by:								
Canadian federal government	**410**	**107**	**–**	**517**	328	103	–	431
Canadian provincial and municipal governments	**364**	**915**	**–**	**1,279**	219	727	–	946
U.S. federal government	**–**	**48**	**–**	**48**	69	–	–	69
Other governments	**–**	**49**	**–**	**49**	–	–	–	–
NHA MBS and U.S. agency MBS and CMO	**–**	**5**	**–**	**5**	–	7	–	7
Corporate debt	**146**	**8,071**	**–**	**8,217**	178	6,643	–	6,821
Corporate equity	**1,536**	**69**	**1,984**	**3,589**	1,378	134	1,825	3,337
	2,456	**9,264**	**1,984**	**13,704**	2,172	7,614	1,825	11,611
FVOCI Securities								
Issued or guaranteed by:								
Canadian federal government	**11,168**	**776**	**–**	**11,944**	11,978	827	–	12,805
Canadian provincial and municipal governments	**3,798**	**2,214**	**–**	**6,012**	3,315	3,547	–	6,862
U.S. federal government	**15,068**	**907**	**–**	**15,975**	16,823	–	–	16,823
U.S. states, municipalities and agencies	**1**	**4,159**	**1**	**4,161**	14	3,640	1	3,655
Other governments	**4,396**	**2,939**	**–**	**7,335**	3,143	1,647	–	4,790
NHA MBS and U.S. agency MBS and CMO	**–**	**14,000**	**–**	**14,000**	–	13,687	–	13,687
Corporate debt	**2,205**	**2,802**	**–**	**5,007**	1,959	1,797	–	3,756
Corporate equity	**–**	**–**	**81**	**81**	–	–	62	62
	36,636	**27,797**	**82**	**64,515**	37,232	25,145	63	62,440
Business and Government Loans	**–**	**442**	**1,736**	**2,178**	–	–	1,450	1,450
Fair Value Liabilities								
Securities sold but not yet purchased	**22,393**	**3,860**	**–**	**26,253**	26,336	2,468	–	28,804
Structured note liabilities and other note liabilities	**–**	**15,829**	**–**	**15,829**	–	14,186	–	14,186
Annuity liabilities	**–**	**1,043**	**–**	**1,043**	–	800	–	800
	22,393	**20,732**	**–**	**43,125**	26,336	17,454	–	43,790
Derivative Assets								
Interest rate contracts	**14**	**10,443**	**–**	**10,457**	18	8,177	–	8,195
Foreign exchange contracts	**7**	**9,262**	**–**	**9,269**	16	12,983	–	12,999
Commodity contracts	**329**	**817**	**–**	**1,146**	166	1,894	–	2,060
Equity contracts	**226**	**997**	**–**	**1,223**	286	1,872	–	2,158
Credit default swaps	**–**	**49**	**–**	**49**	–	10	–	10
	576	**21,568**	**–**	**22,144**	486	24,936	–	25,422
Derivative Liabilities								
Interest rate contracts	**11**	**7,943**	**–**	**7,954**	14	7,838	–	7,852
Foreign exchange contracts	**20**	**10,843**	**–**	**10,863**	2	11,852	–	11,854
Commodity contracts	**218**	**1,462**	**–**	**1,680**	295	1,161	–	1,456
Equity contracts	**103**	**2,896**	**–**	**2,999**	246	2,183	1	2,430
Credit default swaps	**–**	**101**	**1**	**102**	–	36	1	37
	352	**23,245**	**1**	**23,598**	557	23,070	2	23,629

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

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 assumption to the significant Level 3 categories of private equity investments, as the net asset values are provided by the investment or fund managers.

As at October 31, 2019 (Canadian $ in millions, except as noted)	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	**1,984**	Net asset value	Net asset value	**na**	**na**
			EV/EBITDA	Multiple	**5x**	**16x**
Loans (3)	Business and government loans	**1,736**	Discounted cash flows	Discount margin	**70 bps**	**115 bps**
NHA MBS and U.S. agency MBS and CMO	NHA MBS and U.S. agency MBS and CMO	**538**	Discounted cash flows	Prepayment rate	**2%**	**30%**
			Market comparable	Comparability adjustment (4)	**(5.91)**	**8.57**

(1) The low and high input values represent the highest and lowest 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 $829 million of Federal Reserve Bank and U.S. Federal Home Loan Bank shares that we carry at cost, which approximates fair value, and hold to meet regulatory requirements.
(3) The impact of assuming a 10 basis point increase or decrease in discount margin for business and government loans is $3 million.
(4) Range of input values represents price per security adjustment.
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.

Discount Margin

Loan and corporate debt yield is the interest rate used to discount expected future cash flows in the valuation model. The discount margin is the difference between an instrument's yield and a benchmark instrument's yield. Benchmark instruments, such as government bonds, have high credit quality ratings and similar maturities. The discount margin therefore represents a market return that accounts for uncertainty in future cash flows. Generally, a higher or lower discount margin will result in a lower or higher fair value.

Discounted Cash Flow

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.

Market Comparable Pricing

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. The following is a discussion of the significant transfers between Level 1, Level 2 and Level 3 balances for the year ended October 31, 2019.

During the year ended October 31, 2019, we refined our judgment of whether quoted prices for fixed income securities were obtained from markets that were active or not in the determination of whether a security should be classified as Level 1 or Level 2, with the result that certain securities were transferred to Level 2 in the year. During the year ended October 31, 2019, $5,831 million of trading securities, $715 million of FVTPL securities, $11,014 million of FVOCI securities and $9,973 million of securities sold but not yet purchased ($2,578 million of trading securities, $714 million of FVTPL securities, $2,266 million of FVOCI securities and $3,971 million of securities sold but not yet purchased respectively, in 2018) were transferred from Level 1 to Level 2 due to our refined approach and reduced observability of the inputs used to value these securities. During the year ended October 31, 2019, $7,985 million of trading securities, $808 million of FVTPL securities, $7,309 million of FVOCI securities and $7,898 million of securities sold but not yet purchased ($4,122 million of trading securities, $742 million of FVTPL securities, $4,044 million of FVOCI securities and $4,210 million of securities sold but not yet purchased respectively, in 2018) were transferred from Level 2 to Level 1 due to increased availability of quoted prices in active markets.

During the year ended October 31, 2019, $159 million ($nil in 2018) of trading securities were transferred from Level 2 to Level 3 due to changes in the market observability of inputs used in pricing these securities, and $87 million ($nil in 2018) were transferred from Level 3 to Level 2 due to the availability of observable price inputs used to value these securities.

Changes in Level 3 Fair Value Measurements

The tables below present a reconciliation of all changes in Level 3 financial instruments during the years ended October 31, 2019 and 2018, including realized and unrealized gains (losses) included in earnings and other comprehensive income.

For the year ended October 31, 2019 (Canadian $ in millions)	Balance October 31, 2018	Change in fair value: Included in earnings	Change in fair value: Included in other comprehensive income (1)	Purchases	Sales (2)	Maturities/ Settlement	Transfers into Level 3	Transfers out of Level 3	Fair value as at October 31, 2019	Change in unrealized gains (losses) recorded in income for instruments still held (3)
Trading Securities										
NHA MBS and U.S. agency MBS and CMO	255	(46)	1	654	(399)	–	159	(86)	538	(16)
Corporate debt	7	–	–	44	(43)	–	–	(1)	7	–
Total trading securities	262	(46)	1	698	(442)	–	159	(87)	545	(16)
FVTPL Securities										
Corporate debt	–	–	–	–	–	–	–	–	–	–
Corporate equity	1,825	21	(2)	421	(280)	(1)	–	–	1,984	58
Total FVTPL securities	1,825	21	(2)	421	(280)	(1)	–	–	1,984	58
FVOCI Securities										
Issued or guaranteed by:										
U.S. states, municipalities and agencies	1	–	–	–	–	–	–	–	1	na
Corporate debt	–	–	–	–	–	–	–	–	–	na
Corporate equity	62	–	2	17	–	–	–	–	81	na
Total FVOCI securities	63	–	2	17	–	–	–	–	82	na
Business and Government Loans	1,450	7	8	1,410	–	(1,139)	–	–	1,736	–
Fair Value Liabilities										
Securities sold but not yet purchased	–	–	–	(7)	7	–	–	–	–	–
Total fair value liabilities	–	–	–	(7)	7	–	–	–	–	–
Derivative Liabilities										
Equity contracts	1	–	–	–	–	–	–	(1)	–	–
Credit default swaps	1	–	–	–	–	–	1	(1)	1	–
Total derivative liabilities	2	–	–	–	–	–	1	(2)	1	–

(1) Foreign exchange translation on trading securities held by foreign subsidiaries is included in other comprehensive income, net foreign operations.
(2) Includes proceeds recovered on securities sold but not yet purchased.
(3) Changes in unrealized gains (losses) on FVTPL securities still held on October 31, 2019 are included in earnings for the year.
na – not applicable

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

For the year ended October 31, 2018 (Canadian $ in millions)	Balance November 1, 2017	Change in fair value: Included in earnings	Change in fair value: Included in other comprehensive income (1)	Purchases	Sales	Maturities/ Settlement	Transfers into Level 3	Transfers out of Level 3	Fair value as at October 31, 2018	Change in unrealized gains (losses) recorded in income for instruments still held (2)
Trading Securities										
NHA MBS and U.S. agency MBS and CMO	–	(1)	4	306	(54)	–	–	–	255	(5)
Corporate debt	–	–	–	7	–	–	–	–	7	–
Total trading securities	–	(1)	4	313	(54)	–	–	–	262	(5)
FVTPL Securities										
Corporate debt	73	–	(4)	5	–	–	–	(74)	–	–
Corporate equity	1,701	12	31	307	(161)	(2)	–	(63)	1,825	5
Total FVTPL securities	1,774	12	27	312	(161)	(2)	–	(137)	1,825	5
FVOCI Securities										
Issued or guaranteed by:										
U.S. states, municipalities and agencies	1	–	–	–	–	–	–	–	1	na
Corporate debt	2	–	–	–	–	(2)	–	–	–	na
Corporate equity	–	–	–	62	–	–	–	–	62	na
Total FVOCI securities	3	–	–	62	–	(2)	–	–	63	na
Business and Government Loans	2,372	(2)	24	604	–	(1,548)	–	–	1,450	–
Derivative Liabilities										
Equity contracts	–	–	–	–	–	–	1	–	1	–
Credit default swaps	–	–	–	–	–	–	1	–	1	–
Total derivative liabilities	–	–	–	–	–	–	2	–	2	–

(1) Foreign exchange translation on trading securities held by foreign subsidiaries is included in other comprehensive income, net foreign operations.
(2) Changes in unrealized gains (losses) on trading securities, derivative assets and derivative liabilities still held on October 31, 2018 are included in earnings for the year.
na – not applicable

Trading-Related Revenue

Trading assets and liabilities, including derivatives, securities and financial instruments designated at fair value through profit or loss, are measured at fair value, with gains and losses recognized in trading revenues, non-interest revenue, in the 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 the 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)	**2019**	2018	2017
Interest rates	**700**	437	480
Foreign exchange	**401**	377	369
Equities	**269**	449	239
Commodities	**145**	63	84
Other	**6**	95	39
Total trading revenue	**1,521**	1,421	1,211
Reported as:			
Net interest income	**1,223**	716	1,127
Non-interest revenue – trading revenue	**298**	705	84
Total trading revenue	**1,521**	1,421	1,211

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

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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) **2019**

				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	**104,949**	**945**	**104,004**	**9,919**	**93,062**	**82**	**941**
Derivative instruments	**22,423**	**279**	**22,144**	**13,538**	**1,740**	**2,750**	**4,116**
	127,372	**1,224**	**126,148**	**23,457**	**94,802**	**2,832**	**5,057**
Financial Liabilities							
Derivative instruments	**23,877**	**279**	**23,598**	**13,538**	**1,940**	**2,971**	**5,149**
Securities lent or sold under repurchase agreements	**87,601**	**945**	**86,656**	**9,919**	**76,501**	**4**	**232**
	111,478	**1,224**	**110,254**	**23,457**	**78,441**	**2,975**	**5,381**

(Canadian $ in millions) 2018

				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	86,635	1,584	85,051	13,516	70,479	–	1,056
Derivative instruments	25,721	299	25,422	15,575	505	3,576	5,766
	112,356	1,883	110,473	29,091	70,984	3,576	6,822
Financial Liabilities							
Derivative instruments	23,928	299	23,629	15,575	600	1,492	5,962
Securities lent or sold under repurchase agreements	68,268	1,584	66,684	13,516	52,910	–	258
	92,196	1,883	90,313	29,091	53,510	1,492	6,220

(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.

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

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 and risk-weighted assets for the consolidated entity are determined in accordance with OSFI's Capital Adequacy Requirements Guideline.

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

Tier 2 capital is primarily comprised of subordinated debentures and may include certain loan loss allowances, less regulatory deductions. Total capital includes Tier 1 and Tier 2 capital. Details of the components of our capital position are presented in Notes 11, 12, 15 and 16.

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

- The CET1 Capital Ratio is defined as CET1 capital divided by CET1 capital risk-weighted assets.
- The Tier 1 Capital Ratio is defined as Tier 1 capital divided by Tier 1 capital risk-weighted assets.
- The Total Capital Ratio is defined as Total capital divided by Total capital risk-weighted assets.
- The Leverage Ratio is defined as Tier 1 capital divided by the sum of on-balance sheet items and specified off-balance sheet items, net of specified adjustments (leverage exposures).

As at October 31, 2019, we met OSFI's required target 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 2.0% Domestic Stability Buffer.

Regulatory Capital Measures, Risk-Weighted Assets and Leverage Exposures

(Canadian $ in millions, except as noted)	**2019**	2018
Common Equity Tier 1 Capital	**36,071**	32,721
Tier 1 Capital	**41,201**	37,220
Total Capital	**48,340**	44,116
Common Equity Tier 1 Capital Risk-Weighted Assets	**317,029**	289,237
Tier 1 Capital Risk-Weighted Assets	**317,029**	289,420
Total Capital Risk-Weighted Assets	**317,029**	289,604
Leverage Exposures	**956,493**	876,106
Common Equity Tier 1 Capital Ratio	**11.4%**	11.3%
Tier 1 Capital Ratio	**13.0%**	12.9%
Total Capital Ratio	**15.2%**	15.2%
Leverage Ratio	**4.3%**	4.2%

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 on or after December 2013 vest in equal tranches of 50% on the third and fourth anniversaries of their grant date. Options granted prior to December 2013 vest in tranches over a four-year period starting from 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)	**2019**		2018		2017	
	Number of stock options	**Weighted-average exercise price** (1)	Number of stock options	Weighted-average exercise price (1)	Number of stock options	Weighted-average exercise price (1)
Outstanding at beginning of year	**6,095,201**	**72.19**	7,525,296	72.05	9,805,299	77.41
Granted	**931,047**	**89.90**	705,398	100.63	723,431	96.90
Exercised	**902,651**	**60.21**	1,513,307	58.40	2,233,801	57.80
Forfeited/cancelled	**4,756**	**98.96**	152,417	86.85	13,243	66.89
Expired	**10,534**	**103.79**	469,769	153.40	756,390	195.02
Outstanding at end of year	**6,108,307**	**76.59**	6,095,201	72.19	7,525,296	72.05
Exercisable at end of year	**3,507,803**	**64.57**	3,782,481	61.39	4,584,375	67.42
Available for grant	**2,487,645**		3,405,239		3,811,157	

(1) The weighted-average exercise prices reflect the conversion of foreign currency denominated options at the exchange rate as at October 31, 2019, October 31, 2018 and October 31, 2017, respectively. For foreign currency denominated options exercised or expired during the year, the weighted-average exercise prices are translated using the exchange rates as at the settlement date and expiry date, respectively.

Employee compensation expense related to this plan for the years ended October 31, 2019, 2018 and 2017 was $9 million, $7 million and $8 million before tax, respectively ($8 million, $7 million and $7 million after tax, respectively).

The intrinsic value of a stock option grant is the difference between the current market price of our common shares and the strike price of the option. The aggregate intrinsic value of stock options outstanding at October 31, 2019, 2018 and 2017 was $130 million, $162 million and $232 million, respectively. The aggregate intrinsic value of stock options exercisable at October 31, 2019, 2018 and 2017 was $116 million, $140 million and $174 million, respectively.

Options outstanding and exercisable at October 31, 2019 by range of exercise price were as follows:

(Canadian $, except as noted)	2019					
	Options outstanding			Options exercisable		
Range of exercise prices	Number of stock options	Weighted-average remaining contractual life (years)	Weighted-average exercise price (2)	Number of stock options	Weighted-average remaining contractual life (years)	Weighted-average exercise price (2)
$50.01 to $60.00	**1,229,196**	**1.7**	**56.42**	**1,229,196**	**1.7**	**56.42**
$60.01 to $70.00	**1,535,630**	**3.7**	**64.71**	**1,535,630**	**3.7**	**64.71**
$70.01 to $80.00	**1,082,146**	**5.7**	**77.59**	**741,659**	**5.5**	**77.75**
$80.01 to $90.00	**928,566**	**9.1**	**89.89**	**753**	**0.5**	**81.77**
$90.01 and over (1)	**1,332,769**	**7.6**	**98.81**	**565**	**0.5**	**99.02**

(1) Certain options were issued as part of the acquisition of M&I.
(2) The weighted-average exercise prices reflect the conversion of foreign currency denominated options at the exchange rate as at October 31, 2019.

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

(Canadian $ in millions, except as noted)	2019	2018	2017
Unrecognized compensation cost for non-vested stock option awards	**6**	5	5
Weighted-average period over which this cost will be recognized (in years)	**2.6**	2.6	2.7
Total intrinsic value of stock options exercised	**36**	67	90
Cash proceeds from stock options exercised	**54**	88	129
Weighted-average share price for stock options exercised (in dollars)	**99.84**	102.55	98.05

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, 2019, 2018 and 2017 was $10.23, $11.30 and $11.62, respectively. To determine the fair value of the stock option tranches on the grant date, the following ranges of values were used for each option pricing assumption:

	2019	2018	2017
Expected dividend yield	**5.7%**	4.1%	4.3%
Expected share price volatility	**20.0% – 20.1%**	17.0% – 17.3%	18.4% – 18.8%
Risk-free rate of return	**2.5%**	2.1%	1.7% – 1.8%
Expected period until exercise (in years)	**6.5 – 7.0**	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, 2019, 2018 and 2017 was $89.90, $100.63 and $96.90, 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 $100,000. 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, 2019, 2018 and 2017 was $54 million, $51 million and $53 million, respectively. There were 18.0 million, 17.8 million and 18.3 million common shares held in these plans for the years ended October 31, 2019, 2018 and 2017, 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. The assets held by the trusts are not included in our consolidated financial statements.

Total assets held under our share ownership arrangements amounted to $1,752 million as at October 31, 2019 ($1,752 million in 2018).

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. 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, 2019, 2018 and 2017 totalled 6.3 million, 5.9 million and 5.9 million, respectively.

Prior to 2015, we entered into agreements with third parties to assume our liabilities related to a portion of units granted for a fixedup-front payment. For units subject to such arrangements, we no longer have any obligation for future cash payments and as a result no liability is recorded

related to these awards. All cash payments made under such arrangements are deferred in the Consolidated Balance Sheet as other assets and are recognized on a straight-line basis over the vesting period. Subsequent changes in the market value of our common shares do not affect the amount of compensation expense related to these awards. During the year ended October 31, 2017, all remaining deferred compensation related to these arrangements was recognized.

Employee compensation expense related to plans where we entered into agreements with third parties for the years ended October 31, 2019, 2018 and 2017 was $nil, $nil and $(7) million before tax, respectively ($nil, $nil and $(5) million after tax, respectively).

Mid-term incentive plan units for which we did not enter into agreements with third parties for the years ended October 31, 2019, 2018 and 2017 totalled 6.3 million, 5.9 million and 5.9 million units, respectively. The grant date fair value of these awards as at 0ctober 31, 2019, 2018 and 2017 was $616 million, $581 million and $515 million, respectively, for which we recorded employee compensation expense of $610 million, $595 million and $703 million before tax, respectively ($448 million, $437 million and $516 million after tax, 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 on total return swaps and foreign currency swaps recognized for the years ended October 31, 2019, 2018 and 2017 were $20 million, $51 million and $183 million, respectively, resulting in net employee compensation expense of $590 million, $544 million and $520 million, respectively.

A total of 17.2 million, 17.1 million and 17.0 million mid-term incentive plan units were outstanding as at October 31, 2019, 2018 and 2017, respectively, and the intrinsic value of those awards which had vested was $1,251 million, $1,269 million and $1,253 million, respectively. Cash payments made in relation to these liabilities were $642 million, $598 million and $343 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 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 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, 2019, 2018 and 2017 totalled 0.3 million, 0.3 million and 0.3 million, respectively, and the grant date fair value of these units was $32 million, $33 million and $32 million, respectively.

Liabilities related to these plans are recorded in other liabilities in our Consolidated Balance Sheet and totalled $478 million and $485 million as at October 31, 2019 and 2018, respectively. Payments made under these plans for the years ended October 31, 2019, 2018 and 2017 were $59 million, $60 million and $32 million, respectively.

Employee compensation expense related to these plans for the years ended October 31, 2019, 2018 and 2017 was $17 million, $27 million and $91 million before tax, respectively ($12 million, $20 million and $67 million after tax, 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 on these derivatives recognized for the years ended October 31, 2019, 2018 and 2017 were $4 million, $8 million and $78 million before tax, respectively. These gains resulted in net employee compensation expense for the years ended October 31, 2019, 2018 and 2017 of $13 million, $19 million and $13 million before tax, respectively ($10 million, $14 million and $10 million after tax, respectively).

A total of 4.8 million, 4.9 million and 5.0 million deferred incentive plan units were outstanding as at October 31, 2019, 2018 and 2017, 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 employees in some of our subsidiaries. The costs of these plans, recorded in employee compensation expense, are equal to our contributions to the plans.

During the year ended October 31, 2018, we announced changes to our other employee future benefit plan for Canadian employees that will become mandatory for new retirees beginning January 1, 2021. Plan changes include an increase in the service requirement for eligibility and flexible benefits with employer premium caps. In 2018, we recorded a $277 million benefit from the remeasurement of the benefit liability in non-interest expense, employee compensation, in our Consolidated Statement of Income.

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 plan's surplus volatility. This strategy has reduced 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 2019	**Actual 2019**	Actual 2018
Equities	**20% – 50%**	**32%**	37%
Fixed income investments	**25% – 55%**	**51%**	46%
Alternative strategies	**15% – 45%**	**17%**	17%

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 expense 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, 2019 and the most recent funding valuation for our primary U.S. pension plan was performed as at January 1, 2019.

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

(Canadian $ in millions)	Pension benefit plans			Other employee future benefit plans		
	2019	2018	2017	**2019**	2018	2017
Defined benefit obligation	**9,866**	8,311	8,846	**1,254**	1,113	1,460
Fair value of plan assets	**9,723**	8,719	8,990	**175**	153	157
Surplus (deficit) and net defined benefit asset (liability)	**(143)**	408	144	**(1,079)**	(960)	(1,303)
Surplus (deficit) is comprised of:						
Funded or partially funded plans	**36**	573	339	**46**	37	28
Unfunded plans	**(179)**	(165)	(195)	**(1,125)**	(997)	(1,331)
Surplus (deficit) and net defined benefit asset (liability)	**(143)**	408	144	**(1,079)**	(960)	(1,303)

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		
	2019	2018	2017	**2019**	2018	2017
Annual benefits expense						
Current service cost	**193**	210	254	**9**	26	32
Net interest (income) expense on net defined benefit (asset) liability	**(20)**	(10)	7	**37**	45	47
Past service cost (income)	**(5)**	7	–	**–**	(277)	–
Administrative expenses	**5**	5	5	**–**	–	–
Remeasurement of other long-term benefits	**–**	–	–	**6**	(10)	(6)
Benefits expense	**173**	212	266	**52**	(216)	73
Canada and Quebec pension plan expense	**82**	76	75	**–**	–	–
Defined contribution expense	**170**	153	123	**–**	–	–
Total annual pension and other employee future benefit expenses recognized in the Consolidated Statement of Income	**425**	441	464	**52**	(216)	73

Weighted-Average Assumptions

	Pension benefit plans			Other employee future benefit plans		
	2019	2018	2017	**2019**	2018	2017
Defined Benefit Expenses						
Discount rate at beginning of year (3)(4)	**4.0%**	3.5%	3.4%	**4.1%**	3.6%	3.6%
Rate of compensation increase	**2.4%**	2.4%	2.8%	**2.0%**	2.0%	2.4%
Assumed overall health care cost trend rate	**na**	na	na	**4.9%** (1)	4.9% (1)	5.2% (2)
Defined Benefit Obligation						
Discount rate at end of year	**3.0%**	4.0%	3.5%	**3.0%**	4.1%	3.6%
Rate of compensation increase	**2.1%**	2.4%	2.4%	**2.0%**	2.0%	2.0%
Assumed overall health care cost trend rate	**na**	na	na	**4.9%** (1)	4.9% (1)	5.2% (2)

(1) Trending to 4.1% in 2040 and remaining at that level thereafter.
(2) Trending to 4.5% in 2031 and remaining at that level thereafter.
(3) The pension benefit current service cost was calculated using a separate discount rate of 4.10%, 3.70% and 3.68% for 2019, 2018 and 2017, respectively.
(4) The other employee future benefit plans current service cost was calculated using a separate discount rate of 4.20%, 3.76% and 3.78% for 2019, 2018 and 2017, respectively.
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	
	2019	2018	**2019**	2018
Life expectancy for those currently age 65				
Males	**23.7**	23.7	**21.7**	21.9
Females	**24.1**	24.0	**23.0**	23.4
Life expectancy at age 65 for those currently age 45				
Males	**24.7**	24.6	**22.8**	23.1
Females	**25.0**	25.0	**24.2**	24.5

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	
	2019	2018	**2019**	2018
Defined benefit obligation				
Defined benefit obligation at beginning of year	**8,311**	8,846	**1,113**	1,460
U.S. plan merger (1)	**46**	–	**–**	–
Current service cost	**193**	210	**9**	26
Past service cost (income)	**(5)**	7	**–**	(277)
Interest cost	**324**	299	**44**	51
Benefits paid	**(456)**	(492)	**(53)**	(43)
Employee contributions	**17**	15	**5**	5
Actuarial (gains) losses due to:				
Changes in demographic assumptions	**(9)**	(50)	**(22)**	(31)
Changes in financial assumptions	**1,345**	(562)	**161**	(77)
Plan member experience	**92**	16	**(3)**	(4)
Foreign exchange and other	**8**	22	**–**	3
Defined benefit obligation at end of year	**9,866**	8,311	**1,254**	1,113
Wholly or partially funded defined benefit obligation	**9,687**	8,146	**129**	116
Unfunded defined benefit obligation	**179**	165	**1,125**	997
Total defined benefit obligation	**9,866**	8,311	**1,254**	1,113
Fair value of plan assets				
Fair value of plan assets at beginning of year	**8,719**	8,990	**153**	157
U.S. plan merger (1)	**43**	–	**–**	–
Interest income	**344**	309	**7**	6
Return on plan assets (excluding interest income)	**795**	(323)	**23**	(10)
Employer contributions	**256**	213	**40**	35
Employee contributions	**17**	15	**5**	5
Benefits paid	**(456)**	(492)	**(53)**	(43)
Administrative expenses	**(5)**	(5)	**–**	–
Foreign exchange and other	**10**	12	**–**	3
Fair value of plan assets at end of year	**9,723**	8,719	**175**	153
Surplus (deficit) and net defined benefit asset (liability) at end of year	**(143)**	408	**(1,079)**	(960)
Recorded in:				
Other assets	**186**	664	**46**	–
Other liabilities	**(329)**	(256)	**(1,125)**	(960)
Surplus (deficit) and net defined benefit asset (liability) at end of year	**(143)**	408	**(1,079)**	(960)
Actuarial gains (losses) recognized in other comprehensive income				
Net actuarial gains (losses) on plan assets	**795**	(323)	**23**	(10)
Actuarial gains (losses) on defined benefit obligation due to:				
Changes in demographic assumptions	**9**	50	**21**	30
Changes in financial assumptions	**(1,345)**	562	**(153)**	72
Plan member experience	**(92)**	(16)	**3**	1
Foreign exchange and other	**(9)**	6	**–**	–
Actuarial gains (losses) recognized in other comprehensive income for the year	**(642)**	279	**(106)**	93

(1) In 2019, the benefit obligation and assets related to employees formerly included in a multi-employer plan, which was accounted for as a defined contribution plan, merged with the U.S. defined benefit pension plan. The impact of the merger was recognized as a remeasurement of the U.S. defined benefit pension plan.

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 are as follows:

(Canadian $ in millions)	2019			2018		
	Quoted	**Unquoted**	**Total**	Quoted	Unquoted	Total
Cash and money market funds	**156**	**6**	**162**	114	–	114
Securities issued or guaranteed by:						
Canadian federal government	**1**	**57**	**58**	108	41	149
Canadian provincial and municipal governments	**334**	**368**	**702**	219	309	528
U.S. federal government	**345**	**–**	**345**	297	–	297
U.S. states, municipalities and agencies	**–**	**–**	**–**	–	12	12
Pooled funds	**1,450**	**3,204**	**4,654**	1,591	2,715	4,306
Derivative instruments	**–**	**8**	**8**	1	(14)	(13)
Corporate debt	**–**	**1,354**	**1,354**	6	1,055	1,061
Corporate equity	**1,219**	**–**	**1,219**	1,105	–	1,105
	3,505	**4,997**	**8,502**	3,441	4,118	7,559

No plan assets are directly invested in the bank's or related parties' securities as at October 31, 2019 and 2018. As at October 31, 2019, our primary Canadian plan indirectly held, through pooled funds, approximately $10 million ($15 million in 2018) of our common shares and fixed income securities. The plans do not hold any property we occupy or other assets we use.

The plans paid $3 million in the year ended October 31, 2019 ($4 million in 2018) to the bank and certain of our subsidiaries for investment management, record-keeping, custodial and administrative services rendered.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Sensitivity of Assumptions

Key weighted-average assumptions 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.

		Defined benefit obligation	
(Canadian $ in millions, except as noted)		Pension benefit plans	Other employee future benefit plans
Discount rate (%)		3.0	3.0
Impact of:	1% increase ($)	(1,041)	(122)
	1% decrease ($)	1,324	153
Rate of compensation increase (%)		2.1	2.0
Impact of:	0.25% increase ($)	51	– (1)
	0.25% decrease ($)	(49)	– (1)
Mortality			
Impact of:	1 year shorter life expectancy ($)	(185)	(28)
	1 year longer life expectancy ($)	182	29
Assumed overall health care cost trend rate (%)		na	4.9 (2)
Impact of:	1% increase ($)	na	49
	1% decrease ($)	na	(51)

(1) The change in this assumption is immaterial.
(2) Trending to 4.1% in 2040 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)	**2019**	2018
Canadian pension plans	**15.2**	14.0
U.S. pension plans	**7.9**	7.2
Canadian other employee future benefit plans	**14.5**	14.3

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		
	2019	2018	2017	**2019**	2018	2017
Contributions to defined benefit plans	**203**	154	187	**–**	–	–
Contributions to defined contribution plans	**170**	153	123	**–**	–	–
Benefits paid directly to pensioners	**53**	59	32	**40**	35	40
	426	366	342	**40**	35	40

Our best estimate of the contributions and benefits paid directly to pensioners we expect to make for the year ending October 31, 2020 is approximately $277 million to our defined benefit pension plans and $43 million to our other employee future benefit plans. Benefit payments for fiscal 2020 are estimated to be $536 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 income tax assets and liabilities are measured at the tax rates expected to apply when temporary differences reverse. Changes in deferred income 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 income tax assets is $26 million ($42 million in 2018) related to Canadian tax loss carryforwards that will expire in 2037, $289 million ($962 million in 2018) related to both U.S. tax loss carryforwards and tax credits that will expire in various amounts in U.S. taxation years from 2020 through 2039 and $19 million ($17 million in 2018) related to United Kingdom (U.K.) tax loss carryforwards that are available for use indefinitely against relevant profits generated in the U.K. On the evidence available, including management projections of income, we believe that it is probable 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, 2019 is $127 million ($132 million in 2018), of which $3 million ($8 million in 2018) 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 income 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 $15 billion as at October 31, 2019 ($13 billion in 2018).

Provision for Income Taxes

(Canadian $ in millions)	2019	2018	2017
Consolidated Statement of Income			
Current			
Provision for income taxes for the current period	**1,198**	1,340	1,159
Adjustments in respect of current tax for prior periods	**(14)**	20	18
Deferred			
Origination and reversal of temporary differences	**327**	268	171
Effect of changes in tax rates	**3**	425	(2)
Previously unrecognized tax loss, tax credit or temporary difference for a prior period	**–**	(92)	(54)
	1,514	1,961	1,292
Other Comprehensive Income and Equity			
Income tax expense (recovery) related to:			
Unrealized gains (losses) on FVOCI debt securities (1)	**140**	(69)	21
Reclassification to earnings of (gains) on FVOCI debt securities (1)	**(26)**	(23)	(36)
Gains (losses) on derivatives designated as cash flow hedges	**521**	(432)	(322)
Reclassification to earnings of losses on derivatives designated as cash flow hedges	**51**	121	21
Hedging of unrealized (gains) losses on translation of net foreign operations	**(4)**	(56)	8
Gains (losses) on remeasurement of pension and other employee future benefit plans	**(196)**	111	157
Gains (Losses) on remeasurement of own credit risk on financial liabilities designated at fair value	**27**	(6)	(53)
Unrealized gains on FVOCI equity securities	**1**	–	na
Share-based compensation	**–**	10	(12)
	514	(344)	(216)
Total provision for income taxes	**2,028**	1,617	1,076

(1) Fiscal 2017 represents available-for-sale securities (Note 3).
na – not applicable due to IFRS 9 adoption.
Certain comparative figures have been reclassified to conform with the current year's presentation.

Components of Total Provision for Income Taxes

(Canadian $ in millions)	2019	2018	2017
Canada: Current income taxes			
Federal	**791**	501	470
Provincial	**465**	299	272
	1,256	800	742
Canada: Deferred income taxes			
Federal	**(113)**	(44)	(2)
Provincial	**(66)**	(27)	–
	(179)	(71)	(2)
Total Canadian	**1,077**	729	740
Foreign: Current income taxes	**308**	233	186
Deferred income taxes	**643**	655	150
Total foreign	**951**	888	336
Total provision for income taxes	**2,028**	1,617	1,076

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

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

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

(Canadian $ in millions, except as noted)		2019		2018		2017
Combined Canadian federal and provincial income taxes at the statutory tax rate	**1,934**	**26.6%**	1,972	26.6%	1,764	26.6%
Increase (decrease) resulting from:						
Tax-exempt income from securities	**(220)**	**(3.0)**	(226)	(3.0)	(409)	(6.2)
Foreign operations subject to different tax rates	**(158)**	**(2.2)**	(110)	(1.5)	22	0.3
Change in tax rate for deferred income taxes	**3**	**–**	425	5.7	(2)	–
Previously unrecognized tax loss, tax credit or temporary difference for a prior period	**–**	**–**	(92)	(1.2)	(54)	(0.8)
Income attributable to investments in associates and joint ventures	**(37)**	**(0.5)**	(39)	(0.5)	(103)	(1.5)
Adjustments in respect of current tax for prior periods	**(14)**	**(0.2)**	20	0.3	18	0.2
Other	**6**	**0.1**	11	0.1	56	0.9
Provision for income taxes in the Consolidated Statement of Income and effective tax rate	**1,514**	**20.8%**	1,961	26.5%	1,292	19.5%

Components of Deferred Income Tax Balances

(Canadian $ in millions)

Deferred Income Tax Asset (Liability) (1)	Net asset, October 31, 2018	**Benefit (expense) to income statement**	**Benefit (expense) to equity**	**Translation and other**	**Net asset, October 31, 2019**
Allowance for credit losses	484	**23**	**–**	**4**	**511**
Employee future benefits	282	**12**	**31**	**–**	**325**
Deferred compensation benefits	494	**(12)**	**–**	**1**	**483**
Other comprehensive income	195	**–**	**(331)**	**(7)**	**(143)**
Tax loss carryforwards	606	**(462)**	**–**	**1**	**145**
Tax credits	415	**(228)**	**–**	**2**	**189**
Premises and equipment	(515)	**234**	**–**	**(1)**	**(282)**
Pension benefits	(121)	**(18)**	**166**	**–**	**27**
Goodwill and intangible assets	(201)	**(14)**	**–**	**(2)**	**(217)**
Securities	38	**12**	**–**	**–**	**50**
Other	288	**123**	**–**	**9**	**420**
Total	1,965	**(330)**	**(134)**	**7**	**1,508**

(Canadian $ in millions)

Deferred Income Tax Asset (Liability) (1)	Net asset, November 1, 2017 (2)	Benefit (expense) to income statement	Benefit (expense) to equity	Translation and other	Net asset, October 31, 2018
Allowance for credit losses	684	(150)	–	(50)	484
Employee future benefits	416	(111)	(23)	–	282
Deferred compensation benefits	545	(50)	–	(1)	494
Other comprehensive income	50	–	138	7	195
Tax loss carryforwards	1,233	(628)	–	1	606
Tax credits	454	(39)	–	–	415
Premises and equipment	(664)	148	–	1	(515)
Pension benefits	(52)	19	(88)	–	(121)
Goodwill and intangible assets	(261)	60	–	–	(201)
Securities	21	17	–	–	38
Other	180	133	(10)	(15)	288
Total	2,606	(601)	17	(57)	1,965

(1) Deferred tax assets of $1,568 million and $2,039 million and deferred tax liabilities of $60 million and $74 million as at October 31, 2019 and 2018, respectively, are presented on the balance sheet net by legal jurisdiction.

(2) Includes IFRS 9 adoption (refer to Note 28).

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

In fiscal 2019, we were reassessed by the Canada Revenue Agency (``CRA``) for additional income taxes and interest in an amount of approximately $250 million in respect of certain 2014 Canadian corporate dividends. In prior fiscal years, we were reassessed for additional income taxes and interest of approximately $361 million, for certain 2011 to 2013 Canadian corporate dividends. In its reassessments, the CRA denied dividend deductions on the basis that the dividends were received as part of a "dividend rental arrangement." The tax rules raised by the CRA in the reassessments were prospectively addressed in the 2015 and 2018 Canadian federal budgets. In the future, we expect to be reassessed for significant income tax for similar activities in 2015 and subsequent years. We remain of the view that our tax filing positions were appropriate and intend to challenge any reassessment.

On December 22, 2017, the U.S. government enacted new tax legislation that became effective on January 1, 2018. Under the new legislation, our U.S. net deferred tax asset was revalued by $483 million because of the lower income tax rate. The $483 million revaluation is comprised of a $425 million income tax expense recorded in our Consolidated Statement of Income, and a $58 million income tax charge recorded in other comprehensive income and equity for the year ended October 31, 2018.

Note 23: Earnings Per Share

Basic earnings per share is calculated by dividing net income attributable to equity holders of the bank, after deducting dividends on preferred shares and distributions 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:

(Canadian $ in millions, except as noted)	2019	2018	2017
Basic Earnings Per Common Share			
Net income attributable to equity holders of the bank	**5,758**	5,453	5,337
Dividends on preferred shares and distributions on other equity instruments	**(211)**	(184)	(184)
Net income available to common shareholders	**5,547**	5,269	5,153
Weighted-average number of common shares outstanding (in thousands)	**638,881**	642,930	649,650
Basic earnings per common share (Canadian $)	**8.68**	8.19	7.93
Diluted Earnings Per Common Share			
Net income available to common shareholders adjusted for impact of dilutive instruments	**5,547**	5,269	5,153
Weighted-average number of common shares outstanding (in thousands)	**638,881**	642,930	649,650
Effect of dilutive instruments			
Stock options potentially exercisable (1)	**5,326**	5,876	6,859
Common shares potentially repurchased	**(3,847)**	(3,893)	(4,548)
Weighted-average number of diluted common shares outstanding (in thousands)	**640,360**	644,913	651,961
Diluted earnings per common share (Canadian $)	**8.66**	8.17	7.90

(1) In computing diluted earnings per share, we excluded average stock options outstanding of 1,177,152, 1,101,938 and 1,330,564 with weighted-average exercise prices of $101.83, $127.45 and $182.70 for the years ended October 31, 2019, 2018 and 2017, respectively, as the average share price for the period did not exceed the exercise price.

Certain comparative figures have been reclassified to conform with the current year's presentation and for changes in accounting policy (Note 1).

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 (see 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, securities lending, 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.

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

(Canadian $ in millions)	2019	2018
Financial Guarantees		
Standby letters of credit	**21,395**	18,458
Credit default swaps (1)	**2,068**	443
Other Credit Instruments		
Backstop liquidity facilities	**5,550**	5,627
Securities lending	**4,102**	4,939
Documentary and commercial letters of credit	**1,272**	1,263
Commitments to extend credit (2)	**158,533**	137,995
Other commitments	**5,181**	8,935
Total	**198,101**	177,660

(1) The fair value of the related derivatives included in our Consolidated Balance Sheet was $43 million as at October 31, 2019 ($8 million in 2018).

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

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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 directly provided 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 one year to 10 years. Refer to Note 8 for details.

Other Credit Instruments

Backstop liquidity facilities are provided to asset-backed commercial paper ("ABCP") programs administered by either us or third parties 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 and generally do not require us to advance money against non-performing or defaulted assets. The average term of these liquidity facilities is approximately 2 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.

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 our 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, 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 loss to be remote.

Pledged Assets

In the normal course of business, we pledge assets as security for various liabilities that we incur.

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

(Canadian $ in millions)	**2019**	2018
Bank Assets		
Cash and securities (1)		
Issued or guaranteed by the Government of Canada	**5,633**	7,784
Issued or guaranteed by a Canadian province, municipality or school corporation	**5,465**	7,143
Other	**75,076**	60,812
Mortgages, securities borrowed or purchased under resale agreements and other	**125,035**	115,256
	211,209	190,995

(Canadian $ in millions)	**2019**	2018
Assets pledged in relation to:		
Central counterparties, payment systems and depositories	**2,098**	2,403
Bank of Canada	**467**	525
Foreign governments and central banks	**3**	3
Obligations related to securities sold under repurchase agreements	**73,696**	54,606
Securities borrowing and lending	**48,892**	50,388
Derivatives transactions	**9,614**	6,120
Securitization	**30,120**	28,710
Covered bonds	**27,208**	26,721
Other	**19,111**	21,519
Total pledged assets and collateral (1)	**211,209**	190,995

(1) Excludes cash pledged with central banks disclosed as restricted cash in Note 2.

Collateral

When entering into trading activities, such as purchases under resale agreements, securities borrowing and lending activities or financing for certain derivative transactions, we require our counterparties to provide us with collateral that will protect us from losses in the event of their default. Collateral transactions (received or pledged) are typically conducted under terms that are usual and customary in standard trading activities. If there is no default, the securities or their equivalents must be returned to, or returned by, the counterparty at the end of the contract.

The fair value of counterparty collateral that we are permitted to sell or repledge (in the absence of default by the owner of the collateral) was $163,929 million as at October 31, 2019 ($123,782 million as at October 31, 2018). The fair value of collateral that we have sold or repledged was $101,665 million as at October 31, 2019 ($82,392 million as at October 31, 2018).

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 and our premises leases have various renewal options and rights. Our total contractual rental commitments as at October 31, 2019 were $3,800 million. The commitments for each of the next five years and thereafter are $389 million for 2020, $361 million for 2021, $337 million for 2022, $305 million for 2023, $289 million for 2024 and $2,119 million thereafter. Included in these amounts are commitments related to 1,165 leased branch locations as at October 31, 2019.

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.

Restructuring Charges

Provisions for restructuring charges as at October 31, 2019 are $603 million ($176 million as at October 31, 2018), which includes $484 million related to severance and a small amount of real estate-related costs, to continue to improve efficiency, including accelerating delivery against key bank-wide initiatives focused on digitization, organizational redesign and simplification of the way we do our business. This represents our best estimate of the amount that will ultimately be paid out.

Legal Proceedings

The bank and its subsidiaries are party to legal proceedings, including regulatory investigations, in the ordinary course of business. While there is inherent difficulty in predicting the outcome of these proceedings, management does 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.

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

(Canadian $ in millions)	**2019**	2018
Balance at beginning of year	**284**	170
Additional provisions/increase in provisions	**666**	375
Provisions utilized	**(251)**	(250)
Amounts reversed	**(32)**	(11)
Foreign exchange and other	**13**	–
Balance at end of year (1)	**680**	284

(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 groups using reported and adjusted measures, such as net income, revenue growth, return on equity, and non-interest expense-to-revenue (productivity) ratio, as well as operating leverage.

Effective with the adoption of IFRS 9, we allocate the provision for credit losses on performing loans and the related allowance to operating groups. In 2017 and prior years, the collective provision and allowance were held in Corporate Services.

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 for everyday banking, financing, investing, credit card and creditor insurance needs. Commercial Banking provides our small business and commercial banking customers with a broad suite of integrated commercial and capital markets products, as well as financial advisory services.

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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 andmid-sized business banking customers are served through our branches, contact centres, online and mobile banking platforms, and automated banking machines across eight states. Our commercial banking customers are offered in-depth specific industry knowledge, as well as strategic capital markets solutions.

BMO Wealth Management

BMO's group of wealth management businesses 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. Wealth Management ("BMO WM") is a global business with an active presence in markets across Canada, the United States, EMEA and Asia.

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 33 locations around the world, including 19 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, procurement, data and analytics, and innovation. T&O manages, maintains and provides governance of information technology, cyber security and operations services for the bank.

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, residual unallocated expenses and certain acquisition integration costs and restructuring costs.

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 ontax-exempt securities to an equivalent before-tax basis to facilitate comparisons of income between taxable and tax-exempt sources. The offset to the groups' teb adjustments is reflected in Corporate Services revenue and provision for income taxes. The teb adjustment for the year ended October 31, 2019 was $296 million ($313 million in 2018 and $567 million in 2017).

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	Wealth Management	BMO CM	Corporate Services (1)	Total
2019						
Net interest income (2)	**5,878**	**4,218**	**935**	**2,394**	**(537)**	**12,888**
Non-interest revenue	**2,128**	**1,162**	**6,727**	**2,340**	**238**	**12,595**
Total Revenue	**8,006**	**5,380**	**7,662**	**4,734**	**(299)**	**25,483**
Provision for (recovery of) credit losses on impaired loans	**544**	**160**	**2**	**52**	**(7)**	**751**
Provision for (recovery of) credit losses on performing loans	**63**	**37**	**(2)**	**28**	**(5)**	**121**
Total provision for (recovery of) credit losses	**607**	**197**	**–**	**80**	**(12)**	**872**
Insurance claims, commissions and changes in policy benefit liabilities	**–**	**–**	**2,709**	**–**	**–**	**2,709**
Depreciation and amortization	**338**	**456**	**262**	**149**	**–**	**1,205**
Non-interest expense	**3,516**	**2,683**	**3,260**	**3,112**	**854**	**13,425**
Income (loss) before taxes and non-controlling interest in subsidiaries	**3,545**	**2,044**	**1,431**	**1,393**	**(1,141)**	**7,272**
Provision for (recovery of) income taxes	**919**	**433**	**371**	**307**	**(516)**	**1,514**
Reported net income (loss)	**2,626**	**1,611**	**1,060**	**1,086**	**(625)**	**5,758**
Average Assets	**237,995**	**126,584**	**40,951**	**342,347**	**85,375**	**833,252**

(Canadian $ in millions)	Canadian P&C	U.S. P&C	Wealth Management	BMO CM	Corporate Services (1)	Total
2018						
Net interest income (2)	5,541	3,843	826	1,784	(556)	11,438
Non-interest revenue	2,069	1,096	5,475	2,579	248	11,467
Total Revenue	7,610	4,939	6,301	4,363	(308)	22,905
Provision for (recovery of) credit losses on impaired loans	466	258	6	(17)	(13)	700
Provision for (recovery of) credit losses on performing loans	3	(38)	–	(1)	(2)	(38)
Total provision for (recovery of) credit losses	469	220	6	(18)	(15)	662
Insurance claims, commissions and changes in policy benefit liabilities	–	–	1,352	–	–	1,352
Depreciation and amortization	317	454	231	125	–	1,127
Non-interest expense	3,393	2,514	3,284	2,734	425	12,350
Income (loss) before taxes and non-controlling interest in subsidiaries	3,431	1,751	1,428	1,522	(718)	7,414
Provision for (recovery of) income taxes	882	357	356	366	–	1,961
Reported net income (loss)	2,549	1,394	1,072	1,156	(718)	5,453
Average Assets	224,554	110,351	35,913	307,087	76,390	754,295

(Canadian $ in millions)	Canadian P&C	U.S. P&C	Wealth Management	BMO CM	Corporate Services (1)	Total
2017						
Net interest income (2)	5,261	3,551	722	2,501	(760)	11,275
Non-interest revenue	2,079	1,005	5,496	2,075	177	10,832
Total Revenue	7,340	4,556	6,218	4,576	(583)	22,107
Provision for (recovery of) credit losses (3)	483	289	8	44	(78)	746
Insurance claims, commissions and changes in policy benefit liabilities	–	–	1,538	–	–	1,538
Depreciation and amortization	308	433	242	120	–	1,103
Non-interest expense	3,226	2,458	3,113	2,666	626	12,089
Income (loss) before taxes and non-controlling interest in subsidiaries	3,323	1,376	1,317	1,746	(1,131)	6,631
Provision for (recovery of) income taxes	823	358	350	471	(710)	1,292
Reported net income (loss)	2,500	1,018	967	1,275	(421)	5,339
Non-controlling interest in subsidiaries	–	–	2	–	–	2
Net Income (loss) attributable to equity holders of the bank	2,500	1,018	965	1,275	(421)	5,337
Average Assets	217,685	104,209	32,562	302,518	65,652	722,626

(1) Corporate Services includes Technology and Operations.
(2) Operating groups report on a taxable equivalent basis – see Basis of Presentation section.
(3) 2017 has not been restated to reflect the adoption of IFRS 9.

Certain comparative figures have been reclassified to conform with the current year's presentation and for changes in accounting policy (Note 1).

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Geographic Information

We operate primarily in Canada and the United States, but we also have operations in the U.K., 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	Total
2019				
Total Revenue	**15,134**	**8,282**	**2,067**	**25,483**
Income before taxes	**4,324**	**2,367**	**581**	**7,272**
Reported net income	**3,391**	**1,903**	**464**	**5,758**
Average Assets	**469,032**	**316,983**	**47,237**	**833,252**

(Canadian $ in millions)	Canada	United States	Other countries	Total
2018				
Total Revenue	13,632	7,273	2,000	22,905
Income before taxes	4,840	1,871	703	7,414
Reported net income	3,797	1,100	556	5,453
Average Assets	441,376	277,764	35,155	754,295

(Canadian $ in millions)	Canada	United States	Other countries	Total
2017				
Total Revenue	13,365	7,015	1,727	22,107
Income before taxes and non-controlling interest in subsidiaries	4,589	1,580	462	6,631
Reported net income	3,816	1,200	323	5,339
Average Assets	430,570	264,473	27,583	722,626

Certain comparative figures have been reclassified to conform with the current year's presentation and for changes in accounting policy (Note 1).

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Note 26: Significant Subsidiaries

As at October 31, 2019, 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 Capital Markets (Holdings) Limited and subsidiaries, including:	London, England	364
BMO Capital Markets Limited	London, England	
Pyrford International Limited	London, England	
Bank of Montreal (China) Co. Ltd.	Beijing, China	449
Bank of Montreal Europe plc (3)	Dublin, Ireland	1,042
Bank of Montreal Holding Inc. and subsidiaries, including:	Toronto, Canada	31,175
Bank of Montreal Mortgage Corporation	Calgary, Canada	
BMO Mortgage Corp.	Vancouver, Canada	
BMO Investments Limited	Hamilton, Bermuda	
BMO Reinsurance Limited	St. Michaels, Barbados	
BMO Nesbitt Burns Holdings Corporation	Toronto, Canada	
BMO Nesbitt Burns Inc.	Toronto, Canada	
BMO Investments Inc.	Toronto, Canada	
BMO InvestorLine Inc.	Toronto, Canada	
BMO Financial Corp. and subsidiaries, including:	Chicago, United States	23,396
BMO Asset Management Corp. and subsidiaries	Chicago, United States	
BMO Capital Markets Corp.	New York, United States	
BMO Family Office, LLC (4)	Palo Alto, United States	
BMO Harris Bank National Association and subsidiaries, including:	Chicago, United States	
BMO Harris Investment Company LLC	Las Vegas, United States	
BMO Harris Financial Advisors, Inc.	Chicago, United States	
BMO Harris Financing, Inc. and subsidiaries	Chicago, United States	
BMO Global Asset Management (Europe) Limited and subsidiaries, including:	London, England	677
BMO Asset Management (Holdings) plc and subsidiaries	London, England	
BMO Life Insurance Company and subsidiaries, including:	Toronto, Canada	1,285
BMO Life Holdings (Canada), ULC	Halifax, Canada	
BMO Life Assurance Company	Toronto, Canada	
BMO Trust Company	Toronto, Canada	774
BMO Trustee Asia Limited	Hong Kong, China	2
LGM (Bermuda) Limited and subsidiaries, including:	Hamilton, Bermuda	154
BMO Global Asset Management (Asia) Limited	Hong Kong, China	
LGM Investments Limited	London, England	

(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., BMO Capital Markets Corp., BMO Harris Financial Advisors, Inc., BMO Harris Financing, Inc., and BMO Family Office, LLC, which are incorporated under the laws of the state of Delaware, United States. BMO Asset Management (Holdings) plc is incorporated under the laws of Scotland.
(2) Unless otherwise noted, the bank, either directly or indirectly through its subsidiaries, owns 100% of the outstanding voting shares of each subsidiary.
(3) Effective September 2, 2019, Bank of Montreal Ireland Public Limited Company changed its name to Bank of Montreal Europe Public Limited Company.
(4) Effective January 1, 2019, CTC MyCFO, LLC changed its name to BMO Family Office, LLC.

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.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 27: Related Party Transactions

Related parties include subsidiaries, associates, joint ventures, 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 Compensation

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)	**2019**	2018	2017
Base salary and incentives	**22**	21	23
Post-employment benefits	**2**	2	1
Share-based payments (1)	**43**	31	38
Total key management personnel compensation	**67**	54	62

(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, 2019, loans to key management personnel totalled $21 million ($16 million in 2018). We have no provision for credit losses related to these amounts as at October 31, 2019 and 2018.

Directors receive a specified amount of their annual retainer in deferred stock units. Until a director's shareholdings (including deferred stock units) are eight 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. They 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 associated companies accounted for under the equity method as well as our share of the income of those entities:

(Canadian $ in millions)	**Joint ventures**		**Associates**	
	2019	2018	**2019**	2018
Carrying amount	**343**	231	**501**	471
Share of net income	**99**	107	**52**	60

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)	**2019**	2018
Loans	**169**	195
Deposits	**106**	114
Fees paid for services received	**69**	71
Guarantees and commitments	**76**	65

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Note 28: Transition to IFRS 9

The following table shows the pre-transition IAS 39 and corresponding IFRS 9 classification and measurement categories, and reconciles the IAS 39 and IFRS 9 carrying amounts for loans, securities and other financial assets as at November 1, 2017 as a result of adopting IFRS 9. There were no changes to the measurement basis of other financial asset categories or any financial liabilities.

(Canadian $ in millions)	IAS 39 measurement category	IFRS 9 measurement category	IAS 39 carrying amount	Reclassification	Remeasurement	IFRS 9 carrying amount
Financial Assets						
Securities						
	Trading	Trading	99,069	(8,534)	–	90,535
		FVTPL	–	8,534	–	8,534
	Available-for-sale	na	54,075	(54,075)	–	–
		FVOCI	–	51,909	–	51,909
		FVTPL	–	2,081	–	2,081
		Amortized cost	–	85	–	85
	Held-to-maturity	Amortized cost	9,094	–	(2)	9,092
	Other	Other	960	(333)	–	627
		FVTPL	–	333	–	333
Total Securities			163,198	–	(2)	163,196
Loans						
Residential mortgages	Amortized cost	Amortized cost	115,258	–	–	115,258
Consumer instalment and other	Amortized cost	Amortized cost	61,944	–	–	61,944
Credit cards	Amortized cost	Amortized cost	8,071	–	–	8,071
Business and government	Amortized cost	Amortized cost	175,067	(2,372)	–	172,695
		FVTPL	–	2,372	–	2,372
Total Loans			360,340	–	–	360,340
Allowance for credit losses			(1,833)	–	154	(1,679)
			358,507	–	154	358,661
Remaining financial assets (1)			127,706	–	(6)	127,700
Financial Liabilities						
Allowance for credit losses on off-balance sheet exposures			163	–	76	239
Total pre-tax impact of IFRS 9 adoption			na	–	70	na
Total after-tax Accumulated Other Comprehensive Income			3,066	(55)	–	3,011
Total after-tax Retained Earnings (2)(3)			23,709	55	44	23,808
Total after-tax Equity			44,354	–	44	44,398

(1) Represents cash and cash equivalents, interest bearing deposits with banks, securities borrowed or purchased under resale agreements and other assets. Remeasurement represents the impact of the impairment provisions of IFRS 9 on these remaining financial assets.
(2) Reclassification amount represents the after-tax impact ($105 million pre-tax) that resulted from the reclassification of equity securities from available-for-sale under IAS 39 to fair value through profit or loss under IFRS 9.
(3) Remeasurement represents the after-tax impact ($70 million pre-tax) of the adoption of the impairment provisions of IFRS 9.
na – not applicable due to IFRS 9 adoption.

The securities balances by measurement category following the adoption of IFRS 9 as at November 1, 2017 were:

(Canadian $ in millions)	November 1, 2017
Trading	90,535
FVTPL	10,948
FVOCI	51,909
Amortized cost	9,177
Other	627
Total	163,196

The primary impact as a result of adopting the classification and measurement provisions of IFRS 9 relates to securities held by the bank.

On transition, our existing held-to-maturity securities continued to qualify for amortized cost treatment, as they are held with the intent to collect contractual cash flows and those cash flows represent solely payments of principal and interest.

Our available-for-sale portfolio was reclassified based on the result of the business model and contractual cash flow tests. All available-for-sale securities that represented equity instruments were reclassified as fair value through profit or loss. Available-for-sale securities that represented investments in debt instruments were generally classified as fair value through other comprehensive income. Certain available-for-sale debt securities were classified as fair value through profit or loss, as their contractual cash flows did not represent solely payments of principal and interest. Certain available-for-sale debt securities were classified as amortized cost, as they are held with the intent to collect contractual cash flows and those cash flows represent solely payments of principal and interest. On transition, investments held in our merchant banking business are classified as fair value through profit or loss and no longer require designation under the fair value option.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Our lending portfolios continue to be recorded at amortized cost, with the exception of certain business and government loans with contractual cash flows that did not represent solely payments of principal and interest, and were classified as fair value through profit or loss.

The following table illustrates the impact of transition to IFRS 9 on the allowance for credit losses as of November 1, 2017.

(Canadian $ in millions)	IAS 39 collective allowance	IAS 39 specific allowance	IAS 39 allowance	Remeasurement	IFRS 9 allowance	IFRS 9 Stage 1	IFRS 9 Stage 2	IFRS 9 Stage 3
Loans								
Residential mortgages	69	24	**93**	(20)	**73**	16	33	24
Consumer instalment and other	343	136	**479**	71	**550**	70	344	136
Credit cards	243	–	**243**	41	**284**	63	221	–
Business and government	785	233	**1,018**	(246)	**772**	205	334	233
Total allowance for credit losses	1,440	393	**1,833**	(154)	**1,679**	354	932	393
Allowance for credit losses on remaining financial assets (1)	–	–	**–**	8	**8**	7	1	–
Allowance for credit losses on off-balance sheet exposures	136	27	**163**	76	**239**	89	123	27
Total	1,576	420	**1,996**	(70)	**1,926**	450	1,056	420

(1) Represents cash and cash equivalents, interest bearing deposits with banks, securities, securities borrowed or purchased under resale agreements and other assets.

Accounting Policies for Financial Instruments under IAS 39, *Financial Instruments: Recognition and Measurement*

The following accounting policies apply to comparative information for 2017 in our consolidated financial statements as we did not restate prior periods on adoption of IFRS 9.

Classification and Measurement of Securities

Securities are divided into four types: trading securities designated at FVTPL, available-for-sale securities, held-to-maturity securities and other securities.

Trading securities are securities that we purchase for resale over a short period of time. We classify trading securities and securities designated under the fair value option at fair value through profit or loss.

We record the transaction costs, gains and losses realized on disposal and unrealized gains and losses due to changes in fair value in our Consolidated Statement of Income in trading revenues. Securities designated at FVTPL are financial instruments that are accounted for at fair value, with changes in fair value recorded in income provided they meet certain criteria.

Available-for-sale securities consist of debt and equity securities that may be sold in response to or in anticipation of changes in interest rates and resulting prepayment risk, changes in credit risk, changes in foreign currency risk, changes in funding sources or terms, or in order to meet liquidity needs.

Available-for-sale securities are initially recorded at fair value plus transaction costs. They are subsequently measured at fair value, with unrealized gains and losses recorded in unrealized gains (losses) on available-for-sale securities in our Consolidated Statement of Comprehensive Income until the security is sold. 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 and dividends received on available-for-sale securities are recorded in our Consolidated Statement of Income in interest, dividend and fee income, securities.

Held-to-maturity securities are debt securities that we have the intention and ability to hold to maturity and that do not meet the definition of a loan. These securities are initially recorded at fair value plus transaction costs and subsequently measured at amortized cost using the effective interest method. Impairment losses are recorded in our Consolidated Statement of Income in securities gains (losses), other than trading. Interest income earned and amortization of premiums or discounts on these debt securities are recorded in our Consolidated Statement of Income in interest, dividend and fee income, securities.

Other securities are investments in companies where we exert significant influence over operating, investing and financing decisions (generally companies in which we own between 20% and 50% of the voting shares). We account for these other securities using the equity method of accounting. Other securities also include certain securities held by our merchant banking business.

Impairment of Securities

We review held-to-maturity, available-for-sale and other securities at each quarter-end reporting period to identify and evaluate investments that show indications of possible impairment.

For held-to-maturity, available-for-sale and other securities, impairment losses are recognized if there is objective evidence of impairment as a result of an event that reduces the estimated future cash flows from the security and the impact can be reliably estimated.

We do not record impairment write-downs on debt securities when impairment is due to changes in market interest rates if future contractual cash flows associated with the debt security are still expected to be recovered.

The impairment loss on available-for-sale securities is the difference between the security's amortized cost and its current fair value, less any previously recognized impairment losses. If there is objective evidence of impairment, a write-down is transferred from our Consolidated Statement of Comprehensive Income, unrealized gains (losses) on available-for-sale securities, to our Consolidated Statement of Income in securities gains, other than trading.

The impairment loss on held-to-maturity securities is the difference between a security's carrying amount and the present value of its estimated future cash flows discounted at the original effective interest rate. If there is objective evidence of impairment, a write-down is recorded in our Consolidated Statement of Income in securities gains, other than trading.

For available-for-sale debt securities, a previous impairment loss is reversed through net income if an event occurs after the impairment was recognized that can be objectively attributed to an increase in fair value, to a maximum of the original impairment charge. For available-for-sale equity securities, previous impairment losses are not reversed through net income, and any subsequent increases in fair value are recorded in other comprehensive income. Reversals of impairment losses on held-to-maturity securities are recorded to a maximum of the amortized cost of the investment before the original impairment charge.

Loans
Loans are initially measured at fair value plus directly attributable costs, and are subsequently measured at amortized cost using the effective interest method. 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 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.

Allowance for Credit Losses
The allowance for credit losses adjusts the value of loans to reflect their estimated realizable value. In assessing their estimated realizable value, we must rely on estimates and exercise judgment regarding matters for which the ultimate outcome is unknown. These include economic factors, developments affecting companies in particular industries, and specific issues with respect to single borrowers. Changes in circumstances may cause future assessments of credit risk to be materially different from current assessments, which could result in an increase or decrease in the allowance for credit losses.

The allowance is comprised of a specific allowance and a collective allowance.

Specific Allowance
These allowances are recorded for individually identified impaired loans to reduce their carrying value to the expected recoverable amount. 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 classified as impaired and written off when principal or interest payments are 180 days past due, as discussed under Impaired Loans). 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, consumer instalment and other personal loans are individually insignificant and may be individually assessed or collectively assessed for losses at the time of impairment, taking into account historical loss experience.

Collective Allowance
We maintain a collective 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 collective allowance is based on the requirements of IAS 39, considering guidelines issued by OSFI.

The collective allowance methodology incorporates both quantitative and qualitative factors to determine an appropriate level for the collective allowance. For the purpose of calculating the collective allowance, we group loans on the basis of similarities in credit risk characteristics. The loss factors for groups of loans are determined based on a minimum of five years of historical data and a one-year loss emergence period, except for credit cards, where a seven-month loss emergence period is used. The loss factors are back-tested and calibrated on a regular basis to ensure that they continue to reflect our best estimate of losses that have been incurred but not yet identified, on an individual basis, within the pools of loans. Historical loss experience data is also reviewed in the determination of loss factors. Qualitative factors are based on current observable data, such as current macroeconomic and business conditions, portfolio-specific considerations and model risk factors.

Exhibit 99.4

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CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors of Bank of Montreal

We consent to the inclusion in this annual report on Form 40-F of:

i) our report of independent registered public accounting firm dated December 3, 2019 to the Shareholders of Bank of Montreal (the "Bank") on the consolidated financial statements of the Bank, which comprise the consolidated balance sheets as at October 31, 2019 and October 31, 2018, the related consolidated statements of income, comprehensive income, changes in equity and cash flows for each of the years in the three-year period ended October 31, 2019, and the related notes; and

ii) our report of independent registered public accounting firm dated December 3, 2019 to the Shareholders of the Bank on the effectiveness of internal control over financial reporting as of October 31, 2019;

each of which is contained in this annual report on Form 40-F of the Bank for the fiscal year ended October 31, 2019.

We also consent to the incorporation by reference of such reports in the following Registration Statements of the Bank:

1. Registration Statement – Form F-3 – File No. 333-217200
2. Registration Statement – Form F-3 – File No. 333-214934
3. Registration Statement – Form S-8 – File No. 333-207739
4. Registration Statement – Form S-8 – File No. 333-191591
5. Registration Statement – Form S-8 – File No. 333-180968
6. Registration Statement – Form S-8 – File No. 333-177579
7. Registration Statement – Form S-8 – File No. 333-177568
8. Registration Statement – Form S-8 – File No. 333-176479
9. Registration Statement – Form S-8 – File No. 333-175413
10. Registration Statement – Form S-8 – File No. 333-175412
11. Registration Statement – Form S-8 – File No. 333-113096
12. Registration Statement – Form S-8 – File No. 333-14260
13. Registration Statement – Form S-8 – File No. 33-92112

KPMG LLP

Chartered Professional Accountants, Licensed Public Accountants

December 3, 2019
Toronto, Canada

KPMG LLP is a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity. KPMG Canada provides services to KPMG LLP.

Exhibit 99.5

Certifications

Pursuant to Rule 13a-14(a) or 15d-14(a) under the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Darryl White, Chief Executive Officer of Bank of Montreal, certify that:

1. I have reviewed this annual report on Form 40-F (the "report") of Bank of Montreal (the "issuer");

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the issuer as of, and for, the periods presented in this report;

4. The issuer's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the issuer and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the issuer, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;

(c) Evaluated the effectiveness of the issuer's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the issuer's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the issuer's internal control over financial reporting; and

5. The issuer's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the issuer's auditors and the audit committee of the issuer's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the issuer's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the issuer's internal control over financial reporting.

Date: December 3, 2019

/s/ Darryl White
Darryl White
Chief Executive Officer

Exhibit 99.6

Certifications

Pursuant to Rule 13a-14(a) or 15d-14(a) under the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Thomas E. Flynn, Chief Financial Officer of Bank of Montreal, certify that:

1. I have reviewed this annual report on Form 40-F (the "report") of Bank of Montreal (the "issuer");

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the issuer as of, and for, the periods presented in this report;

4. The issuer's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the issuer and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the issuer, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;

(c) Evaluated the effectiveness of the issuer's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the issuer's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the issuer's internal control over financial reporting; and

5. The issuer's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the issuer's auditors and the audit committee of the issuer's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the issuer's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the issuer's internal control over financial reporting.

Date: December 3, 2019

/s/ Thomas E. Flynn
Thomas E. Flynn
Chief Financial Officer

Exhibit 99.7

Certifications

Pursuant to Rule 13(a) or 15(d) under the Securities Exchange Act of 1934, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002

Pursuant to 18 U.S.C. 1350, the undersigned officers of Bank of Montreal (the *"Bank"*), hereby certify that, to his knowledge, (a) the annual report on Form 40-F for the period ended October 31, 2019 (the *"Report"*) fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934 and (b) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Bank.

Date: December 3, 2019

/s/ Darryl White
Darryl White
Chief Executive Officer

Date: December 3, 2019

/s/ Thomas E. Flynn
Thomas E. Flynn
Chief Financial Officer